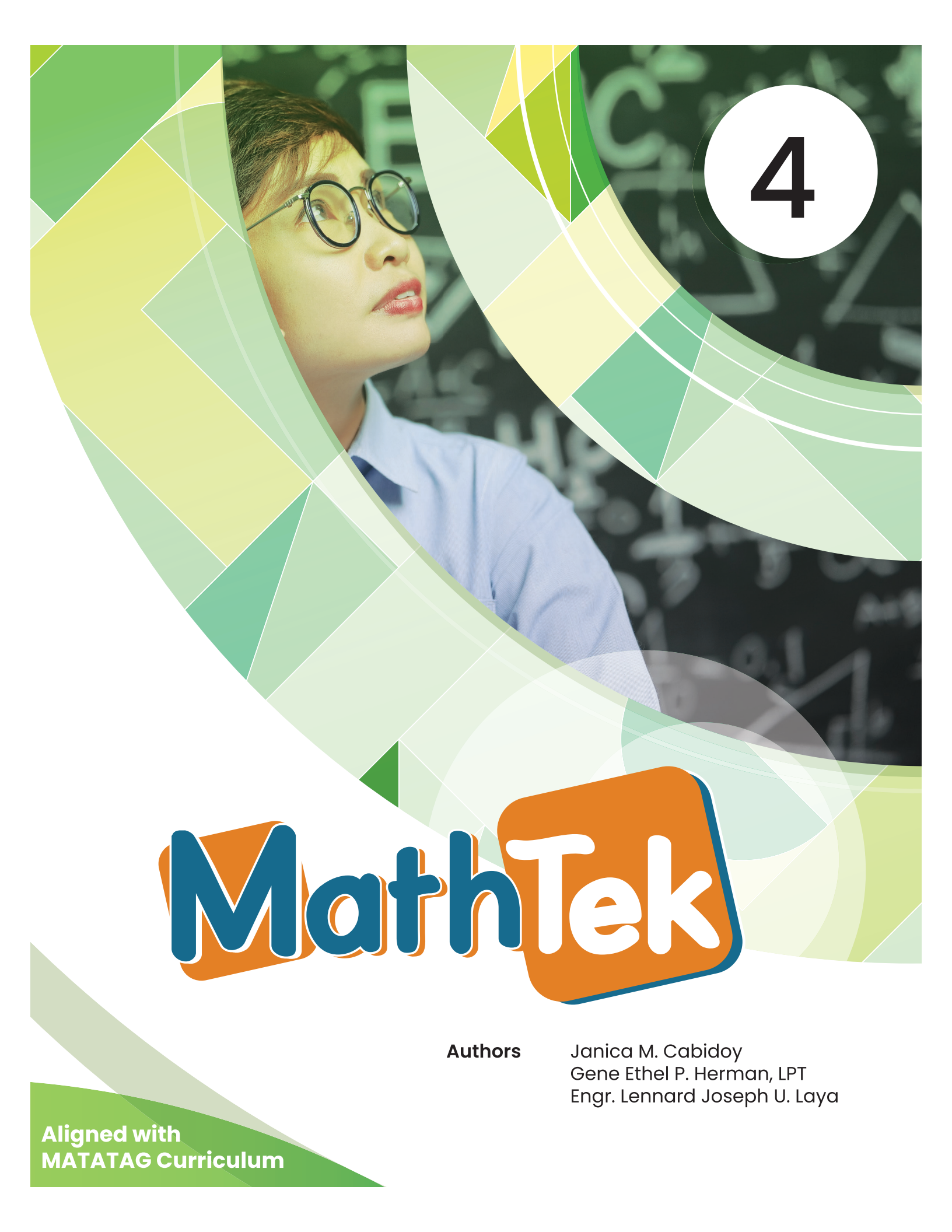


The cover features a woman with glasses looking upwards, framed by a large, stylized number '4' composed of various green and yellow geometric shapes. The background is a chalkboard with faint mathematical symbols.

4

MathTek

Authors

Janica M. Cabidoy
Gene Ethel P. Herman, LPT
Engr. Lennard Joseph U. Laya

**Aligned with
MATATAG Curriculum**



Fourth Edition

Janica M. Cabidoy

Gene Ethel P. Herman, LPT

Engr. Lennard Joseph U. Laya



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FOREWORD

In today's world, learning Math is ever critical. A certain level of mathematical understanding is necessary not only in specialized fields but also in everyday activities. Math helps us analyze information critically, make well-founded judgments, and create beneficial solutions.

However, learning Math can have its challenges. Filipino students have developed a general negative attitude towards Math, making it a very unpopular subject with a reputation of being tedious and difficult. Because of these, TechFactors created the MathTek K-12 series based on the Department of Education MATATAG Curriculum.

As TechFactors' contribution to the learning of Mathematics, MathTek identifies and addresses the causes of this problem. Through the thoughtful implementation of the CPA strategy, MathTek makes learning math concepts easy so that students will not be overwhelmed or intimidated by highly abstract concepts. Learning Math is also made relevant through situating lessons in familiar and localized settings with characters whom students can relate to.

TechFactors believes that students should learn Math in an engaging and accessible way. In line with this, MathTek provides standardized and authentic assessment activities that not only reinforce learning but also encourage students to exercise their creativity.

With MathTek, we hope for students to develop solid foundations of math skills, enabling them to become critical thinkers and problem-solvers ready to face the challenges of our ever-changing world.

TechFactors Inc.

How to Use This Book

The sections in the series and their brief descriptions are as follows:



Objectives

states the target learning goals of the students.



Vocabulary Bank

unlocks difficult words found in the lesson.



Math Tale

presents a relevant story and a mathematical problem involving the concept(s) tackled in the lesson.



Let's Explore

discusses mathematical concepts through an example. It focuses on solving the problem presented in Math Tale. It includes a step-by-step procedure on how the problem can be solved.



Keep in Mind

emphasizes important reminders such as formulas, techniques and procedures.



Do It Yourself

shows a step-by-step guide in creating physical manipulatives to be used in each lesson.



Put to Practice

includes two tasks that shall be performed by the student independently.



Skills Builder

offers a variety of exercises that evaluate the skills learned by the students.



Challenge Yourself

provides a non-routine problem or a puzzle that will act as reinforcement of the problem-solving strategy discussed at the beginning of the chapter or unit.



Portfolio Prompts

offers activities such as research and creative projects wherein students can reflect on their learning.



Fun Facts

offers students interesting trivia related to the topic of mathematics in general.



Interactives

shares the link where students can access alternative learning through virtual games.

What's New?

As we dedicate ourselves to improve the program, we have included the following changes.

INSTRUCTIONAL DESIGN

1. Aligned to the new **MATATAG curriculum** from the Department of Education
2. Concise lessons for clearer instruction
3. More and updated real-life situations on the practical applications of the topics
4. Additional and improved guided questions to solve problems
5. More and revised individual, pair, and group activities
6. Added interesting and relatable trivia
7. Integrated performance tasks with other subjects
8. New and improved interactives

LOOK AND FEEL

1. New layout and design
2. New vibrant illustrations

Embark on a dynamic educational journey with MathTek's latest offerings, where learning is made a great experience!

ABOUT THE AUTHORS

Janica M. Cabidoy

Janica graduated from the Pamantasan ng Lungsod ng Pasig with a Bachelor in Secondary Education, Major in Mathematics. She is a Content Developer at TechFactors Inc.

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Engr. Lennard Joseph U. Laya

Lennard graduated from the University of the Philippines Diliman with a Bachelor of Science in Industrial Engineering. He taught math and science as part of the Jesuit Volunteers Philippines (JVP) at the Maryknoll Academy of Cateel. He was a technical assistant at the Office of the Secretary, Department of Education. He also taught math, science, and Christian Life Education at the Ateneo de Iloilo. He is currently working as a Content Developer at TechFactors Inc.

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UNIT 1

Welcome to the fun world of Math! In this unit, we'll explore angles, shapes, and big numbers. Learn about right, acute, and obtuse angles using models and a protractor. Discover triangles and quadrilaterals, and become a pro at finding perimeter. Dive into big numbers, mastering reading, writing, comparing, and rounding up to 1 000 000. Become an addition and subtraction expert, practicing estimation and problem-solving. Join us on this journey to build strong skills in geometry, measurement, and numbers for future math adventures. Let's get started, fourth-grade math champs!.



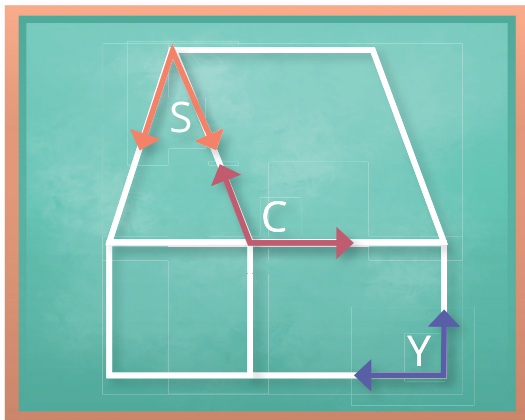
LESSON 1

Angles



Objectives

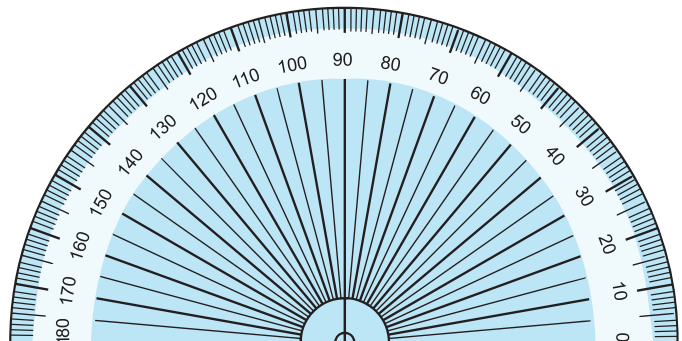
- ◇ Copy and bisect line segments and angles using a ruler and compass.
- ◇ Draw perpendicular and parallel lines.



What types of angles are formed in the figure on the left?

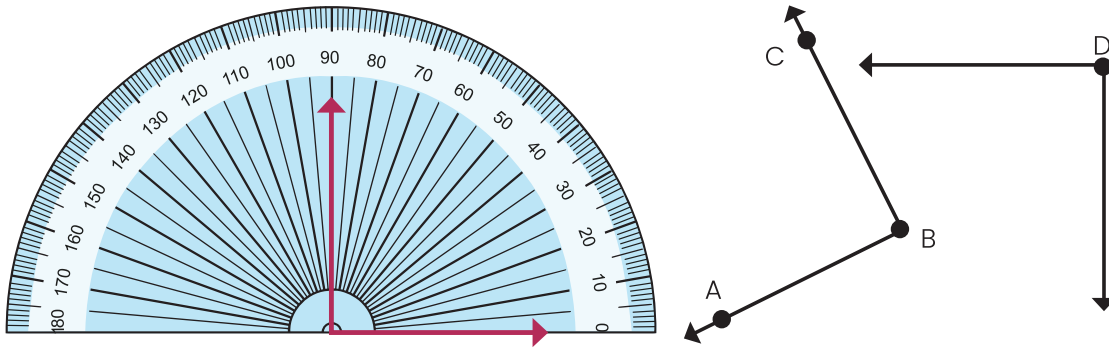


Angles are geometric figures that are formed by two rays with a common end point called the vertex. Angles can be measured in degrees ($^{\circ}$) using a measuring tool known as the protractor. An angle ($\angle$) can be named using three letters or by the letter at its vertex.



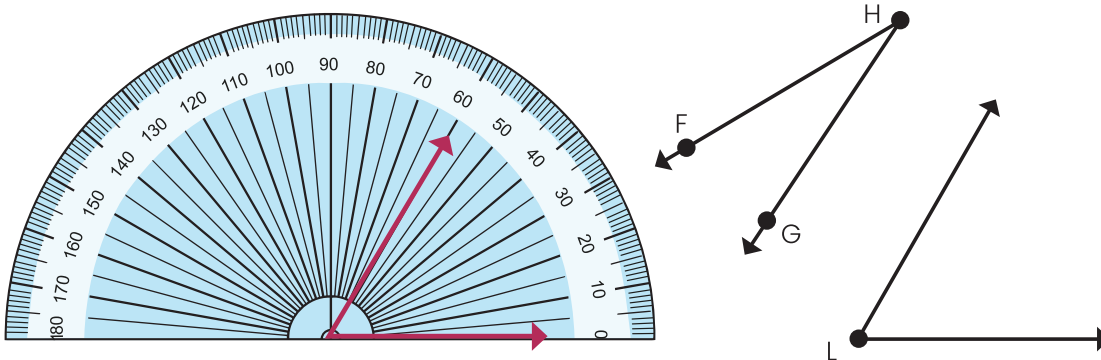
Kinds of Angles

1. **Right angle** – an angle whose measure is exactly 90°



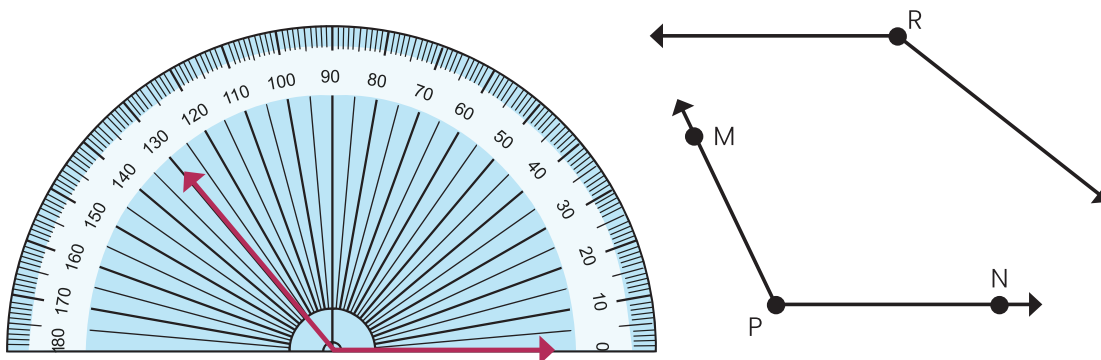
$\angle ABC$ and $\angle D$ are right angles.

2. **Acute angle** – an angle whose measure is less than 90°



$\angle FHG$ and $\angle L$ are acute angles.

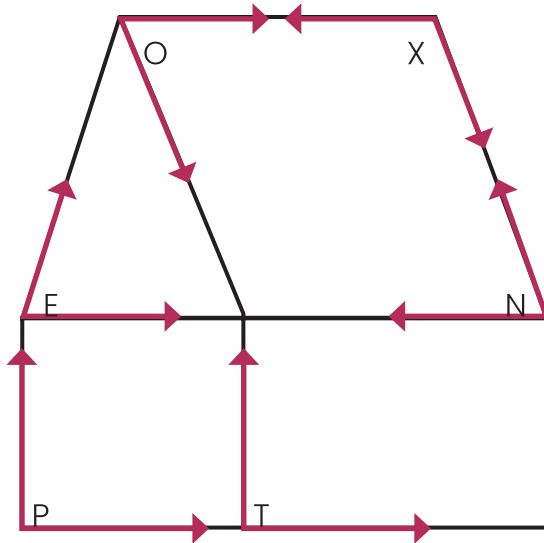
3. **Obtuse angle** – an angle whose measure is more than 90° but less than 180°



$\angle MPN$ and $\angle R$ are obtuse angles.

We can easily identify the angles formed in the figure given at the start of this lesson. $\angle S$ is an acute angle, $\angle C$ is an obtuse angle, and $\angle Y$ is a right angle.

Using the same figure, we can see more angles.

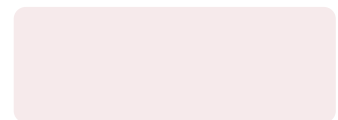
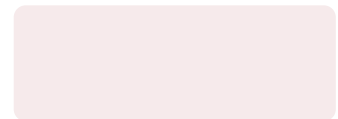
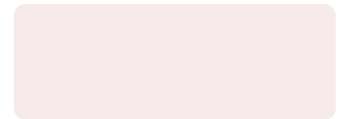
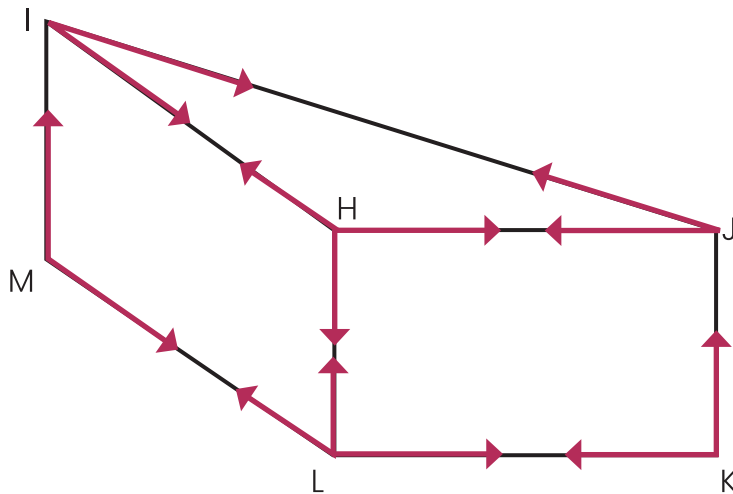


$\angle E$, $\angle O$, and $\angle N$ are acute angles.

$\angle X$ is an obtuse angle.

$\angle P$ and $\angle T$ are right angles.

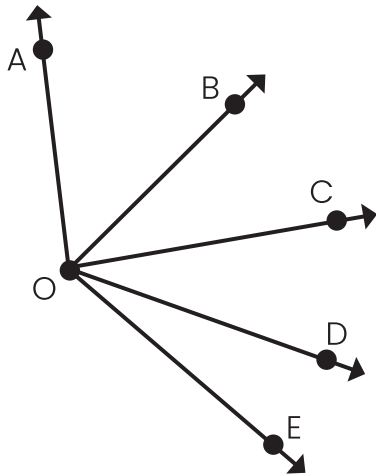
Now, it's your turn to identify the different types of angles. Classify the angles formed in the figure as acute, obtuse, or right.





Challenge Yourself

How many angles can you form using the figure below? Classify the angles.



Acute

Obtuse

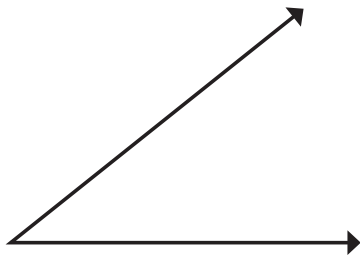
Right



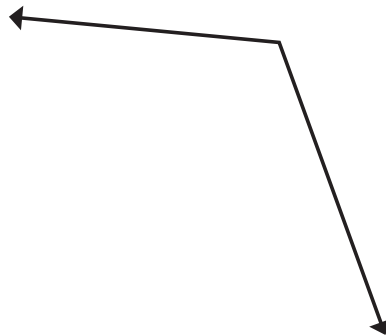
Skills Builder

I. Classify each angle as acute, obtuse, or right.

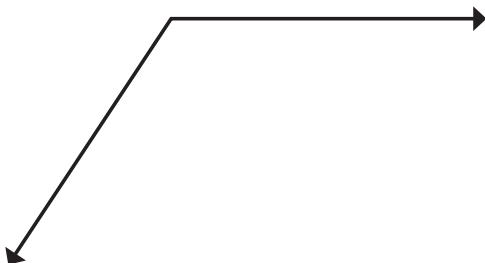
1. _____



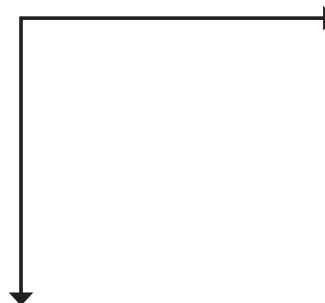
3. _____



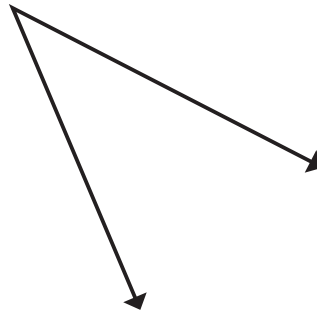
2. _____



4. _____

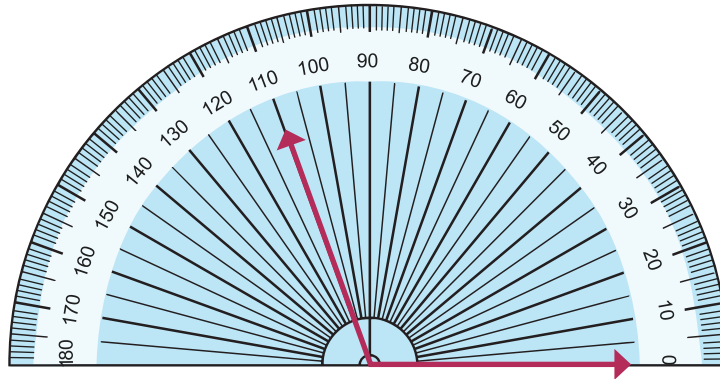


5. _____

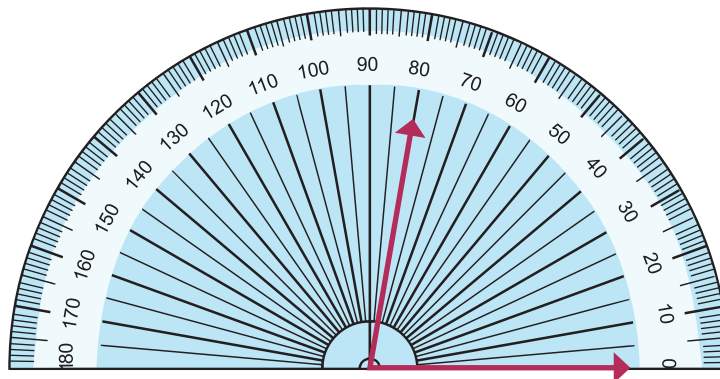


II. Find the measure of each angle and classify it as acute, obtuse, or right.

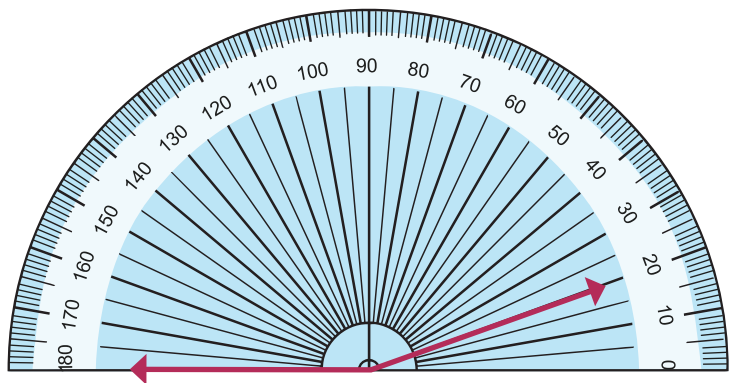
1. Measure of Angle: _____ Kind of Angle: _____



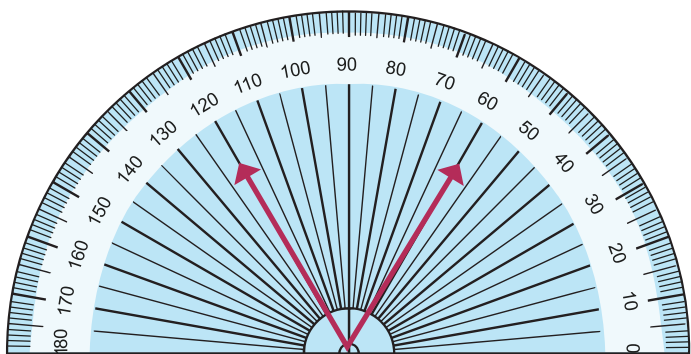
2. Measure of Angle: _____ Kind of Angle: _____



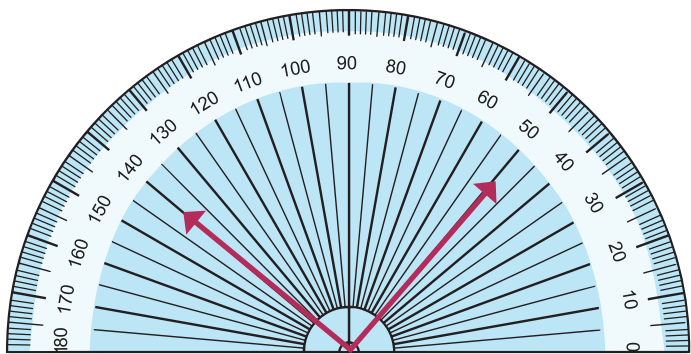
3. Measure of Angle: _____ Kind of Angle: _____



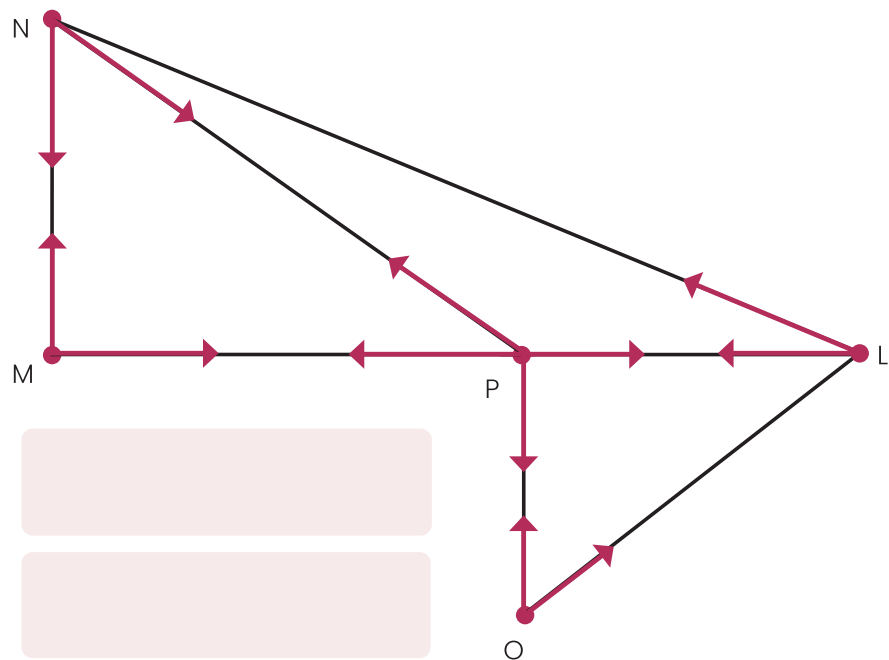
4. Measure of Angle: _____ Kind of Angle: _____



5. Measure of Angle: _____ Kind of Angle: _____



III. Identify the angles formed in the figure and classify each as acute, obtuse, or right.



Acute Angles:

Obtuse Angles:

Right Angles:

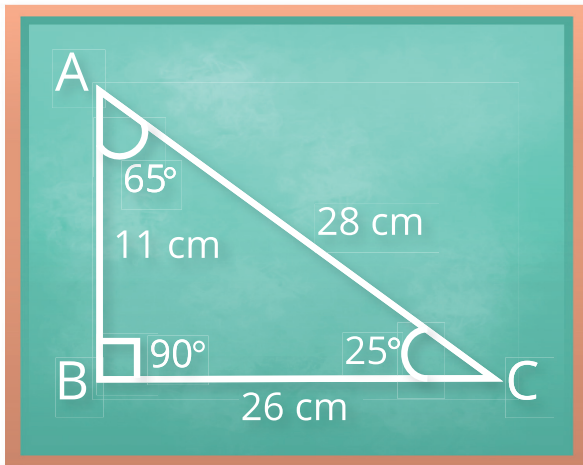


Interactives

To learn more about this lesson, you may visit TekTeach (Learning Management System).

LESSON 2

Triangles

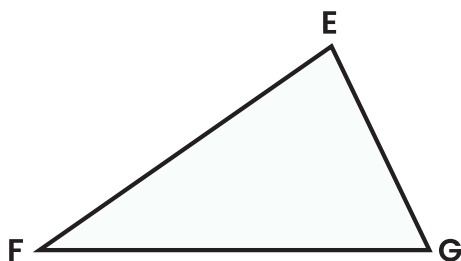


Most polygons can be divided into smaller triangles.

What can you say about the triangle on the left?

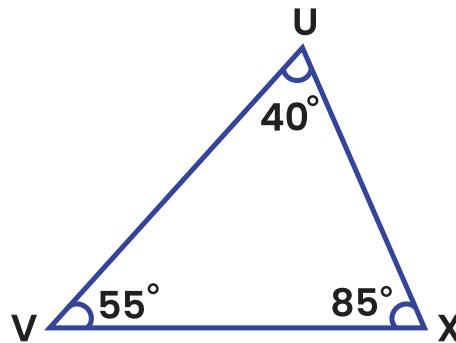
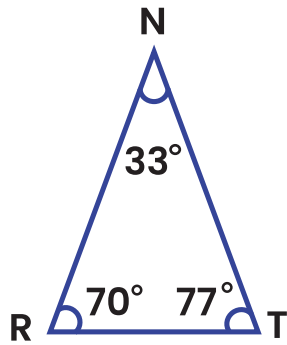


A **triangle** is a closed figure with three vertices, three sides, and three angles. It is named after its three vertices. In triangle $\triangle EFG$ below, E, F, and G are called the vertices of the triangle. EF, FG, and EG are the sides of the triangle. A vertex is an intersection of any two sides of the triangle while a side is a line segment whose endpoints are two of the triangle's vertices. The sum of the measures of the three angles is equal to 180° . ($m\angle E + m\angle F + m\angle G = 180^\circ$)

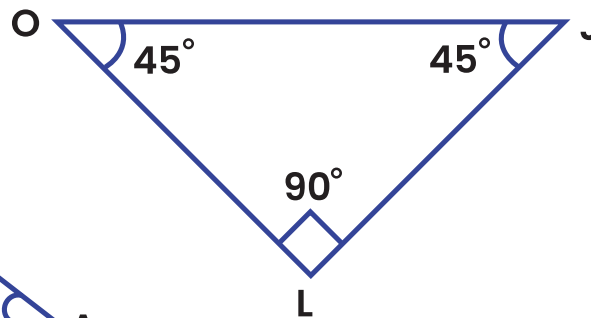
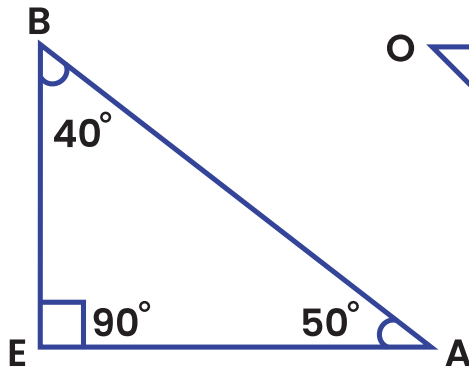


Kinds of Triangles According to Angles

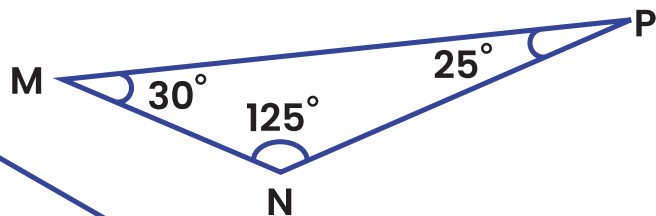
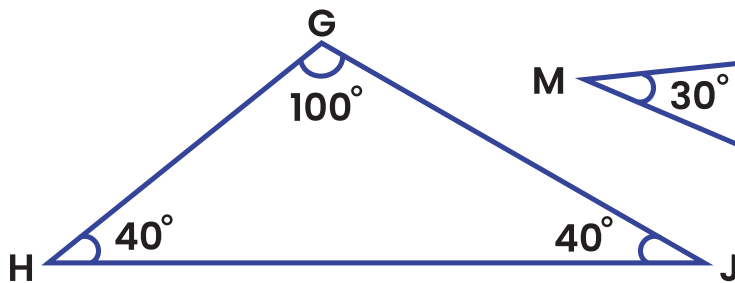
1. **Acute Triangle** – a triangle whose three angles are acute



2. **Right Triangle** – a triangle with one right angle

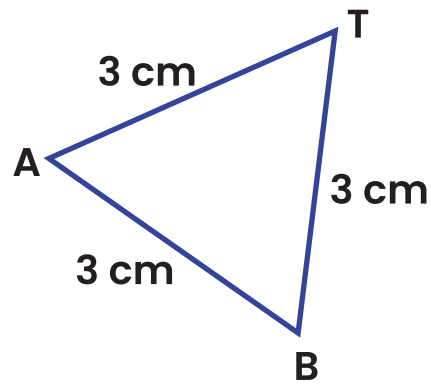
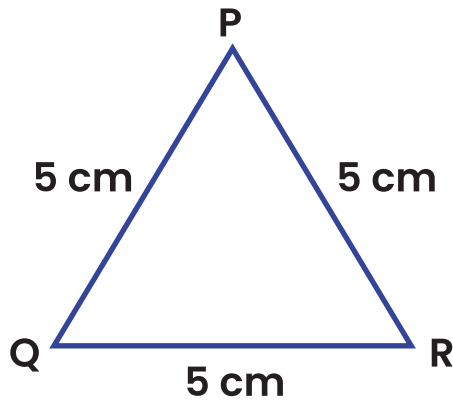


3. **Obtuse Triangle** – a triangle with one obtuse angle

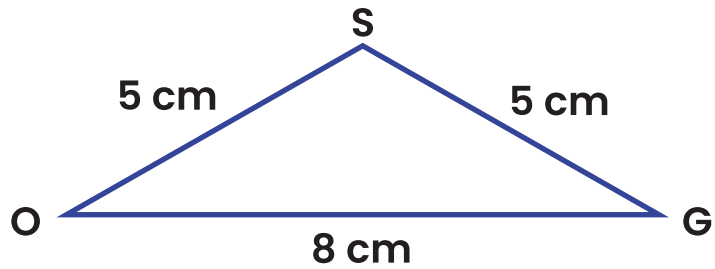
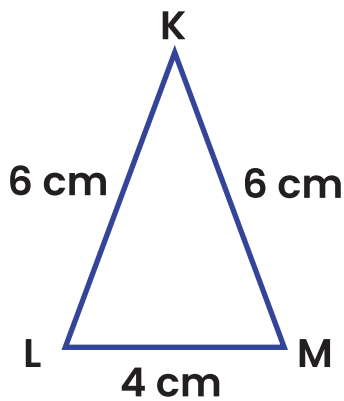


Kinds of Triangles According to Sides

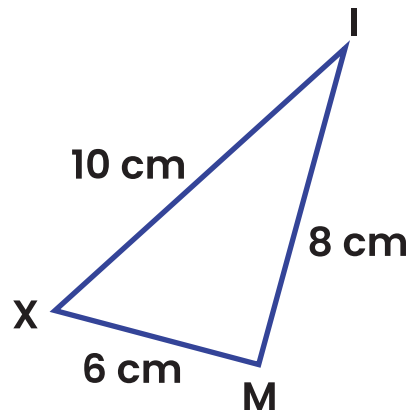
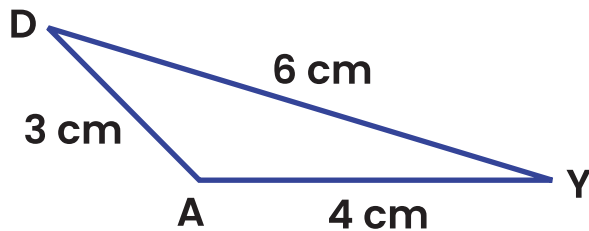
1. **Equilateral Triangle** – a triangle whose three sides are equal in length



2. **Isosceles Triangle** – a triangle with two sides that are equal in length



3. **Scalene Triangle** – a triangle with no sides equal in length





Fun Facts

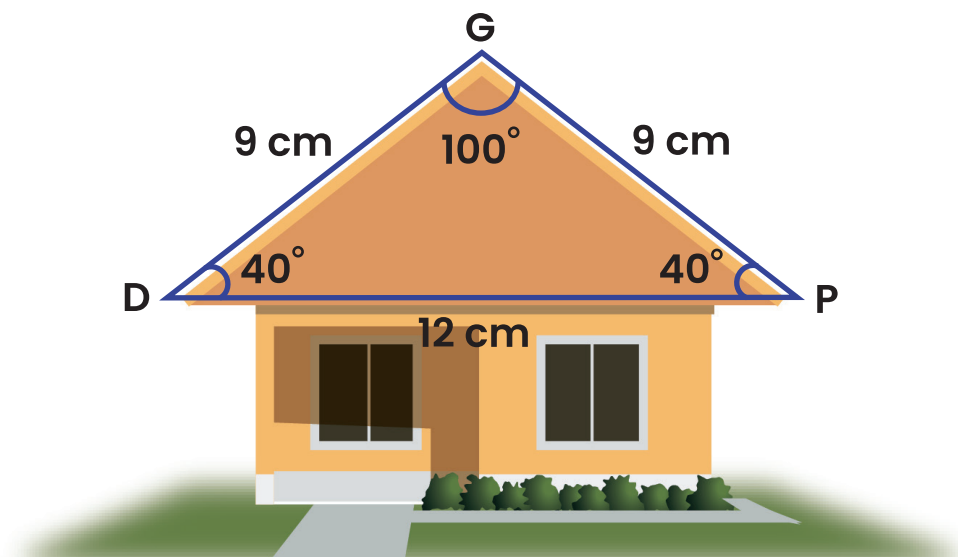
The Bermuda Triangle on the South-Eastern coast of the United States and the Atlantic Ocean is famous for being a mystic. At least 1000 planes and ships had strangely disappeared in the area for the last 5 centuries, even without machine failure, natural disasters, or human error.



Note that the given triangle ($\triangle ABC$) on page 10 has sides AB, BC, and AC and vertices A, B, and C.

$\triangle ABC$ is a right triangle because one angle measures 90° , making it a right angle.

$\triangle ABC$ is also a scalene triangle because there are no sides equal in length.



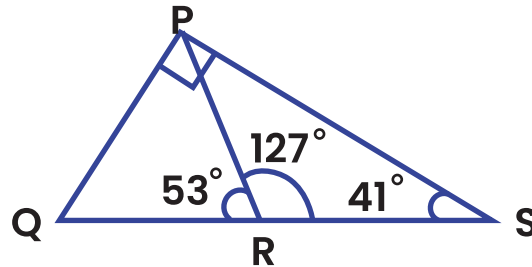
In $\triangle DGP$, the sides are $\overline{DG}$, $\overline{GP}$, and $\overline{DP}$ and the vertices are D, G, and P. The triangle is an obtuse triangle because one angle is obtuse. $\triangle DGP$ is also an isosceles triangle because two of the sides are equal in length.



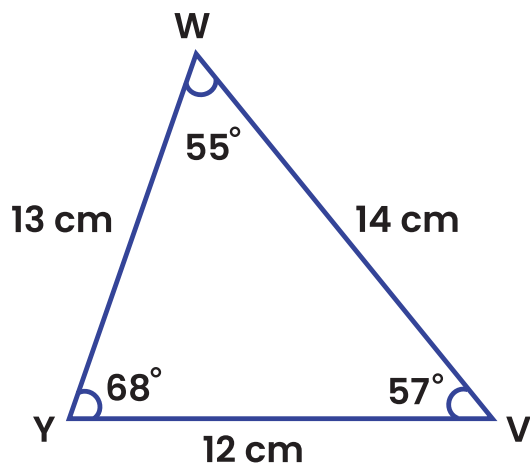
Challenge Yourself

Problem Solving Strategy: Working Backwards

Given the figure, $\triangle SPQ$ is a right triangle and $\triangle SRP$ is an obtuse triangle. Find the measure of $\angle Q$.



Name the triangle and determine its sides and vertices. Then, classify the triangle according to its angles and sides.



Sides

Vertices

Kind of Triangle



Interactives

To learn more about this lesson, you may visit TekTeach (Learning Management System).

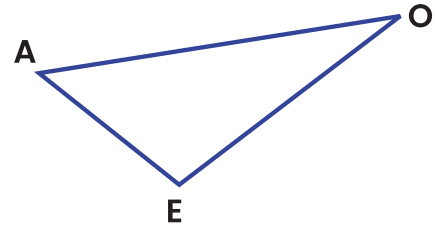


Skills Builder

I. Identify the sides and vertices of the given triangles.

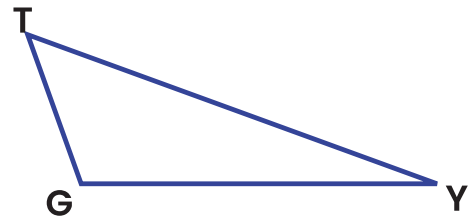
1.

Sides			
Vertices			



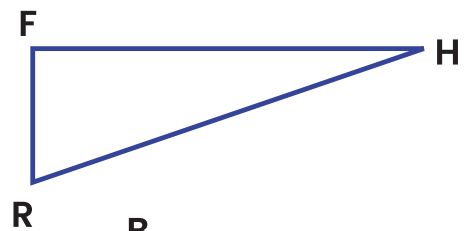
2.

Sides			
Vertices			



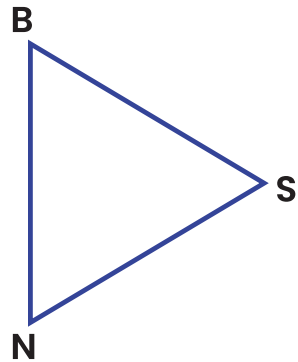
3.

Sides			
Vertices			



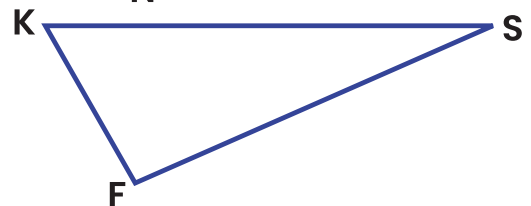
4.

Sides			
Vertices			



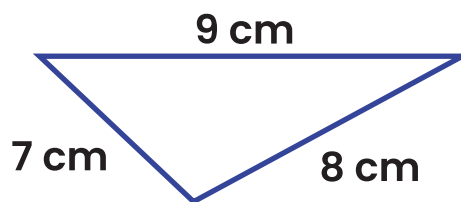
5.

Sides			
Vertices			

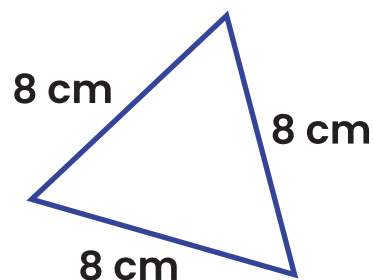


II. Classify each triangle according to its sides.

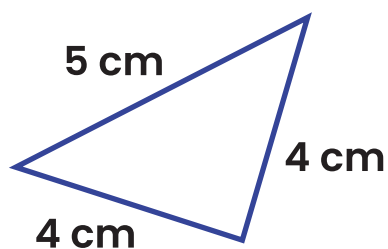
1. _____



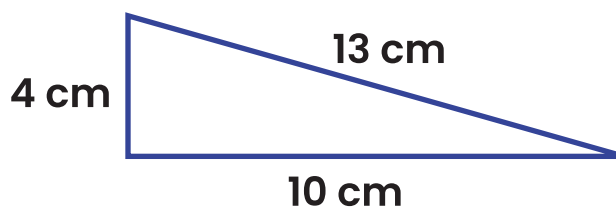
2. _____



3. _____

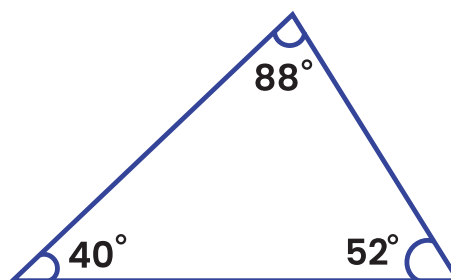


4. _____

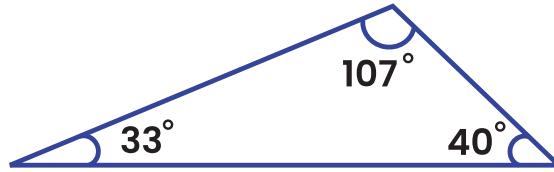


III. Classify each triangle according to its angles.

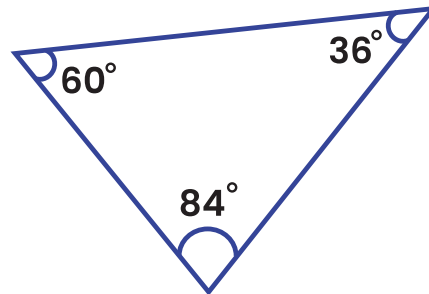
1. _____



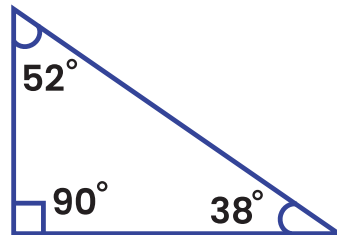
2. _____



3. _____



4. _____

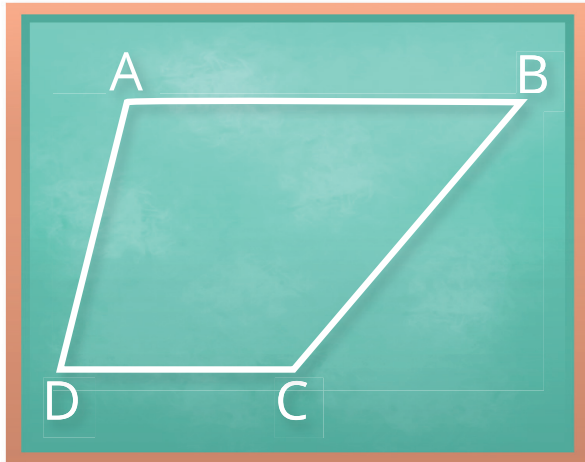


Portfolio Prompts

Take pictures of 10 objects or designs in your home that use different kinds of triangles. Print the pictures and post them on a $\frac{1}{4}$ illustration board.

LESSON 3

Quadrilaterals



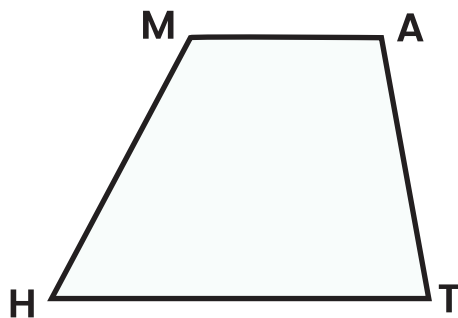
Quadrilaterals can be seen everywhere. The walls of the classroom are rectangles, some tables are squares, and some chocolate bars are trapezoids.

What can you say about figure ABCD?



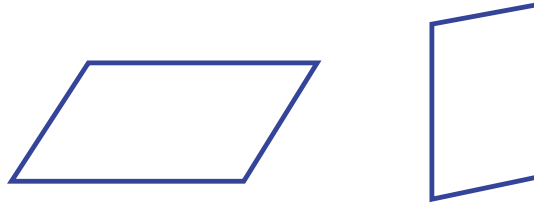
A quadrilateral is a closed figure with four sides and four angles. Quadrilaterals are named after their vertices. In the quadrilateral MATH below, $\angle M$, $\angle A$, $\angle T$, and $\angle H$ are the angles. $\overline{MA}$, $\overline{AT}$, $\overline{TH}$, and $\overline{HM}$ are the sides. The sum of the measures of the four angles is equal to 360° .

$$(m\angle M + m\angle A + m\angle T + m\angle H = 360^\circ).$$

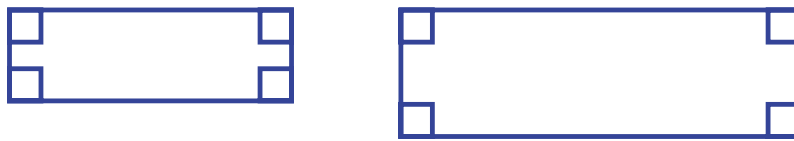


Kinds of Quadrilaterals

1. Parallelogram – a quadrilateral with two pairs of parallel sides. The opposite sides and angles are equal



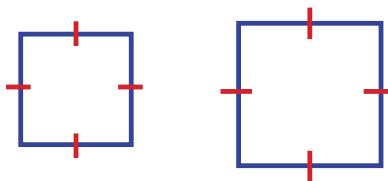
2. Rectangle – a parallelogram with four right angles



3. Rhombus – a parallelogram with four equal sides



4. Square – a rectangle with four equal sides or a rhombus with four right angles



5. Trapezoid – a quadrilateral with exactly one pair of parallel sides



Quadrilateral ABCD on page 18 has vertices A, B, C, and D. Its angles are $\angle A$, $\angle B$, $\angle C$, and $\angle D$. Its four sides are $\overline{AB}$, $\overline{BC}$, $\overline{CD}$, and $\overline{DA}$. The sides $\overline{AB}$ and $\overline{CD}$ are parallel. The quadrilateral has only one pair of parallel sides, therefore it is a trapezoid.

The figure on the right is a quadrilateral with vertices F, I, S, and H. It has sides $\overline{FI}$, $\overline{IS}$, $\overline{SH}$, and $\overline{HF}$. Its angles are $\angle F$, $\angle I$, $\angle S$, and $\angle H$. We can see that $\overline{FI} \parallel \overline{SH}$ and $\overline{IS} \parallel \overline{HF}$. Since it has two pairs of parallel sides, we can say that it is a parallelogram.

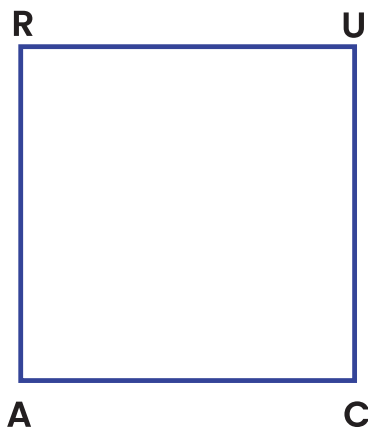


Keep in Mind

A square is a rectangle, but a rectangle may not always be a square.

A square is a rhombus, but a rhombus may not always be a square.

Determine the sides and angles then identify the kind of quadrilateral through its properties/characteristics.

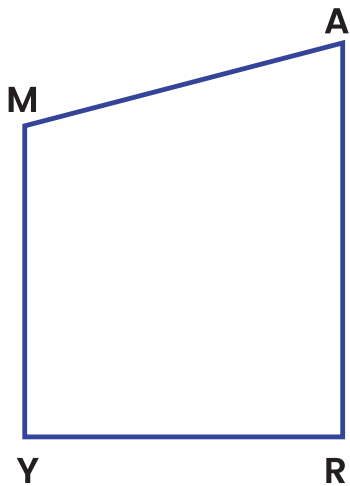


Sides

Angles

Properties/Characteristics

Kind of Quadrilateral



Sides

--	--	--	--

Angles

--	--	--	--

Properties/Characteristics

--

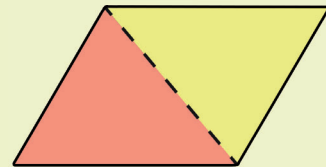
Kind of Quadrilateral

--



Fun Facts

Every parallelogram may be divided into two triangles of the same size.



Skills Builder

1. Identify the sides and vertices of the given quadrilaterals.

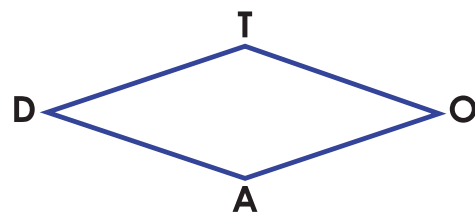
1.

Sides				
Vertices				



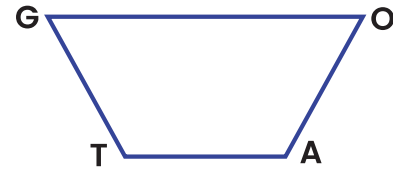
2.

Sides				
Vertices				



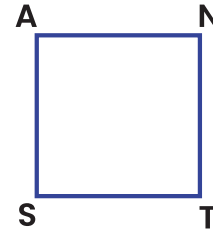
3.

Sides				
Vertices				



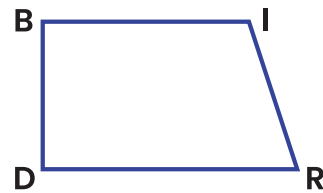
4.

Sides				
Vertices				



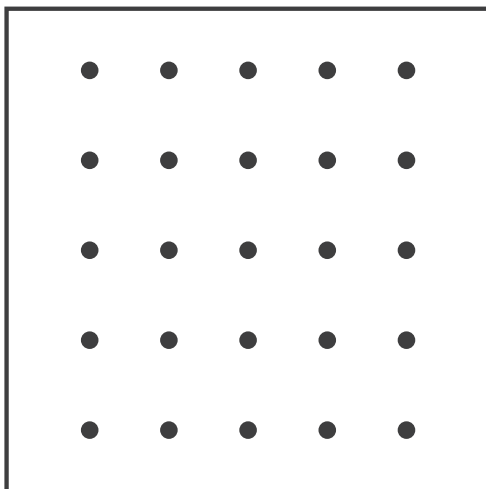
5.

Sides				
Vertices				

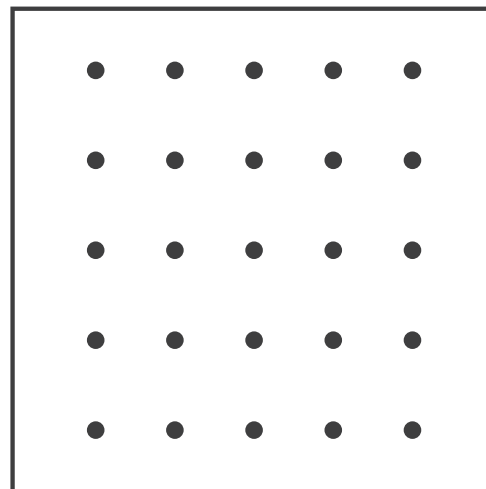


II. Draw all possible quadrilaterals on the geoboard based on the given properties. Use a ruler to draw the sides.

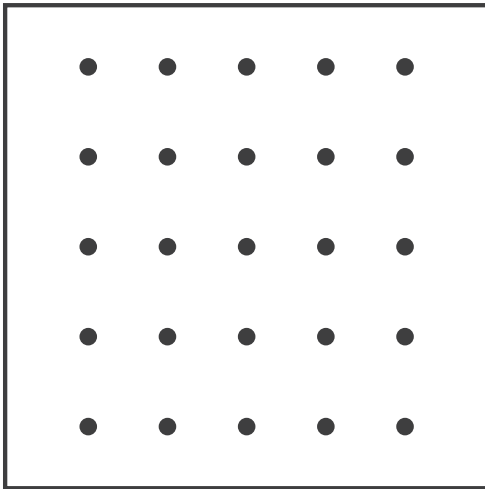
1. All sides are equal and all angles are right.



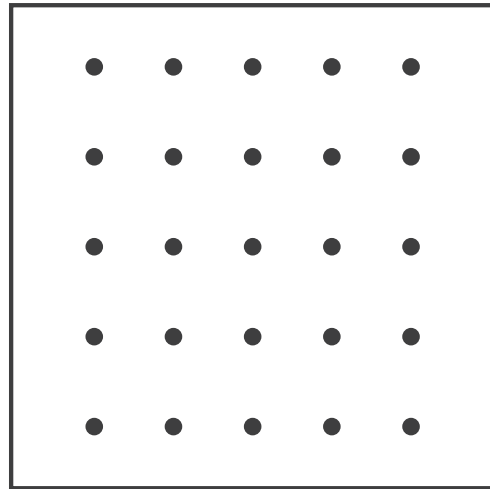
2. One pair of sides is parallel.



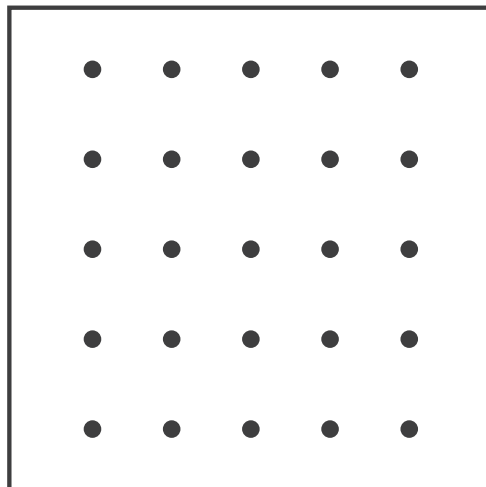
3. Two pairs of sides are parallel and equal.



4. Opposite sides are parallel and there is no right angle.



5. All sides are equal and no angle is right.



III. Draw a ♥ if the statement is true and a ● if it is false.

☐

1. A rhombus cannot have one right angle.

☐

2. Squares have exactly two pairs of parallel sides.

☐

3. A square is a rectangle.

☐

4. A rectangle is a parallelogram.

☐

5. Trapezoids are parallelograms.



Portfolio Prompts

Take pictures of 10 objects or designs in your home that use different kinds of quadrilaterals. Print the pictures and post it on a $\frac{1}{4}$ illustration board.



Interactives

To learn more about this lesson, you may visit TekTeach (Learning Management System).

LESSON 4

Perimeter of Triangles, Quadrilaterals, and Composite Figures



Objectives

- ◇ Visualize the perimeter of any given figure.
- ◇ Measure perimeter using appropriate tools.
- ◇ Derive the formula for the perimeter of any given figure.



Vocabulary Bank

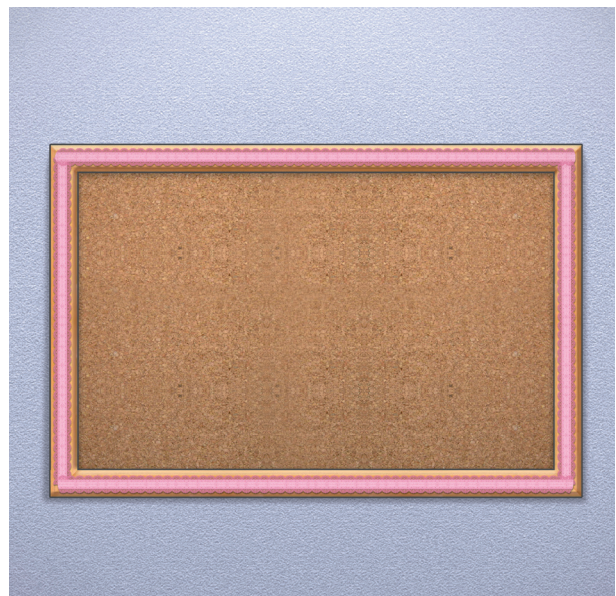
- **regular pentagon** – a polygon with 5 equal sides



Math Tale

Ribbons and Laces

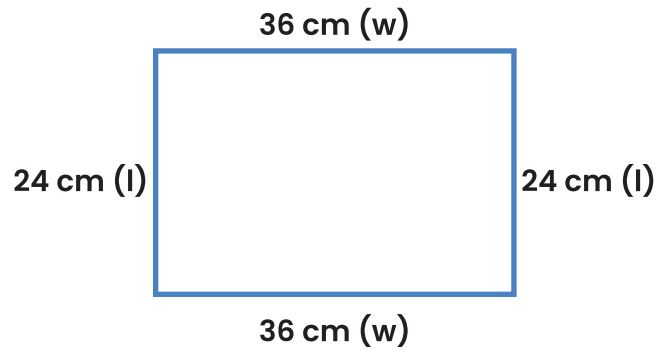
Heidi's dad installed a wooden board in her room that Heidi could use to post her pictures and daily reminders. The length of the board was 24 cm long and the width was 36 cm long. If Heidi was going to design the edge of the board with pink laces, how much pink lace would she need?





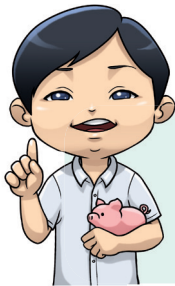
Let's Explore

The length around any shape or object is called the **perimeter**. To get the length of lace that Heidi needed, we need the perimeter of the board. To get this, add the length of each side of the board.



The perimeter (P) of the rectangular board is equal to twice its length (l) added to twice its width (w).

$$\begin{aligned} P &= 24 \text{ cm} + 24 \text{ cm} + 36 \text{ cm} + 36 \text{ cm} \\ &= 2 \times 24 \text{ cm} + 2 \times (36 \text{ cm}) \\ &= 48 \text{ cm} + 72 \text{ cm} \\ &= 120 \text{ cm} \end{aligned}$$



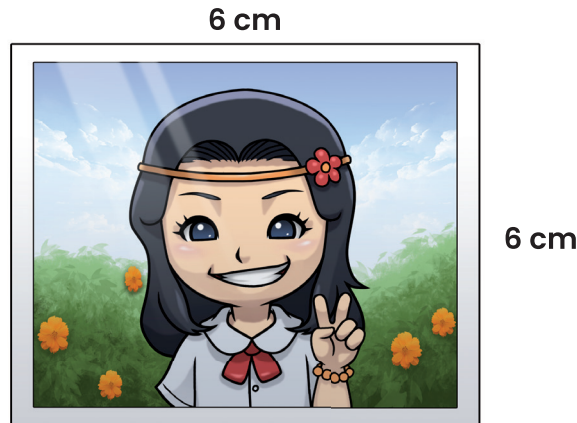
Heidi needed 120 cm of pink lace to design the edge of the board.



Keep in Mind

Perimeter is the total distance around a polygon. The perimeter of a polygon depends on its size and shape.

Heidi would like to put her picture on a square board and enclose it with a ribbon.



What are the dimensions of the picture?

What shape is the picture?

How do you get the perimeter of the picture?

How much ribbon would Heidi need?



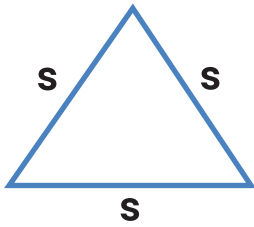
Fun Facts

Before, ribbons were only worn by the elite, as it was regarded as a sign of nobility and luxury. It was only by the 1800s that ribbons became popular among the common folks in England.



Derivation of The Formula of Perimeter

To get the perimeter of any polygon, add the length of each side. Consider an equilateral triangle.

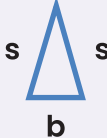
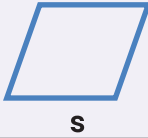
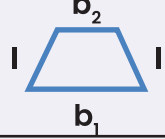
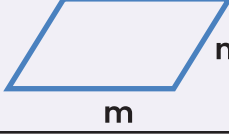


The lengths of each side are equal. Instead of adding one by one, we can multiply by 3.

Thus, we can get the perimeter of the triangle using this formula:

$$P = 3 \times s$$

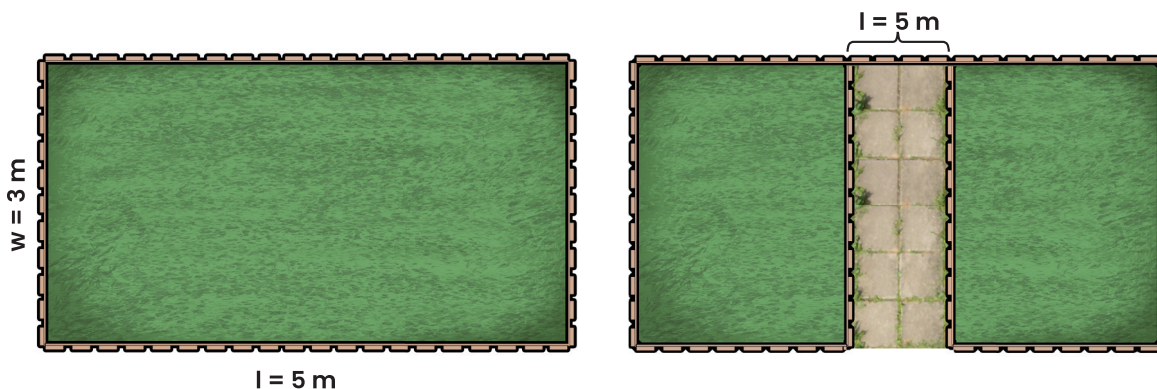
Try to find the formula of the polygons.

Shape	Figure	Formula
Isosceles triangle		
Square		
Rectangle		
Rhombus		
Isosceles Trapezoid		
Parallelogram		



Put to Practice

Heidi's family is making a fence around their backyard. The shape of their backyard is illustrated below.



TASK 1

Find out how much fencing material the family would need to fence the backyard completely.

TASK 2

The family decided to keep a pathway in the middle. Find out how much fencing material they would need to fence the backyard and the sides of the pathway completely.



Skills Builder

I. Encircle the letter of the correct answer.

- What is the perimeter of a triangle with sides measuring 6 centimeters, 10 centimeters, and 8 centimeters?
 - 22 centimeters
 - 24 centimeters
 - 26 centimeters
 - 28 centimeters
- A rectangle has a perimeter of 12 cm. What is one possible measure of its length and width?
 - 3 cm and 4 cm
 - 8 cm and 4 cm
 - 4 cm and 2 cm
 - 5 cm and 7 cm

3. The perimeter of a square is 36 meters. How long is each of its sides?
- a. 6 meters b. 7 meters c. 8 meters d. 9 meters

4. Two squares with each side measuring 6 centimeters are drawn side by side. What is the perimeter of the formed figure?



- a. 24 centimeters c. 36 centimeters
b. 32 centimeters d. 48 centimeters

5. The measure of each side of a regular pentagon is 7 cm. What is its perimeter?

- a. 35 cm b. 40 cm c. 42 cm d. 49 cm

II. Compare the perimeter in Column A and the perimeter in Column B. Draw a:



if the value in Column A is greater than the value in Column B.



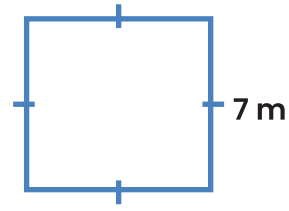
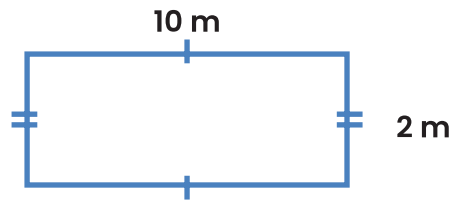
if the value in Column B is greater than the value in Column A.



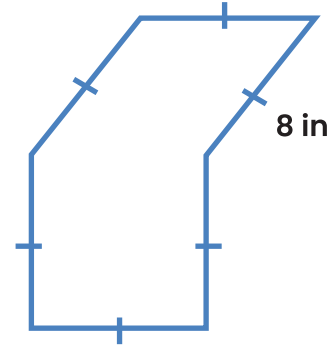
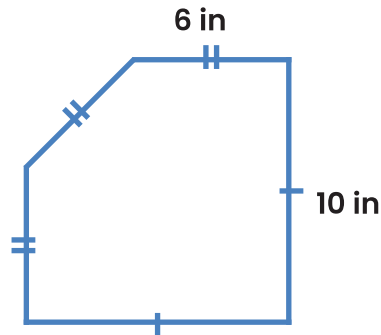
if the two values are equal.

	COLUMN A	COLUMN B
1.		
2.		

3.



4.



III. Read the statements for each number. Tell whether what is given is enough to answer what is asked. Write:

T

if statement A alone is enough to answer the question.

I

if statement B alone is enough to answer the question.

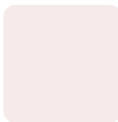
M

if you need both statements A and B to answer the question.

E

if statements A and B together are not enough to answer the question.

1.

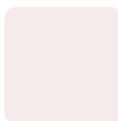


A. The length of a rectangle is 8 meters.

B. Its width is 6 meters.

QUESTION: What is the perimeter of the rectangle?

2.

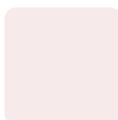


A. The perimeter of a square is 40 cm.

B. A square has 4 equal sides.

QUESTION: What is the measure of each side of the square?

3.



A. A triangle has a larger perimeter than a given square.

B. The triangle also has a larger perimeter than a given rectangle.

QUESTION: Which has the larger perimeter, the rectangle or the square?

VI. Read and answer the following problems.

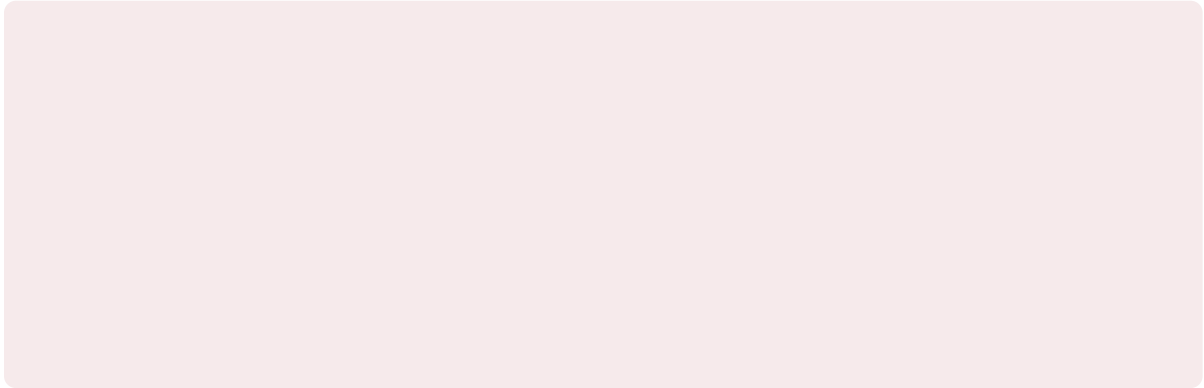
1. Joanna decorated the edges of their square dining table with a lace. If she used 144 cm of lace, how long is each edge of their dining table?



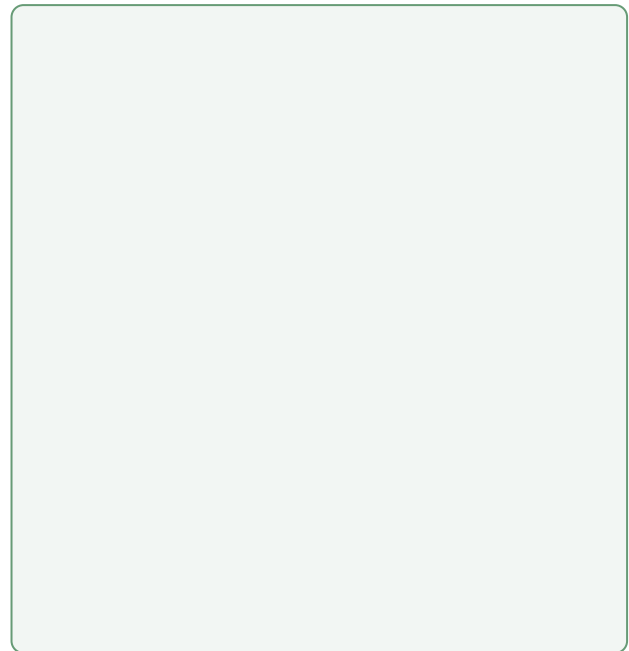
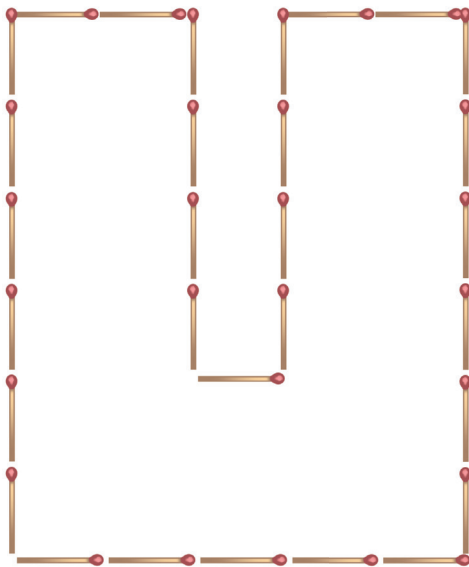
2. Ricky and June are decorating their bedroom door with Christmas lights. The door's length is 2.8 meters and the width is 1.2 meters. If they are going to put lights on the edges except on the one touching the floor, what is the total length of lights that they will need?



3. The class is going to plant roses around a rectangular garden. The length of the garden is 6 meters and the width is 3 meters. How many rose plants are needed if 6 roses are to be planted for every meter?



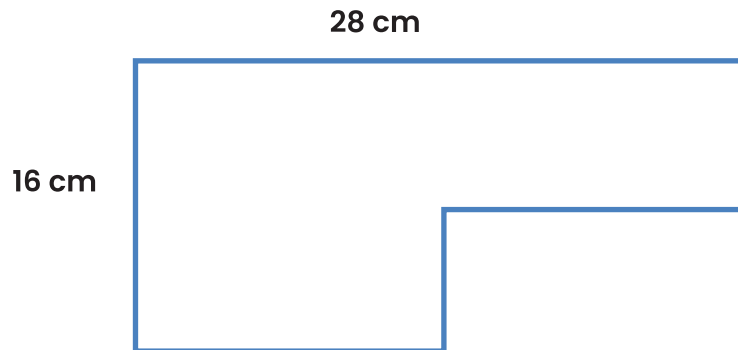
4. Ulysses used matchsticks to form the first letter of his name. If each matchstick measures 2.2 cm, what is the total length of the matchsticks that he used?





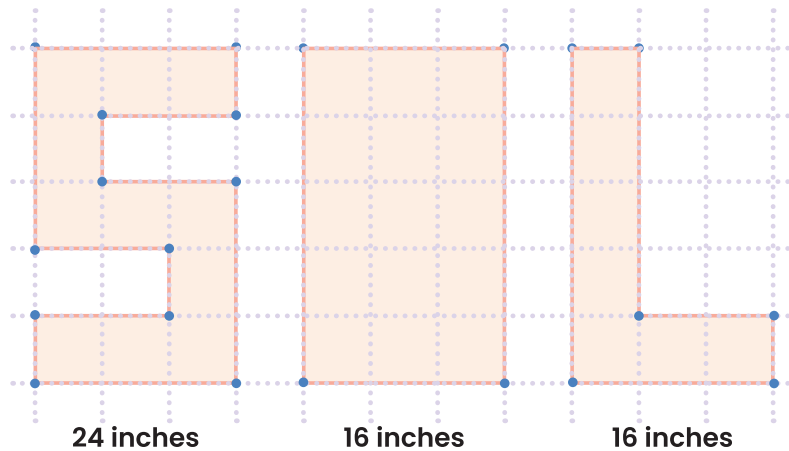
Challenge Yourself

Find the perimeter of the figure.



Portfolio Prompts

Using a graphing paper, write your nickname using capital letters. Assume that each side of the square is 1 cm. Write the perimeter of each letter below the letter.



Interactives

To learn more about this lesson, you may visit TekTeach (Learning Management System).

LESSON 5

Numbers: Reading, Writing, and Place Value

PLACE VALUE	HUNDRED THOUSANDS	TEN THOUSANDS	THOUSANDS	HUNDREDS	TENS	ONES
Los Piñas	5	5	2	5	7	3
Parañaque	5	2	9	0	3	9
Makati	5	8	8	1	2	8



Objectives

- ◇ Identify place value and value of digits.
- ◇ Read and write numbers in standard, word, and expanded forms.



Vocabulary Bank

- **equivalent** - having the same amount
- **withdraw** - to take out money from a bank
- **balance** - the amount of money that is left with the bank
- **deposit** - to put money in a bank account
- **check** - a written order directing a bank to pay money



Math Tale

A Day in the Bank

Harry and his mom went to the bank to make some transactions. Their first stop was the bank's ATM. His mom withdrew a certain amount. Harry saw the balance on the withdrawal slip.

How many digits did the balance have?





Let's Explore

The balance or the remaining amount was PHP 203 750. The number 203 750 has 6 digits and each digit has its own place value.

Place the digits under each column of the Place Value Chart. Start from the rightmost digit.

For example, in 203 750, the rightmost digit is 0.



PLACE VALUE	HUNDRED THOUSANDS	TEN THOUSANDS	THOUSANDS	HUNDREDS	TENS	ONES
GIVEN DIGITS				7	5	0

Place 0 under **ones**.

The next digit is 5. Place 5 under **tens**.

The third digit from the right is 7. Place 7 under **hundreds**.

PERIOD	THOUSANDS			UNITS		
PLACE VALUE	HUNDRED THOUSANDS	TEN THOUSANDS	THOUSANDS	HUNDREDS	TENS	ONES
GIVEN DIGITS	2	0	3	7	5	0

The next digit is 3. Place 3 under **thousands**.

The next digit is 0. Place 0 under **ten thousands**.

The last digit is 2. Place 2 under **hundred thousands**.

From the right, every group of three digits is called a **period**. It is separated by a space. Each period has **ones**, **tens**, and **hundreds**.

PLACE VALUE	HUNDRED THOUSANDS	TEN THOUSANDS	THOUSANDS	HUNDREDS	TENS	ONES
GIVEN DIGITS	2	0	3	7	5	0

In 203 750, the digits **203** belong to the **thousands period**, while the digits **750** belong to the **units period**.

To get the **value** of a digit, **multiply** the digit by the place value. Notice that starting from the ones place, the **value** increases by **10 times**.

Digit	Place Value	Value
0	ones	$0 \times 1 = 0$
5	tens	$5 \times 10 = 50$
7	hundreds	$7 \times 100 = 700$
3	thousands	$3 \times 1000 = 3000$
0	ten thousands	$0 \times 10\,000 = 0$
2	hundred thousands	$2 \times 100\,000 = 200\,000$

Note that the sum of the values of all the digits is equal to the given number.

The number expressed as the sum of the values of the digits, starting from the highest place value, is called the **expanded form** of the number.

The number is written in expanded form as follows:

$$200\,000 + 0 + 3000 + 700 + 50 + 0$$

To read 203 750, read the number in each period from left to right. State the name of each period except for the units period.

This number is read as **two hundred three thousand seven hundred fifty**.





Keep in Mind

When reading numbers, read the number formed per period starting from the left. Mention the period except for the units period.

When writing numbers in words, use a hyphen for the two-digit numbers from 21 to 99 except for the numbers ending in 0.

The expanded form of a number is the number written as the sum of the values of all the digits.

Harry's mom made another withdrawal. Harry saw Php 196 250 as the new balance on the withdrawal receipt. Find the place value and value of each digit in that number.

What is the highest place value of the balance?

What is the place value of 5?



Complete the Place Value Chart below.

PERIOD	Thousands			Units		
PLACE VALUE	HUNDRED THOUSANDS	TEN THOUSANDS	THOUSANDS	HUNDREDS	TENS	ONES
GIVEN DIGITS						
VALUE						

After you get the value of each digit, what should the sum of the values be?

Write this amount in words.



Put to Practice

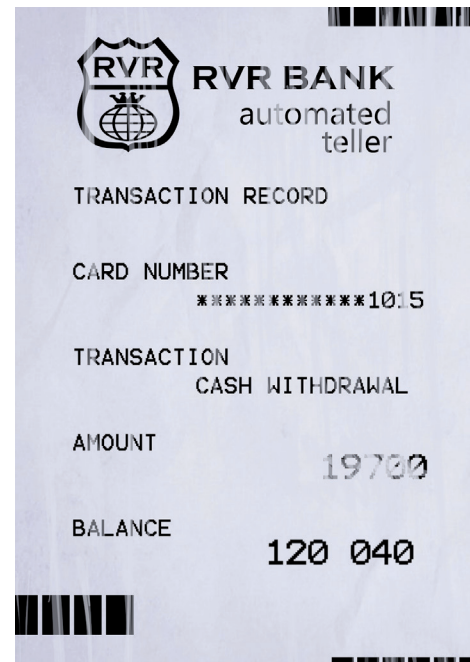
While waiting for his mom, Harry found an ATM withdrawal receipt near the machine.

Task 1

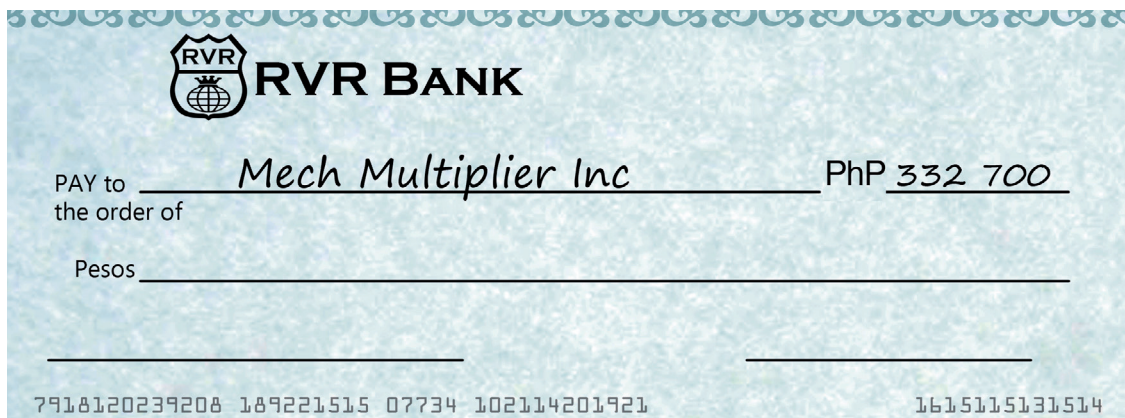
Identify the place value of each digit of the balance. Use the Place Value Chart.

Task 2

Use the Place Value Chart to find the value of each digit of the balance.



Harry's mom asked him to hold two checks. The first check only has the standard form written while the second only has the word form.



Read the given number written in standard form.

How do you write the given number in word form?



How do you write the given number in standard form?

How do you write the given number in expanded form?



Put to Practice

While waiting for their number to be called, Harry's mom showed him a check with some mistakes.



Task 1

Identify the mistakes. If the mistake is in the amount in words, write the correct word form. If it is in the amount in figures, write the correct standard form.

Task 2

Express the amount in expanded form.



Skills Builder

I. Encircle the letter of the correct answer.

1. What is the place value of 7 in 107 642?

- a. thousands
- b. hundreds
- c. tens
- d. ones

2. In 958 671, which digit is in the ten thousands place?

- a. 5
- b. 6
- c. 7
- d. 8

3. Which of the following is the correct word form of 310 313?
- a. Thirty-one thousand, three hundred one and three
 - b. Thirty and ten thousand, three hundred thirteen
 - c. Three hundred ten thousand, three hundred thirteen
 - d. Three hundred ten thousand, three hundred and thirteen
4. Which of the following numbers is read as seven hundred sixty-one thousand, two hundred three?
- a. 761 023
 - b. 761 203
 - c. 761 230
 - d. 761 320
5. What is 206 811 expressed in expanded form?
- a. $200\ 000 + 600 + 800 + 1$
 - b. $200\ 000 + 6000 + 800 + 11$
 - c. $200\ 000 + 6000 + 80 + 10 + 1$
 - d. $200\ 000 + 6000 + 800 + 10 + 1$

II. Compare the values. Write $>$, $<$, or $=$.

1. $200\ 000 + 90\ 000 + 700 + 50 + 7$ 297 057
2. $800\ 000 + 3000 + 600 + 50 + 1$ 803 651

III. Read this number and write it in words:

586 205

IV. Draw a 😊 if the given information is enough to find the number. If not, draw a ☹️.

1. The digit in the hundreds place is twice the digit in the ones place. The digit in the thousands place is 5 more than the digit in the tens place. The digit in the hundred thousands place is the same as the digit in the thousands place. The digit in the ten thousands place is 9.

2. The value of the digit in the ten thousands place is five times the value of the digit in the thousands place. The place value of the digit 7 is hundred thousands. The value of the digit 1 is 10 000. The rest of the digits are the same as the digit in the hundred thousands place.

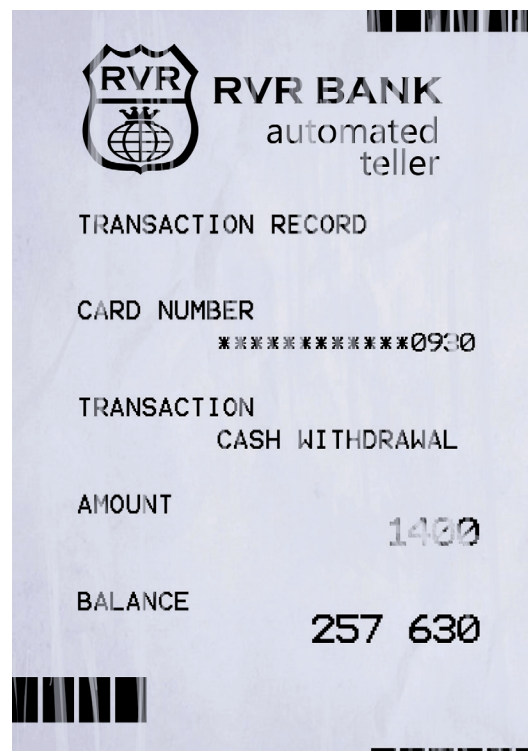
3. The value of the digit in the tens place is 30. The digits in the thousands period is the same as the digit in the tens place. The digit in the ones place is the same as that in the hundreds place. The digit in the ones place is two times the digit in the tens place.

V. Solve the following problems.

1. Harry saw an ATM withdrawal slip on the table.

What is the place value of the digit 5 in the balance?

What is the value of the digit 7 in the balance?



2. Harry's dad asked him to get a check from his office.



Write the amount in standard form.

Write the amount in expanded form.

3. Harry read in a newspaper that a newly opened company earned **PhP 980 300**. Write the amount in word form.

Write the amount in expanded form.



Challenge Yourself

Guess and Check

Heidi wrote a six-digit number. The digit in the hundred thousands place is twice the digit in the thousands place. The digit in the ten thousands place is three more than the digit in the thousands place. The sum of all three digits in the thousands period is 19, while the rest of the digits are 0. What is the 6-digit number?



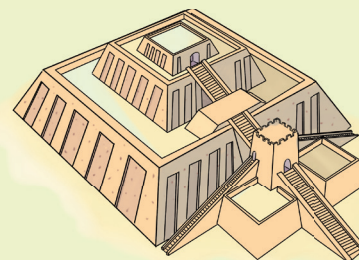
@ractive

To learn more about this lesson, you may visit TekTeach (Learning Management System).



Fun Facts

Mesopotamian temples were the first banks. Sure, ancient people could have stored their grains in palaces and houses, but in temples, their goods would be protected by the gods.



LESSON 6

Number Comparisons to a Million

PLACE VALUE	HUNDRED THOUSANDS	TEN THOUSANDS	THOUSANDS	HUNDREDS	TENS	ONES
Las Piñas	5	5	2	5	7	3
Parañaque	5	2	9	0	3	9
Makati	5	8	8	1	2	6



Objectives

- ◇ Compare numbers using words and symbols.
- ◇ Solve problems on comparing and ordering numbers.



Vocabulary Bank

- **population** - the number of people who live in a given place
- **order** - a way of arranging a group of things
- **ascending** - arranged from the lowest to the highest value
- **descending** - arranged from the highest to the lowest value



Math Tale

Brushing Up on Numbers

Heidi got a high score in her Social Studies quiz. The teacher had asked the students to compare cities of the Philippines by population. Using a map, Heidi saw which city had the most people living in it.

How do you think Heidi compared the numbers to get the right answer?

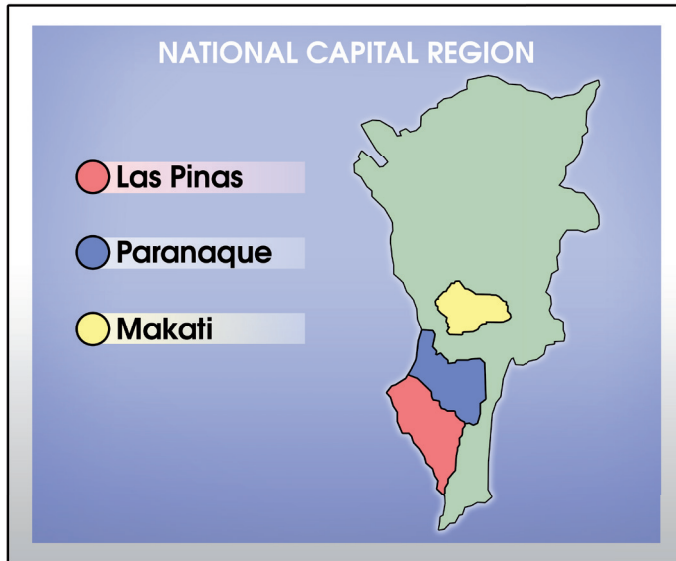




Let's Explore

Comparing and Ordering Quantities

The table shows the population of Las Piñas, Makati, and Parañaque.



City	Population
Las Piñas	552 573
Parañaque	529 039
Makati	588 126

When comparing numbers, we start from the leftmost digits and compare their values.

The number whose digit has the higher value is the larger number. If the values are the same, we compare the next digits on the right.

PLACE VALUE	HUNDRED THOUSANDS	TEN THOUSANDS	THOUSANDS	HUNDREDS	TENS	ONES
Las Piñas	5	5	2	5	7	3
Parañaque	5	2	9	0	3	9
Makati	5	8	8	1	2	6



Look at the leftmost digits of the numbers.

PLACE VALUE	HUNDRED THOUSANDS	TEN THOUSANDS	THOUSANDS	HUNDREDS	TENS	ONES
Las Piñas	5	5	2	5	7	3
Parañaque	5	2	9	0	3	9
Makati	5	8	8	1	2	6

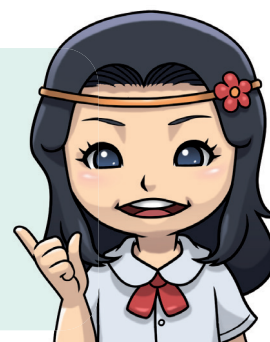
The digits in the hundred thousands place are all equal and have a value of 500 000. Therefore, we compare the digits in the ten thousands place.

PLACE VALUE	HUNDRED THOUSANDS	TEN THOUSANDS	THOUSANDS	HUNDREDS	TENS	ONES
Las Piñas	5	5	2	5	7	3
Parañaque	5	2	9	0	3	9
Makati	5	8	8	1	2	6

The smallest is 2, next is 5, and the largest is 8. So,

$$529\ 039 < 552\ 573 < 588\ 126.$$

Therefore, Makati has the largest population among the three cities.



Keep in Mind

When comparing numbers, start from the digit in the highest place value to the lowest place value.

We use the following symbols to compare numbers:

- < less than
- > greater than
- = equal to or equals

Heidi compared the population of cities in Negros Occidental: Bacolod, Silay, and Cadiz. Help Heidi arrange the cities in ascending order according to their population. Use a Place Value Chart.

City	Population
Bacolod	511 820
Silay	120 999
Cadiz	151 500

PLACE VALUE	HUNDRED THOUSANDS	TEN THOUSANDS	THOUSANDS	HUNDREDS	TENS	ONES
Bacolod						
Silay						
Cadiz						

How many digits does each number have?

What is the highest place value?

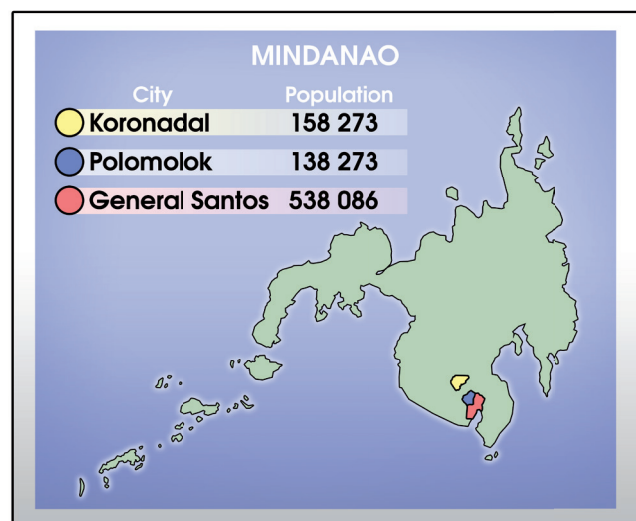
Which city has the smallest population?

Which city has the largest population?



Put to Practice

Heidi wanted to learn about the cities in South Cotabato by comparing the population of three cities – General Santos, Koronadal, and Polomolok.



Task 2

Arrange the cities from smallest to largest population.

Task 1

Construct a Place Value Chart to compare the numbers.

PLACE VALUE	HUNDRED THOUSANDS	TEN THOUSANDS	THOUSANDS	HUNDREDS	TENS	ONES



Skills Builder

Encircle the letter of the correct answer.

- Which of the following is the largest?
a. 341 654 b. 340 589 c. 346 154 d. 345 089
- Which of the following is the smallest number?
a. 897 431 b. 884 514 c. 883 515 d. 884 515
- Which number is less than 655 314?
a. 655 310 b. 655 315 c. 846 315 d. 841 145
- Which of the following is arranged in ascending order?
a. 377 548, 367 548, 357 548, 347 548
b. 844 351, 844 151, 844 049, 844 048
c. 851 743, 851 742, 850 789, 849 789
d. 451 435, 451 434, 451 419, 451 450
- Which is arranged in descending order?
a. 431 155, 431 156, 431 157, 431 158
b. 433 589, 433 590, 433 595, 434 600
c. 454 711, 455 710, 456 709, 457 708
d. 455 477, 454 588, 453 699, 452 711

II. Draw a:

- if the value in Column A is **greater than** the value in Column B.
- if the value in Column B is **greater than** the value in Column A.
- = if the two values are **equal**.

Column A

98 732

48 145

765 109

Column B

90 000 + 8000 + 700 + 30 + 2

40 000 + 80 000 + 100 + 40 + 5

700 000 + 60 000 + 100 + 9

III. Read and solve each problem carefully.

1. Heidi visited her favorite websites. She saw the visitor count on each page.

Website

Page Views

www.ecoworldjr.com

852 345

www.spiffymath.com

955 410

www.numberrangers.com

956 841

www.flowerpetalworld.com

95 631

- a. Which of Heidi's favorite websites is the most popular?

- b. Which one is the least popular?

- c. Arrange the websites from the least visited site to the most visited site.

2. The following table gives the population of the five cities of Nueva Ecija.

City	Population
Talavera	112 515
Gapan	101 488
San Jose	129 424
Guimba	104 894
Cabanatuan	272 676

- a. Which city has the 3rd largest population?

- b. Arrange in descending order according to population.



Challenge Yourself

Problem Solving Strategy: Guess and Check

A **palindrome number** is a number that reads the same forward and backward. An example is 134 431. What is the smallest six-digit palindrome number that you can make with digits appearing only a maximum of two times?



Portfolio Prompts

Go to the nearest grocery store and find three different brands of the same product. Compare the prices and order them from the least to the most expensive. Do this for three different products.



Interactives

To learn more about this lesson, you may visit TekTeach (Learning Management System).



Fun Facts

142 857 is a cyclic number. This means that its digits are rotated around when multiplied by any number from **1** to **6**.

$$142\,857 \times 1 = 142857$$

$$142\,857 \times 5 = 714285$$

$$142\,857 \times 4 = 571428$$

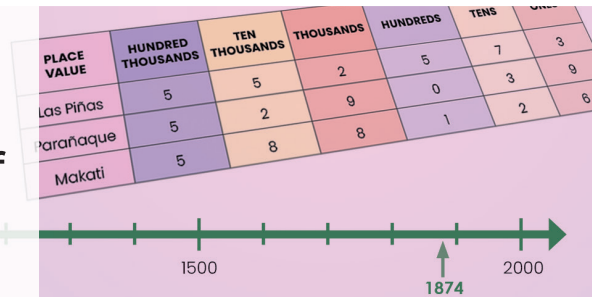
$$142\,857 \times 6 = 857142$$

$$142\,857 \times 2 = 285714$$

$$142\,857 \times 3 = 428571$$

LESSON 7

Rounding and Estimation of Large Numbers



Objectives

- ◇ Round numbers to the nearest given place value.
- ◇ Solve problems involving rounding numbers.



Vocabulary Bank

- **estimate** – to approximate or give a number close to the actual value



Math Tale

Family Day

For the upcoming Family Day, Heidi volunteered to be a part of the school's Food Committee. They were tasked to prepare sandwiches for the event.

The total number of expected attendees is 1874. Some students might bring more people, while others might not come. Can you help Heidi estimate how many sandwiches they should make?

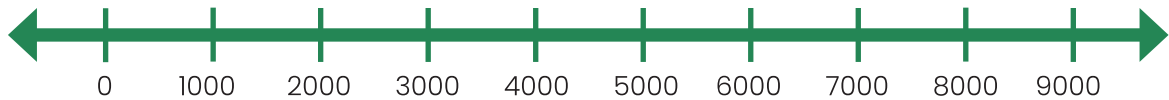




Let's Explore

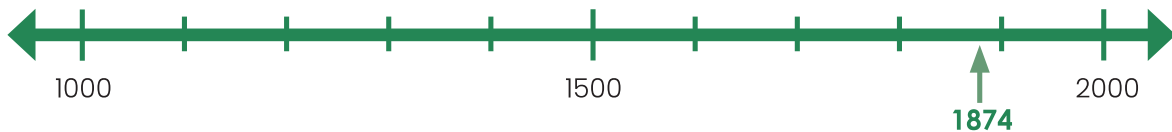
Rounding Numbers

Rounding numbers is useful when we need to make an estimate.



To round a number to the **nearest thousand**, you need to locate that number on the number line and find the **multiple of 1000 (1000, 2000, 3000, ...)** **nearest** to that number. To round a number to the **nearest ten thousand**, you have to find the **multiple of 10 000 (10 000, 20 000, 30 000, ...)** that is **nearest** to that number on the number line.

To find out how many sandwiches should be made, let's round 1874 to the nearest thousand. On the number line, 1874 is closer to 2000 than 1000.



1874 can be rounded to 2000. **1874 $\approx$ 2000**

We can also round numbers without using the number line.

The digit to be rounded is 1. Look at the digit to its right.

PLACE VALUE	Thousands	Hundreds	Tens	Ones
1874	1	8	7	4

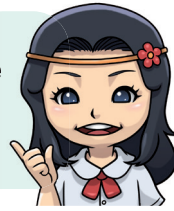
The digit in the hundreds place is 8, which is greater than 5.



1874
↓
2874
↓
2000

If the number is **5 or greater**, we **add one** to the digit we are rounding. Then, we **change** all the digits to its right to zero.

Therefore, 1874 rounded to the nearest thousand is 2000.



According to the school's records, the food preparations will cost PhP 21 450. Round this number to the nearest ten thousand.

The digit in the ten thousands place is 2. Look at the **digit to its right**.

PLACE VALUE	TEN THOUSANDS	THOUSANDS	HUNDREDS	TENS	ONES
21 450	2	1	4	5	0

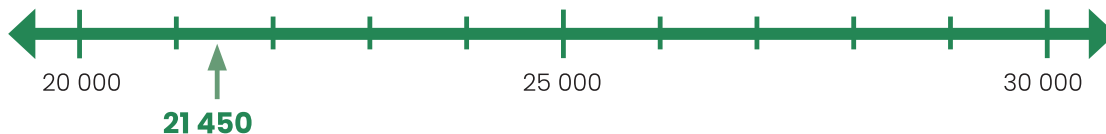
21 450
↓
21 450
↓
20 000

The digit in the thousands place is 1, which is lower than 5.



If the number is lower than five, we **do not change** the digit we are rounding. Then, we must **replace** all the digits to its right by zero.

This means that 21 450 is nearer to 20 000 than 30 000.



Therefore, 21 450 rounded to the nearest ten thousand is 20 000.





Keep in Mind

When rounding numbers to a given place value, we look at the digit to its right. If the digit on the right is 5 or more, we round UP. If it is less than 5, we round DOWN.

The food committee needed to order PhP 19 690 worth of water bottles to sell on Family Day. About how much is this number?

Which multiples of 10 000 are nearest this number?

Where is this number located on the number line?

What is this number rounded to the nearest thousand?

What is this number rounded to the nearest ten thousand?



Put to Practice

A bakeshop sold PhP 267 364 worth of cakes and pastries in the last five months.

CAKES	PhP 9 000
PASTRIES	PhP 8 600
TOTAL	PhP 267 364

Task 1

Round the amount to the nearest thousand.

Task 2

Round the amount to the nearest hundred thousand.



Skills Builder

I. Encircle the letter of the correct answer.

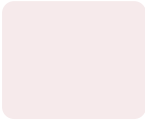
- What is 12 810 rounded to the nearest thousand?
a. 10 000 b. 12 800 c. 12 000 d. 13 000
- Which of the following is **NOT** equal to 90 000 when rounded to the nearest thousand?
a. 89 550 b. 90 492 c. 90 000 d. 90 736
- What is 99 999 rounded to the nearest thousand?
a. 100 000 b. 90 400 c. 89 900 d. 94 000
- What is 457 851 rounded to the nearest hundred thousand?
a. 400 000 b. 460 000 c. 500 000 d. 560 000
- Which of the following is **NOT** equal to 740 000 when rounded to the nearest ten thousand?
a. 735 201 b. 753 201 c. 739 097 d. 740 982

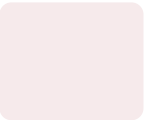
II. Write the symbols $>$, $<$, or $=$ to compare the values.

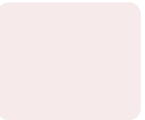
- | | | |
|--|----------------------|---|
| 1. 13 457 rounded to the nearest ten thousand | <input type="text"/> | 13 547 rounded to the nearest thousand |
| 2. 96 500 rounded to the nearest ten thousand | <input type="text"/> | 96 500 rounded to the nearest thousand |
| 3. 457 851 rounded to the nearest hundred thousand | <input type="text"/> | 459 851 rounded to the nearest ten thousand |

III. Write:

- M** if statement A alone is enough to answer the question.
- A** if statement B alone is enough to answer the question.
- T** if you need both statements A and B to answer the question.
- H** if statements A and B together are not enough to answer the question.

1. 
 - A.** There are 14 257 students enrolled in public schools in Quezon City.
 - B.** The population of Makati is about 550 000.

QUESTION: About how many students are enrolled in public schools in Makati?
2. 
 - A.** There are 3424 who signed up for the fun run.
 - B.** There are 7940 participants in the fun run.

QUESTION: What is the estimated number of participants in the fun run to the nearest thousand?
3. 
 - A.** A drum set costs PhP 53 650.
 - B.** An electric guitar costs PhP 13 330.

QUESTION: About how much would you spend if you bought a drum set and an electric guitar?

IV. Solve the following problems.

1. Sweet City is composed of four villages. The population of Cacao village is 874 456. Sugar Village has a population of 866 942, Honey Village has a population of 868 519, and Caramel Village has a population of 875 534. Which villages have the same population when rounded to the nearest hundred thousand?



2. Heidi typed 4741 words. Round this number to the nearest thousand.

3. In the Pasig Fun Run, 57 314 runners participated. Round this number to the nearest ten thousand.

4. A drum set costs PhP 48 740. Round this amount to the nearest ten thousand.



5. A house and lot cost PhP 2 458 000. Round this amount to the nearest hundred thousand.



Challenge Yourself

Problem Solving Strategy: Guess and Check

Find the smallest and largest number that, when rounded to the nearest ten thousand, will result to 80 000.



Portfolio Prompts

Create five word problems that require rounding numbers. Try to make the situations realistic and relevant.



Interactives

To learn more about this lesson, you may visit TekTeach (Learning Management System).



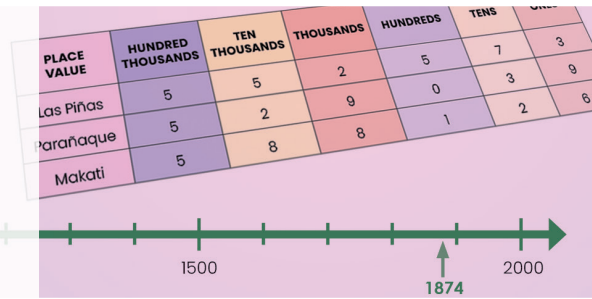
Fun Facts

There is archaeological evidence that the concept of rounding is very old. Estimations of square roots and reciprocals were found on a stone tablet from the Babylonian Period.



LESSON 8

Addition and Subtraction of Large Numbers



Objectives

- ◇ Combine numbers to make 1,000,000, using regrouping or not.
- ◇ Take away numbers under 1,000,000, with or without regrouping.
- ◇ Solve problems on addition and subtraction with and without regrouping.



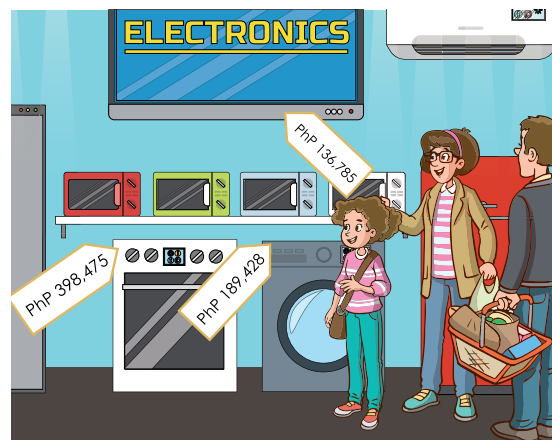
Vocabulary Bank

- **Combine** - To put together or join numbers to create a larger total.
- **Regrouping** - Rearranging digits in a number when adding or subtracting to simplify the process.
- **Take away** - Subtracting one number from another to find the difference.



Math Tale

Corrine's family went to ABT Electronic Store to shop for new appliances. They bought a washer and dryer set (PhP 189 428), a Smart TV (PhP 136 785), and a kitchen set (PhP 398 475) for the house. Corrine wanted to know how much they paid for all the items.

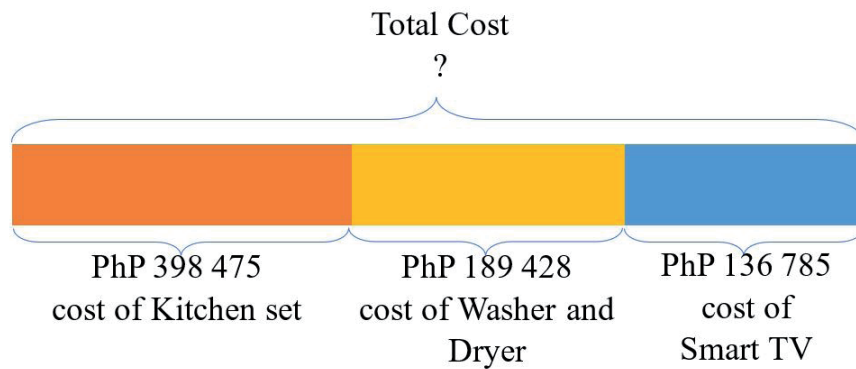


What should she do to find out how much they paid?



Let's Explore

Look at the illustration below. These bars are called Problem Solving Bars.



We need to find the total cost of the items, so we put the bars together. This means we need to **add** their prices together.

Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
Kitchen set					
100 000	10 000 10 000	1 000 1 000	100 100	10 10	1 1
100 000	10 000 10 000	1 000 1 000	100 100	10 10	1 1
100 000	10 000 10 000	1 000 1 000		10 10	1
	10 000 10 000	1 000 1 000		10	
	10 000				

Washer and Dryer										
100000	10000	10000	1000	1000	100	100	10	10	1	1
	10000	10000	1000	1000	100	100			1	1
	10000	10000	1000	1000					1	1
	10000	10000	1000	1000					1	1
			1000							
Smart TV										
10000	1000	1000	1000	1000	100	100	10	10	1	1
	1000		1000	1000	100	100	10	10	1	1
			1000	1000	100	100	10	10	1	
					100		10	10		

First, add the ones:

5 ones + 8 ones + 5 ones =
18 ones or 1 ten and 3 ones

$$\begin{array}{r}
 \text{1} \\
 3 \ 9 \ 8 \ 4 \ 7 \ 5 \\
 1 \ 8 \ 9 \ 4 \ 2 \ 8 \\
 + \ 1 \ 3 \ 6 \ 7 \ 8 \ 5 \\
 \hline
 8
 \end{array}$$

Next, add the tens:

1 tens + 7 tens + 2 tens + 8 ten =
18 tens or 1 hundred and 8 tens

$$\begin{array}{r}
 \text{1} \ 1 \\
 3 \ 9 \ 8 \ 4 \ 7 \ 5 \\
 1 \ 8 \ 9 \ 4 \ 2 \ 8 \\
 + \ 1 \ 3 \ 6 \ 7 \ 8 \ 5 \\
 \hline
 8 \ 8
 \end{array}$$

Next, add the hundreds:

1 hundreds + 4 hundreds + 4 hundreds
+ 7 hundred =
16 hundreds or 1 thousands and
6 hundreds

			1	1	1	
	3	9	8	4	7	5
	1	8	9	4	2	8
+	1	3	6	7	8	5
				6	8	8

Then, add the thousands:

1 thousands + 8 thousands + 9 thousands
+ 6 thousands =
24 thousands or
2 ten thousand and 4 thousand

			2	1	1	
	3	9	8	4	7	5
	1	8	9	4	2	8
+	1	3	6	7	8	5
			4	6	8	8

Next, add the ten thousands:

2 ten thousands + 9 ten thousands + 8 ten
thousands + 3 ten thousand =
22 ten thousands or
2 hundred thousands and 2 ten
thousands

			2	2	1	1	1
	3	9	8	4	7	5	
	1	8	9	4	2	8	
+	1	3	6	7	8	5	
			2	4	6	8	8

Lastly, add the hundred thousands:

2 hundred thousands + 3 hundred
thousands + 1 hundred thousands
+ 1 hundred thousands =
7 hundred thousands

			2	2	1	1	1	
	3	9	8	4	7	5		
	1	8	9	4	2	8		
+	1	3	6	7	8	5		
			7	2	4	6	8	8

To visualize, look at the table below.

Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
100000 100000	10000 10000	1000	100	10	
100000 100000 100000	10000 10000 10000 10000 10000	1000 1000 1000 1000 1000 1000	100 100 100 100	10 10 10 10 10 10	1 1 1 1 1
100000	10000 10000 10000 10000	1000 1000 1000 1000 1000 1000	100 100 100 100	10 10	1 1 1 1 1 1
100000	10000 10000	1000 1000 1000 1000	100 100 100 100	10 10 10 10	1 1 1 1

We spent Php 724 688 for the kitchen set, washer and dryer, and Smart TV.



Put to Practice

While walking around the appliance store, Corrine found a receipt. The receipt shows three items bought from the electronic store.

Help Corrine solve for the total price of the cheapest and the most expensive items using Problem Solving Bars.

Show how to solve for the total price of the two most expensive items using Problem Solving Bars.

abt
ELECTRONICS

Maamo St. Road Lot 30 V.Luna and Anonas
Extn. Sikatuna, Quezon City
SN#57BJ001427

SALES INVOICE

06/11/2020 09:42

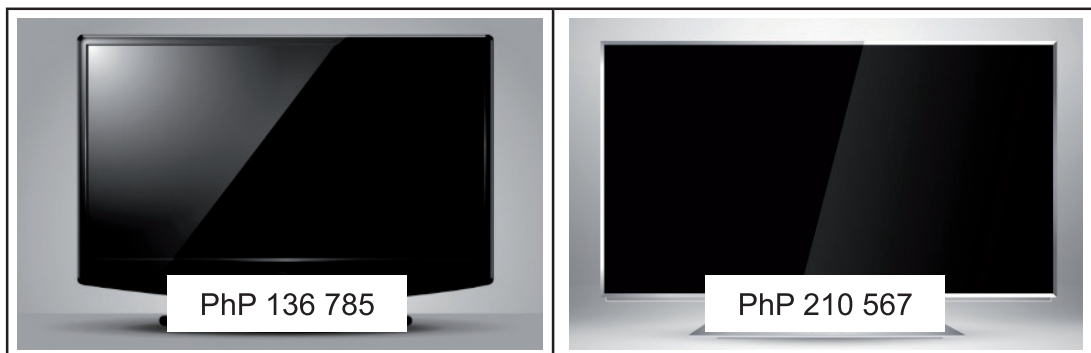
1 Oven	PhP 15 990
1 Water Dispenser	PhP 13 895
1 Freezer	PhP 11 450
1 Mixer	PhP 14 221
TOTAL	PhP 55 556



Keep in Mind

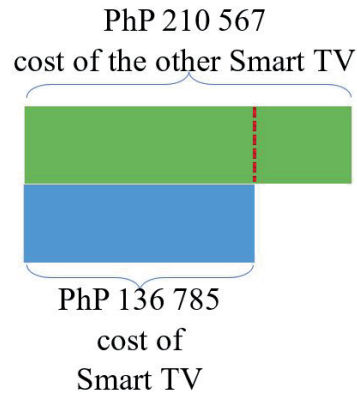
Putting two things together means adding them. To add large numbers, align the addends from the right then add the digits with the smallest value. Regroup when necessary.

Corrine saw a different Smart TV and it costs PhP 210 567. She wanted to know how much the price difference of the two TVs are.



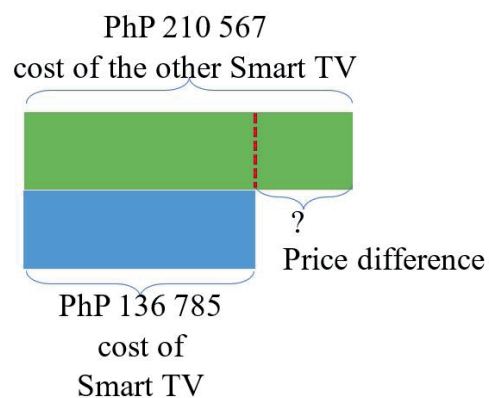
The price of the Smart TV that Corrine's family bought was PhP 136 785, while the amount of the other Smart TV was PhP 210 567. Look at how the amounts are shown using Problem Solving Bars.

The **difference** in length shows that the amount of the other Smart TV is **greater than** the amount of the Smart TV that they bought.



To know how much the price difference of the Smart TVs is, we have to take away the amount of the Smart TV they bought from the other Smart TV's price.

To take something away means to subtract.



Let's subtract the two amounts.

First, subtract the **ones** digits:

$$7 \text{ ones} - 5 \text{ ones} = 2 \text{ ones}$$

$$\begin{array}{r} 210567 \\ - 136785 \\ \hline 2 \end{array}$$

Next, subtract the **tens** digits:

$$6 \text{ tens} - 8 \text{ tens} = \underline{\hspace{2cm}}$$

$$\begin{array}{r} 210567 \\ - 136785 \\ \hline 2 \end{array}$$

We cannot subtract 6 tens from 8 tens, so regroup the **hundreds** digits of the minuend. This will give us

$$16 \text{ tens} - 8 \text{ tens} = 8 \text{ tens.}$$

$$\begin{array}{r} 210567 \\ - 136785 \\ \hline 82 \end{array}$$

Then, subtract the **hundreds** digits. Since we already borrowed 1 from the hundreds earlier, we are now left with

4 hundreds – 7 hundreds = _____

$$\begin{array}{r} 210\text{ } \boxed{4}167 \\ - 136\text{ } \boxed{7}85 \\ \hline \boxed{8}2 \end{array}$$

We cannot subtract 4 hundreds from 7 hundreds, so regroup the **thousands** digits of the minuend. This will give us

14 hundreds – 7 hundreds = 7 hundreds.

$$\begin{array}{r} 09 \\ 2\text{ } \cancel{1} \text{ } \cancel{0} \boxed{14}67 \\ - 136\text{ } \boxed{7}85 \\ \hline \boxed{7}82 \end{array}$$

Subtract the **thousands** digits:

9 thousands – 6 thousands = 3 thousands.

$$\begin{array}{r} 20\text{ } \boxed{9}167 \\ - 13\text{ } \boxed{6}785 \\ \hline \boxed{3}782 \end{array}$$

Subtract the **ten thousands** digits:

0 thousands – 3 thousands = _____

$$\begin{array}{r} 2\text{ } \boxed{0}9\text{ } \boxed{1}67 \\ - 1\text{ } \boxed{3}6785 \\ \hline \boxed{3}782 \end{array}$$

We cannot subtract **0 ten thousands** from **3 ten thousands**, so regroup the **ten thousands** digits of the minuend. This will give us

**10 ten thousands – 3 ten thousands =
7 ten thousands.**

$$\begin{array}{r} 1 \\ \cancel{2} \text{ } \boxed{10}9\text{ } \boxed{1}67 \\ - 1\text{ } \boxed{3}6785 \\ \hline \boxed{7}3782 \end{array}$$

Finally, we subtract the hundred thousands digits.

**1 hundred thousands – 1 hundred thousands =
0 hundred thousands.**

$$\begin{array}{r} \boxed{1}09\text{ } \boxed{1}67 \\ - \boxed{1}36785 \\ \hline \boxed{0}73782 \end{array}$$

The price difference between the two Smart TVs is PhP 73 782.



Put to Practice

Task 1

Corrine keeps her savings in a bank account. After depositing PhP 750 last week and depositing PhP 520 this week, she still had PhP 345 left of her allowance. How much savings did she have at the start?

Task 2

Find the largest subtrahend such that its estimated difference from 4392 is 1000.

$$\begin{array}{r} 4392 \\ - \quad \boxed{} \\ \hline \end{array} \approx \begin{array}{r} 4000 \\ - \quad \boxed{} \\ \hline 1000 \end{array}$$

Clue: Find first the missing number in the rectangle on the right.



Keep in Mind

To subtract large numbers, subtract the digits with the smallest value first. Regroup when necessary.



Do It Yourself

Problem Solving Bars

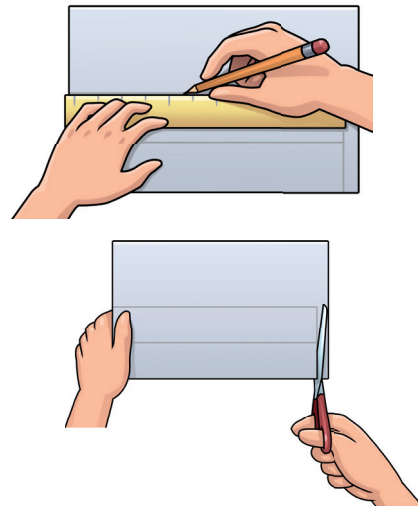
Problem Solving Bars can be used to easily picture mathematical problems.

You will need:

- cardboards or construction papers
- bond paper
- pair of scissors
- ruler
- paste or glue
- markers

Using cardboards or construction papers, make 2 rectangular bars of the following sizes:

- 6 inches long and 1 inch wide
- 5 inches long and 1 inch wide
- 4 inches long and 1 inch wide
- 3 inches long and 1 inch wide
- 2 inches long and 1 inch wide



Skills Builder

I. Do the following addition activities.

1. What is the sum of 325 678 and 674 322?

- a. 999 000 b. 1 000 000 c. 1 100 000 d. 1 010 000

2. Match the following numbers to their correct sum to make 1 000 000.

A. 456 789	i. _____ + 678 900
B. 543 211	ii. 543 211 + _____
C. 678 900	iii. 456 789 + _____
D. 321 100	iv. 321 100 + _____

3. I am a number between 500 000 and 600 000. When you add me to 400 000, we make 1 000 000. What am I?

II. Do the following subtraction activities.

1. What is the result of subtracting 356 789 from 500 000?

a. 143 211 b. 143 789 c. 123 456 d. 256 789

2. Match the subtraction problem with its correct answer:

A. 987 654 - 123 456	i. 444 444
B. 456 789 - 123 456	ii. 543 210
C. 789 012 - 345 678	iii. 765 432

3. Match the subtraction problem with the correct method (with or without regrouping):

A. 543 210 - 123 456	i. Without regrouping
B. 800 000 - 345 678	ii. With regrouping
C. 987 654 - 234 567	iii. Without regrouping

III. Solve the following problems.

- Jenny wants to buy a bicycle that costs PhP 450 000, and she already has PhP 320 000 saved. How much more money does she need to reach a total of PhP 1 000 000? Remember to use regrouping if necessary.
- The population of a city was 980 000 last year. Due to migration, this year's population decreased by 264 000. What is the current population of the city? Be sure to use regrouping if needed.
- Emma has 750 000 marbles, and she gave 123 000 marbles to her friend. After that, she received 280 000 marbles as a gift. How many marbles does Emma have now? Solve the problem without regrouping.



Portfolio Prompts

Look for flyers and brochures of different stores. Make a list of items you find in them and add their prices.

If you have a budget of PhP 1000.00, how much will your change be after paying for the items in your list?



Challenge Yourself

Use your knowledge in mental addition and subtraction to complete the following number sentences. Find the numbers that should be placed in the $\triangle$ and $\bigcirc$.

$\triangle$ and $\bigcirc$.

$$\bigcirc + \triangle = 180$$
$$\triangle - \bigcirc = 70$$



Interactives

To learn more about this lesson, you may visit TekTeach (Learning Management System).

Unit Performance Task

The Department of Education would like to hire Grade 4 pupils to be part of their numeracy program. The hired Grade 4 pupils shall become actors who shall give review lessons to their co-Grade 4 pupils through a form of a dance, a song, or an act which shall encompass the following:

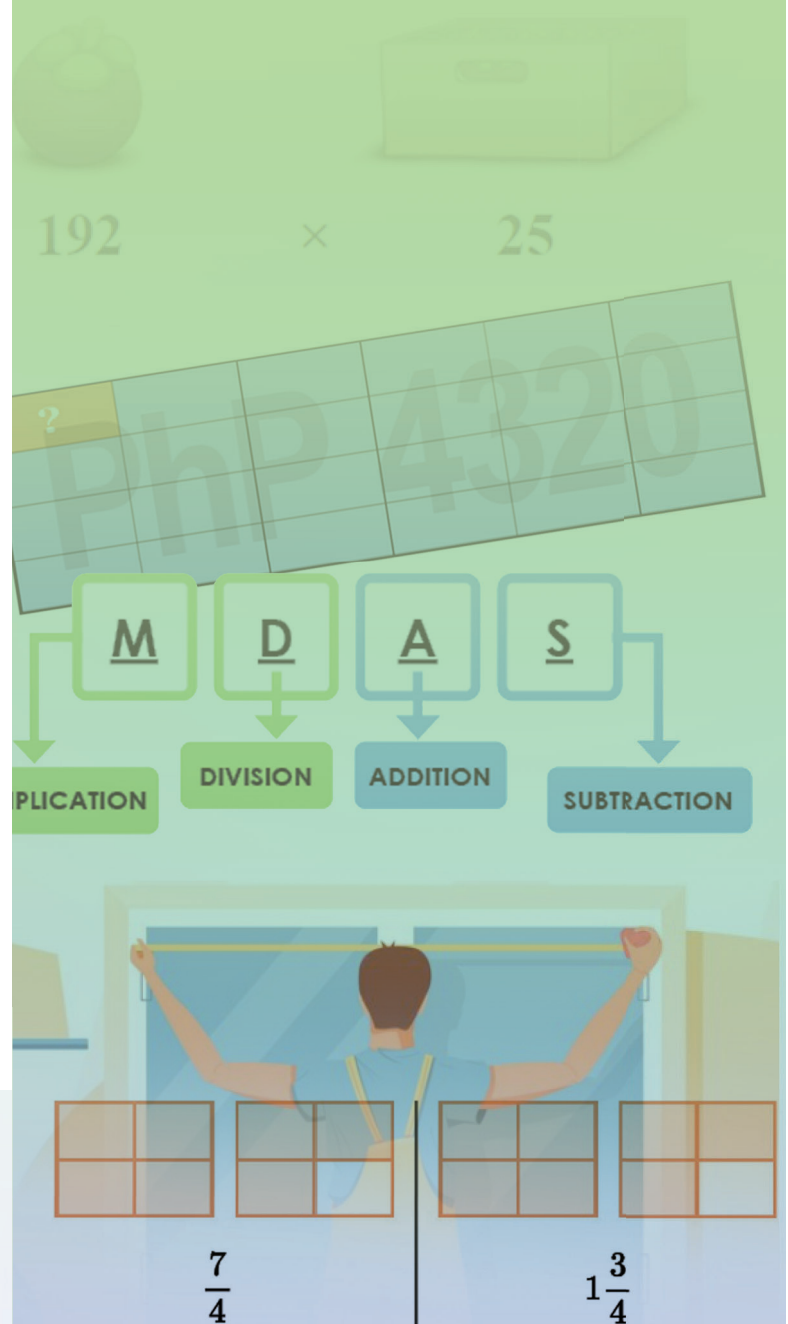
- Illustrating and measuring different angles
- Classifying triangles and quadrilateral, and differentiate quadrilaterals, by applying their properties
- Finding the perimeter of quadrilaterals and composite figures composed of triangles and quadrilaterals
- Reading, writing, and comparing whole numbers up to 1 000 000
- Performing addition of numbers with sums up to 1 000 000 and subtraction of numbers where both numbers are less than 1 000 000

Your created output should not exceed 50 minutes and shall be placed in a USB to be submitted to your Adviser a week before the First Quarter Exam. The submitted output shall be scored based on the following criteria below.

	Weight	Outstanding 5	Developing 4	Beginning 3
Mastery of the content	4	The actor performer mastered the concepts of the given lesson.	The actor performer somehow mastered the concepts of the given lesson.	The actor performer did not master the concepts of the given lesson.
Relevance to the topic	4	The created output is relevant to the given topic.	The created output is somehow relevant to the given topic.	The created output is not relevant to the given topic.
Creativity	2	The actor performer is very creative in presenting the lesson.	The actor performer is somehow creative in presenting the lesson.	The actor performer is not creative in presenting the lesson.

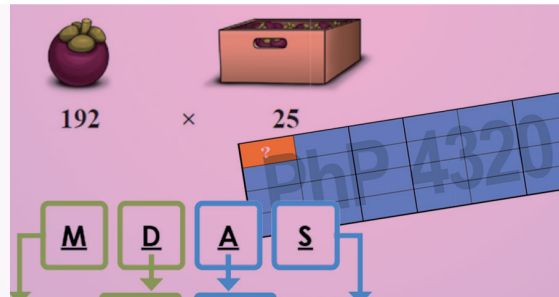
UNIT 2

Welcome to the foundations of mathematical competence unit, where we dive deep into fundamental mathematical principles to build a strong mathematical foundation. This unit covers multiplication and division, emphasizing mastery of operations with and without regrouping, estimation, and real-world problem-solving up to 1 000 000. Unit conversion is a key focus, enabling you to seamlessly convert between various units of length, mass, and time. Additionally, we explore the world of fractions, teaching you to identify and convert proper fractions, improper fractions, and mixed numbers, and perform addition and subtraction with similar fractions. Whether you are a novice or an experienced learner, this unit equips you with essential mathematical skills and problem-solving techniques, preparing you for success in both academic and real-life mathematical challenges. Join us on this journey to strengthen your mathematical competence and confidence.



LESSON 1

Multiplication



Objectives

- ◇ Multiplying two numbers with and without regrouping.
- ◇ Estimate the result of multiplying two numbers.
- ◇ Solve problems involving one or more of the four operations, including problems involving money.



Vocabulary Bank

- **plantation** – a big farm where specific crops, like mangosteen, are grown and taken care of on a large scale
- **varieties** – different types or kinds of fruits and trees on the farm, showing the many kinds of fruits the children saw
- **cultivate** – getting the land ready and growing and picking fruits, like mangosteen, in an organized way on the fruit farm



Math Tale

Heidi's class went to a fruit farm where the children saw different kinds of fruit trees. They toured the mangosteen plantation and saw 25 crates of mangosteen.



If there were 192 mangosteens in each crate, how many mangosteens were there in all?



Let's Explore

There were 192 mangosteens in each of the 25 crates. To find the total number of mangosteens that can be stored in 25 crates, **multiply** 192×25 .



192

×



25

To multiply two numbers, align the numbers vertically from the right.



Keep in Mind

Observe the proper alignment of the digits. Regroup if necessary.

$$\begin{array}{r} \textcolor{blue}{1} \\ 1 \ 9 \ 2 \\ \times \ 2 \ 5 \\ \hline \textcolor{red}{0} \end{array}$$

$2 \times 5 = 10$
1 tens and 0 ones (carry 1)

$$\begin{array}{r} \textcolor{blue}{4} \textcolor{blue}{1} \\ 1 \ 9 \ 2 \\ \times \ 2 \ 5 \\ \hline \textcolor{red}{9} \ \textcolor{red}{6} \ \textcolor{red}{0} \end{array}$$

$9 \times 5 = 45$
 $45 + 1 = 46$ (carry 4)
 $1 \times 5 = 5$

$$\begin{array}{r} \textcolor{blue}{4} \textcolor{blue}{1} \\ 1 \ 9 \ 2 \\ \times \ 2 \ 5 \\ \hline \textcolor{red}{9} \ \textcolor{red}{6} \ \textcolor{red}{0} \end{array}$$

$192 \times 5 = 960$
"partial product"

Next, multiply each digit of the multiplicand by the tens digit of the multiplier. Regroup if necessary.

$$\begin{array}{r} \text{4} \quad \text{1} \\ 192 \\ \times \quad 25 \\ \hline 960 \\ 4 \end{array}$$

$2 \times 2 = 4$
Write 4 in the tens column.

$$\begin{array}{r} \text{1} \quad \text{4} \quad \text{1} \\ 192 \\ \times \quad 25 \\ \hline 960 \\ 84 \end{array}$$

$9 \times 2 = 18$
 $= 1 \text{ tens and } 8 \text{ ones (carry 1)}$
Write 8 in the hundreds column.
(below 9)

$$\begin{array}{r} \text{1} \quad \text{4} \quad \text{1} \\ 192 \\ \times \quad 25 \\ \hline 960 \\ 384 \end{array}$$

$1 \times 2 = 2$
 $2 + 1 = 3$
Write 3 in the thousands column.
 $192 \times 20 = 3840$

Finally, add the partial products.

$$\begin{array}{r} \text{1} \quad \text{4} \quad \text{1} \\ 192 \\ \times \quad 25 \\ \hline 960 \\ + 3840 \\ \hline 4800 \end{array}$$

$$960 + 3840 = 4800$$

Therefore, there were 4800 mangosteens in all.

Let's try another example. Find the product of 807 and 46.

$$\begin{array}{r} 8^47 \\ \times 46 \\ \hline 2 \end{array}$$

$7 \times 6 = 42$
Write 2. (Carry 4).

$$\begin{array}{r} 8^47 \\ \times 46 \\ \hline 42 \end{array}$$

$0 \times 6 = 0$
 $0 + 4 = 4$
Write 4.

$$\begin{array}{r} 8^47 \\ \times 46 \\ \hline 4842 \end{array}$$

$8 \times 6 = 48$
Write 48.

$$\begin{array}{r} 8^2^47 \\ \times 46 \\ \hline 4842 \\ 28 \end{array}$$

$7 \times 4 = 28$
Write 8. (Carry 2).

$0 \times 4 = 0$
 $0 + 2 = 2$
Write 2.

$$\begin{array}{r} 8^2^47 \\ \times 46 \\ \hline 4842 \\ + 3228 \\ \hline 37122 \end{array}$$

$8 \times 4 = 32$
Write 32.

Add.

$807 \times 46 = 37122$



Let's try to estimate the product of 807 and 46.

To estimate the product of two numbers, round the numbers to the highest place value of the smaller number.

$$\begin{aligned}807 &\approx 800 \\ 46 &\approx 50\end{aligned}$$

First, round the numbers. The highest place value of the smaller number (46) is tens. Therefore, we round to the nearest ten.

$$800 \times 50 = 40\,000$$

Multiply the rounded numbers.

Thus, the estimated product of 807 and 46 is about 40 000.



Keep in Mind

An estimate may be a little higher or a little lower than the actual amount.



Put to Practice

Read and answer the given problem carefully. Answer the following questions.

The fruit farm delivered 64 crates of mangosteens to CDAB Market. Each crate costs PhP 925. If 6 crates were returned to the fruit farm and 2 crates were sold to fruit farm staff for PhP 850 for each crate:

How much was the cost of 64 crates of mangosteen?

How much was the cost of 6 crates that were returned to the fruit farm?

How much was the cost of mangosteen sold to QTY Market?

How about the cost of mangosteen sold to fruit farm staff?

How much was the total cost of all the crates of mangosteens sold?



Challenge Yourself

Read and answer the given problem carefully. Write your answer in a whole sheet of paper.

In a certain book, there are 16 words in each line. Each page has 14 lines. If the book has 97 pages, how many words are there in a book? What is the estimated number of words in a book?



Portfolio Prompts

Solve the given problem. Show you step-by-step solutions.

A store sold 27 bags in one month. If each bag costs PhP 480, how much did the store earn?

PROBLEM A

Each sack of rice weighs 50 kilograms. If there are 147 sacks in a warehouse, how many kilograms of rice are there in all?

PROBLEM B

An adult's entrance ticket costs PhP 250. If 24 adults watch the show, how much will the show earn?

PROBLEM C



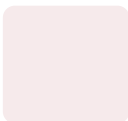
Skills Builder

I. Read the statements for each number. Write:

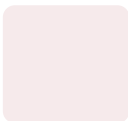
- M** if statement A alone is enough to answer the question.
- A** if statement B alone is enough to answer the question.
- T** if you need both statements A and B to answer the question.
- H** if statements A and B together are not enough to answer the question.

1.  **A.** 175 crates of mangosteens were loaded in each of the 15 trucks.
B. There were 192 mangosteens in one crate.

Question: How many crates were loaded in all the trucks?

2.  **A.** There were three dozen eggs in one tray.
B. 120 trays of eggs were delivered to the XMP Market.

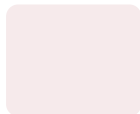
Question: How many eggs were delivered to the XMP Market?

3.  **A.** 64 trucks of mangosteens were delivered to JPD Market.
B. There were 112 trays of eggs in one truck.

Question: How many mangosteens were delivered to JPD Market?

II. Estimate the product in Column A and compare with the values in Column B. Draw a:

- >** if the value in Column A is **greater than** the value in Column B.
- <** if the value in Column B is **greater than** the value in Column A.
- =** if the two values are **equal**.

	Column A	Column B
1. 	277×18	9000

2.		39×349	14 000
3.		4324×96	388 800
4.		2112×189	420 000
5.		1275×1409	1 000 000

III. Answer the following problems.

1. The fruit farm delivered 64 crates of mangosteens to QTY Market. Each crate costs PhP 925. How much was the total cost of all the mangosteens?
2. In a certain book, there are 16 words in each line. Each page has 14 lines. If the book has 97 pages, how many words are there in the book?
3. The peak of Mt. Everest is 28 times as high as that of Mt. Taal. If the peak of Mt. Taal is 311 meters above sea level, how high is Mt. Everest?

4. RMT train can accommodate 115 passengers. If the government adds 125 more trains, around how many people will the new trains serve?
5. As a gift to the school library, 38 alumni from Batch 1973 donated 102 books each. Around how many books did they donate in all?



Fun Facts

Did you know that multiplying any number by 9 has a cool trick? When you multiply a number by 9, the digits of the product always add up to 9! For example:

- $4 \times 9 = 36$ (and $3 + 6 = 9$),
- $7 \times 9 = 63$ (and $6 + 3 = 9$),
- $2 \times 9 = 18$ (and $1 + 8 = 9$)

It's a neat pattern that works every time!

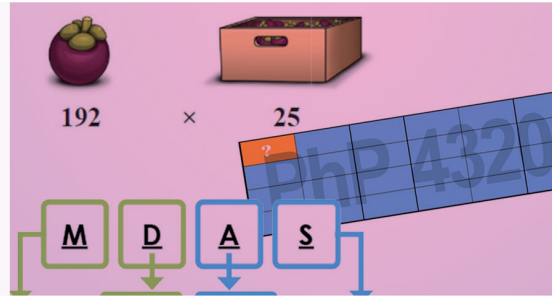


Interactives

To learn more about this lesson, you may visit TekTeach (Learning Management System).

LESSON 2

Division



Objectives

- ◇ Divide two numbers with and without regrouping.
- ◇ Estimate the quotient using multiples of 10.
- ◇ Represent situations involving one or more of the four operations using a number sentence.



Vocabulary Bank

- **quotient** - the answer when you divide one number by another
- **estimate** - making a good guess of a number
- **reservation** - booking or reserving something ahead of time



Math Tale

It was Heidi's birthday, and she wanted to do something special with her friends. She thought watching a movie would be nice so her mom reserved their tickets online. Heidi saw that the total price for 24 tickets was PHP 4320.

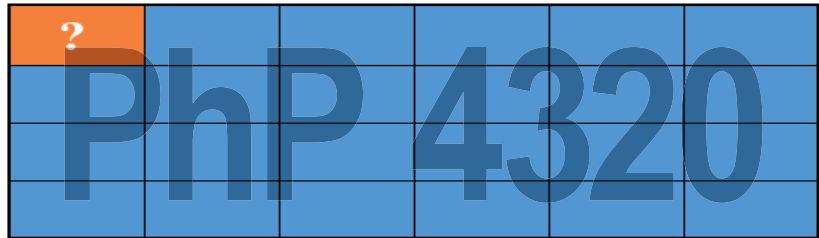
How much did each ticket cost?





Let's Explore

Study the reservation form below and the illustration. The whole represents the total price of the tickets. If we divide the whole into 24 equal parts, one part will represent the price of one ticket.



Dividing into equal parts represents division. In order to get the price of one movie ticket, we divide PHP 4320 by 24 (number of tickets bought).

To divide two numbers, draw a *vertical and horizontal bar* then write the divisor on the left side and dividend on the right side of the *vertical bar*.

$$24 \overline{) 4320}$$

Since the divisor has 2 digits, examine the first 2 digits of the dividend.

Divide 43 by 24 $43 \div 24 = 1$.
Write 1 above 3, then disregard the remainder first.

$$24 \overline{) 4320} \quad 1$$

Since $43 > 24$, we can proceed to division

$$\begin{array}{r} 1 \\ 24 \overline{) 4320} \\ \underline{- 24} \\ 19 \end{array}$$

Multiply 1 by 24 $\rightarrow 1 \times 24 = 24$.
Subtract the **product** from 43 $\rightarrow 43 - 24 = 19$.
Write the difference below 24.

$$\begin{array}{r} 18 \\ 24 \overline{) 4320} \\ \underline{- 24} \\ 192 \end{array}$$

Bring down 2 from the dividend.
Divide 192 by 24 $\rightarrow 192 \div 24 = 8$.
Write **8** above 2.

$$\begin{array}{r} 18 \\ 24 \overline{) 4320} \\ \underline{- 24} \\ 192 \\ \underline{- 192} \\ 0 \end{array}$$

Multiply 8 by 24 $\rightarrow 8 \times 24 = 192$.
Subtract the **product** from 192 $\rightarrow 192 - 192 = 0$.
Write the difference below 192.

$$\begin{array}{r} 180 \\ 24 \overline{) 4320} \\ \underline{- 24} \\ 192 \\ \underline{- 192} \\ 0 \\ \underline{- 0} \\ 0 \end{array}$$

Bring down 0 from the dividend.
Divide 0 by 24. $0 \div 24 = 0$.
Write **0** above 0.

Therefore, each movie ticket costs **PhP 180**.

Let's have another example.

Some of Heidi's friends would like to give her mystery books as their gift. They were able to raise PhP 2500. How many could they buy if each book costs PhP 118?

To give the number of books that Heidi's friends could buy we need to divide 2500 by 118.

$$2500 \div 118 = ?$$

$$\begin{array}{r} 2 \\ 118 \overline{) 2500} \end{array}$$

Divide 250 by 118 $\rightarrow 250 \div 118 = 2$.
Write **2** directly above 0.

$$\begin{array}{r} 2 \\ 118 \overline{) 2500} \\ \underline{- 236} \\ 140 \end{array}$$

Multiply 2 by the divisor $\rightarrow 2 \times 118 = \mathbf{236}$.
Subtract the **product** from 250.
Bring down 0 from the dividend.

$$\begin{array}{r} 21 \\ 118 \overline{) 2500} \\ \underline{- 236} \\ 140 \end{array}$$

Divide 140 by 118. $\mathbf{140 \div 118 = 1}$
Write **1** above 0.

$$\begin{array}{r} 21 \\ 118 \overline{) 2500} \\ \underline{- 236} \\ 140 \\ \underline{- 118} \\ 22 \end{array}$$

Multiply 1 by 118. $1 \times 118 = \mathbf{118}$
Subtract the **product** from 140.

Since $\mathbf{22} < 118$, thus **22** is the remainder.



Keep in Mind

Zero divided by any other number except zero is always zero.

Let's try to estimate the quotient of 239 and 39.

To estimate the quotient of two numbers, round the numbers to the highest place value of the smaller number.

$$\begin{array}{l} 239 \approx 240 \\ 39 \approx 40 \end{array}$$

First, round the numbers. The highest place value of the smaller number (39) is tens. Therefore, we round to the nearest ten.

$$240 \div 40 = 6$$

Then we divide the rounded numbers.

Thus, the estimated quotient of 239 and 39 is
approximately equal to 6.



Keep in Mind

Both factors must be greater than 1. It will not help if one factor is 1 because you will just go back to your original division sentence.



Put to Practice

Read and answer the given problem carefully. Answer the following questions.
(Show your solution)

Teacher Ean, the class adviser, is planning to celebrate his birthday in a Filipino buffet restaurant in the village. Each seat in the restaurant costs PhP 78 for lunch and PhP 98 for dinner.

How many people can Teacher Ean invite if his budget is only PhP 2500?

If Teacher Ean wants to invite the most number of people, should he choose lunch or dinner?



Challenge Yourself

Solve the given problem. Show your step-by-step solutions.

Heidi bought 24 hotdog sandwiches for their movie snack. If Heidi paid a total of PhP 912.00, how much did one hotdog sandwich cost?

PROBLEM A

After watching a movie, Heidi and her 24 classmates went to PlayZone. They bought tokens amounting to PhP 1728. Each token costs PhP 12. How many tokens did they buy?

PROBLEM B

Heidi treated her 23 classmates to snacks before going home. They ordered pancakes and milkshakes in a snack house. The total bill amounted to PhP 1176. Would Heidi's budget of PhP 50 per person be enough to pay the bill? Why?

PROBLEM C



Portfolio Prompts

Read and answer the given problem carefully. Write your answer on a whole sheet of paper.

1. If a dozen doughnuts costs PhP 358, how much does each doughnut cost?
2. In a school field trip, one teacher is needed to assist 31 students. If 542 students are going on the trip, how many teachers are needed?



Skills Builder

I. Encircle the letter of the correct answer.

- If you divide 768 by 16, what will be the number in the tens digit of the quotient?
a. 3 b. 4 c. 5 d. 6
- How many sets of 21 are there in 2625?
a. 105 b. 115 c. 125 d. 135
- Which two sets of numbers will give a quotient of 102?
a. 2234 and 22 c. 7548 and 84
b. 3774 and 37 d. 9896 and 98
- The quotient of 9844 and 46 is between which numbers?
a. 185 and 195 c. 204 and 212
b. 195 and 203 d. 213 and 220
- What is the remainder when 2432 is divided by 12?
a. 8 b. 10 c. 11 d. 15

II. Compare the expressions. Write $>$, $<$, or $=$.

COLUMN A		COLUMN B
1. $38 \overline{)2470}$		75
2. $12 \overline{)2976}$		248
3. $23 \overline{)4945}$		225
4. $39 \overline{)2652} + 25 \overline{)1500}$		99
5. $33 \overline{)3663} + 51 \overline{)1122}$		132

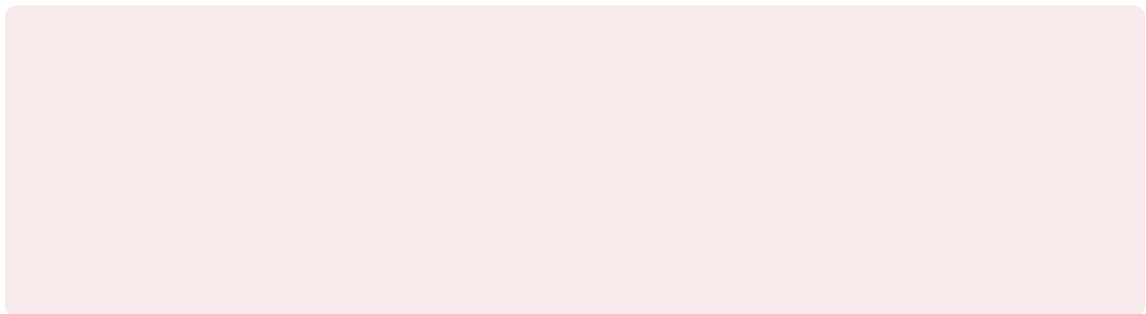
III. Read the statements for each number. Write:

- M** if statement A alone is enough to answer the question.
- A** if statement B alone is enough to answer the question.
- T** if you need both statements to answer the question.
- H** If statements A and B are not enough to answer the question.

1.  **A.** SMC Boutique earned PhP 28 650 on Day 1.
B. The boutique earned half of Day 1 earnings on Day 2.
QUESTION: What is the total earnings of the boutique for the two-day sale?
2.  **A.** Eris, Rafael, and Brian ate at Pasta House and got a total of PhP 399 for their bill.
B. They divided the bill equally among themselves.
QUESTION: How much did each pay?
3.  **A.** The cost of each movie ticket in ABC Mall is PhP 180.
B. Cinema 6 of ABC Mall has 21 rows of seats and a total of 588 seats.
QUESTION: How many seats are there in each row?

IV. Read and solve each problem carefully.

1. After watching the movie, Heidi and her 24 classmates went to PlayZone. They bought tokens amounting to PhP 1728. Each token costs PhP 12. How many tokens did they buy?



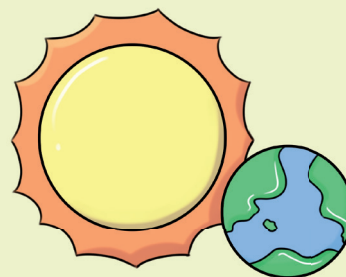
2. In one of the games in PlayZone, Kristofer got a total of 7065 points for collecting silver coins. How many silver coins were collected if each silver coin was equivalent to 45 points?

3. Heidi treated her 23 classmates to snacks before going home. They ordered pancakes and milkshakes in a snack house. The total bill amounted to PhP 1176. Would Heidi's budget of PhP 50 per person be enough to pay the bill? Why?



Fun Facts

The distance from Earth to the sun is called an astronomical unit, or AU. An AU is equal to 149 597 870 700 meters or 92 955 807 miles.



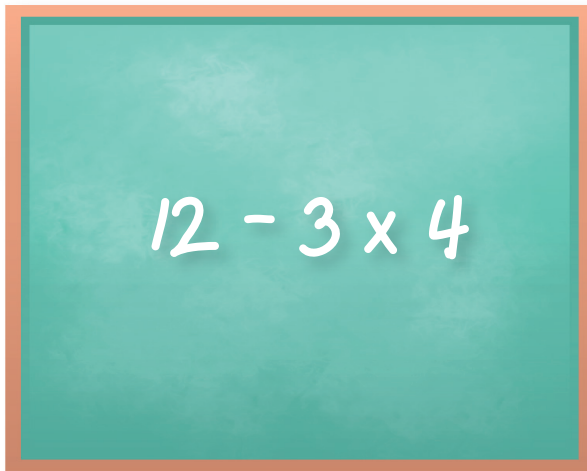
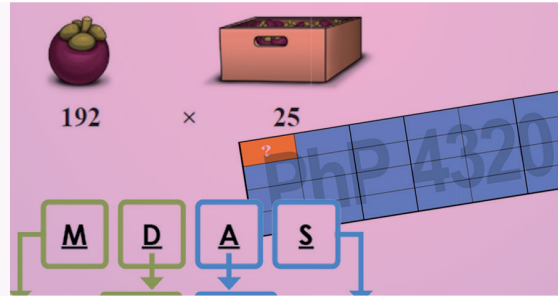


Interactives

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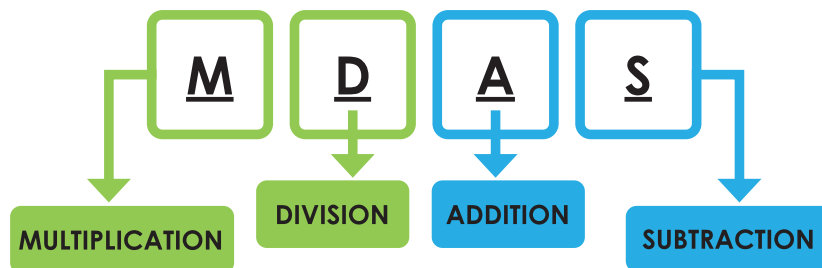
LESSON 3

Order of Operations



Take a look at the expression on the board. It involves multiple operations. Depending on which operation you do first, you will get different answers.

Which operation should you do first?



Following a different order gets you a different answer. As a rule, the order that we must follow is given by the mnemonic **MDAS**.

(M or D) Multiplication or Division: First, do multiplication or division. Remember to do whichever comes first from left to right. If division comes before multiplication, do division first. Just because multiplication comes first in MDAS, it does not mean that multiplication should always be done first.

(A or S) Addition or Subtraction: After doing the multiplication and division operations, proceed to do addition or subtraction, whichever comes first from left to right.

Let's try to solve the equation on the board. If we just perform the operations from left to right, the answer will be 36. However, we must follow the MDAS rule.

$$12 - 3 \times 4$$

First, we should do **M**ultiplication: $3 \times 4 = 12$.

$$12 - 12$$

We are left with **S**ubtraction: $12 - 12 = 0$.

Therefore, the answer is **0** and not **36**.



Let's try another example, this time with three operations.

Evaluate the expression: $75 - 15 \div 3 \times 14$

$$75 - 15 \div 3 \times 14$$

According to the MDAS rule, we need to do **M**ultiplication or **D**ivision, whichever comes first from left to right. In this case, **D**ivision comes first: $15 \div 3 = 5$.

$$75 - 5 \times 14$$

Then, we multiply: $5 \times 14 = 70$.

$$75 - 70$$

Lastly, we subtract: $75 - 70 = 5$.

Therefore, the answer is 5.



Keep in Mind

Given any series of operations, remember the order you must follow:
Multiplication, Division, Addition, Subtraction.

The next expression has 4 operations. Which one should you do first? Write 1, 2, 3, or 4 in the box under the correct operation.

$$72 \div 3 - 3 \times 2 + 17$$

Evaluate the expression. Show your solution and box your final answer.



Fun Facts

$$1 \times 8 + 1 = 9$$

$$12 \times 8 + 2 = 98$$

$$123 \times 8 + 3 = 987$$

$$1234 \times 8 + 4 = 9876$$

$$12345 \times 8 + 5 = 98765$$

$$123456 \times 8 + 6 = 987654$$

$$1234567 \times 8 + 7 = 9876543$$

$$12345678 \times 8 + 8 = 98765432$$

$$123456789 \times 8 + 9 = 987654321$$



Challenge Yourself

Create your own word problem that can be solved by simplifying an expression using MDAS.



Skills Builder

I. Encircle the letter of the correct answer.

1. Given: $8 \div 4 + 3 - 2$ Which operation should you do first?

- a. Multiplication
- b. Division
- c. Addition
- d. Subtraction

2. What is the value of $8 \div 4 + 3 - 2$?

- a. 2
- b. 5
- c. 4
- d. 3

For numbers 3-4, which number or operation should be placed in the box to make the expression true?

3. $3 + \square \div 2 \times 4 - 5 = 10$

- a. 3
- b. 4
- c. 5
- d. 6

4. $12 \times 2 \div 4 \square 8 - 5 = 9$

- a. $\times$
- b. $\div$
- c. $+$
- d. $-$

II. Place the proper operation ($\times$, $\div$, $+$, $-$) in each box to have a valid mathematical expression vertically and horizontally. Some of the operations are already placed to guide you.

3	$\times$	4	$\div$	6	=	2
+						
6		4		2	=	4
$\div$						
3		2		1	=	1
=		=		=		=
5		3		7	=	8

III. Evaluate the given expressions. Show your solution and box your final answer.

1. $18 \div 6 - 3 + 4 \times 2$

2. $12 - 5 \times 12 \div 6 + 2$

3. $4 + 8 \div 2 - 1 \times 3$

4. $7 \times 3 - 12 + 15 \div 5$

5. $20 \div 5 \times 2 - 1 + 1$

IV. Write a single expression and give the correct answer for each problem.

1. Harry receives his weekly allowance of PhP 300 from his Mom, half of which he saves. His Dad adds PhP 150 more to his allowance. As an older brother, Harry gives PhP 30 each to his two sisters. How much can Harry save in a week?

2. Heidi had received PhP 500 as a gift from her balikbayan uncle. She divided the money into four parts. Heidi gave three of the four parts to her Mom. Heidi then received another PhP 10 from her cousin. She decided to spend her money by buying two cups of ice cream for PhP 15 each. How much money is left with Heidi?

3. Harry and Heidi earned PhP 600 from selling cupcakes last week. They decided to buy new books for the Math Club. They bought two books for PhP 85 each, three books for PhP 60 each, and two books for PhP 110 each. How much money was left with Harry and Heidi?

4. Teacher Caesar, the math teacher, writes a mathematical expression on the board. He accidentally erased the two numbers and the operation between them. What are the missing numbers and operation?

$$24 \div 8 \times \text{?} \text{?} \text{?} - 9 = 6$$



Interactives

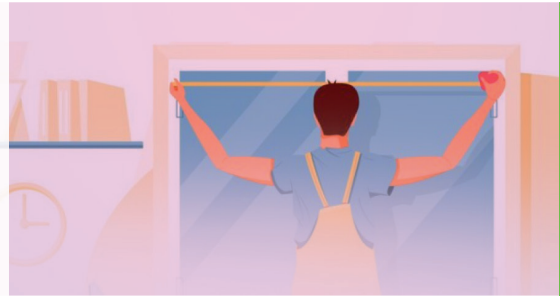
To learn more about this lesson, you may visit TekTeach (Learning Management System).

LESSON 4

Length, Mass, and Capacity

$$\frac{7}{4}$$

$$1\frac{3}{4}$$



Objectives

- ◇ Convert common units of measure from larger to smaller units, and vice versa (meter and centimeter, kilometer and meter, kilogram and gram, gram and milligram, and liter and milliliter.)



Vocabulary Bank

- **palette** – a bunch of colors or materials used for decorating
- **ambiance** – how a place feels overall
- **budget** – the money plan for a project



Math Tale

Dave is planning to redecorate his bedroom. He needs to buy new curtains. Dave measured the length of his window and found it to be 2.5 meters long. However, when he went to the curtain store, he noticed that the curtains were priced per centimeter. If Dave measured the length of his window in meters, then what is the length of his window in centimeters?





Let's Explore

Fundamental Units of Measurement for Lengths

Understanding meters, centimeters, and kilometers is essential in the world of measurement. These are units of length used to measure length or distances, and they vary in size to accommodate different measurement needs. Here's a breakdown of each unit:

Meter (m)

- The meter is the fundamental unit of length, represented by " m ".
- It is commonly used for measuring medium-length distances, such as the height of a person, the length of a room, or the width of a car.

Centimeter (cm)

- The centimeter is a smaller unit of length, and there are 100 centimeters in one meter.
- It is often used for measuring shorter lengths, such as the size of an object, the dimensions of a book, or the length of a piece of paper.

Kilometer (km)

- The kilometer is a larger unit of length, and there are 1000 meters in one kilometer.
- It is typically used for measuring longer distances, such as the length of a road, the distance between cities, or the height of a mountain.

Let's go back the story and help Dave convert the measured length of his window in meters to centimeters.

Dave window's length in meters = 2.5 meters

Dave window's length in centimeters = ?

To convert from **meters** to **centimeters**, multiply by 100 or simply *move the decimal point 2 places to the right*.

Multiply by 100.

$$2.5 \text{ m} \times 100 = 250 \text{ cm}$$

(**larger** unit to **smaller** unit)

Or simply move the decimal point 2 places to the right.

$$2.5 \text{ m} = 250 \text{ cm}$$

*Therefore, the length of Dave's window in centimeters is equal to **250 cm**.*

What if you were asked to convert **centimeters** to **meters**?

For example,

Convert 3450 cm to meters (m).

$$3450 \text{ cm} = \text{___ m ?}$$

To convert from **centimeters** to **meters**, divide by 100 or simply *move the decimal point 2 places to the left*.

Since,

$$100 \text{ cm} = 1 \text{ m}$$

(**smaller** unit to **larger** unit)

Divide by 100.

$$3450 \text{ cm} \div 100 = 34.50 \text{ m}$$

Or simply move the decimal point 2 places to the left.

$$3450 \text{ cm} = 34.50 \text{ m}$$

*Therefore, the equivalent value of 3450 cm to meters is **34.50 m**.*

Converting from Kilometers to Meters and Vice Versa

To convert from **kilometers** to **meters**, multiply by 1000 or simply *move the decimal point 3 places to the right*.

Since,

$$1 \text{ km} = 1000 \text{ m}$$

(**larger** unit to **smaller** unit)

For example,

Convert 4.875 km to meters (m).

$$4.875 \text{ km} = \underline{\hspace{2cm}} \text{ m ?}$$

Multiply by 1000.

$$4.875 \text{ km} \times 1000 = 4875 \text{ m}$$

Or simply move the decimal point 3 places to the right.

$$4.875 \text{ km} = 4875 \text{ m}$$

Therefore, the equivalent value of 4.875 km to meters is **4875 m**.

What if you were asked to convert **meters** to **kilometers**?

For example,

Convert 495 m to kilometers (km).

$$495 \text{ m} = \underline{\hspace{2cm}} \text{ km ?}$$

To convert from **meters** to **kilometers**, divide by 1000 or simply *move the decimal point 3 places to the left*.

Since,

$$1000 \text{ m} = 1 \text{ km}$$

(**smaller** unit to **larger** unit)

Divide by 1000.

$$495 \text{ m} \div 1000 = 0.495 \text{ km}$$

Or simply move the decimal point 3 places to the left.

$$495 \text{ m} = 0.495 \text{ km}$$

Therefore, the equivalent value of 495 m to kilometers is **0.495 km**.

Fundamental Units of Measurement for Masses or Weight

Kilogram (kg), gram (g), and milligram (mg) are units of measurement for mass or weight commonly used in the metric system. They represent different levels of magnitude, with each unit being a multiple or fraction of the others.

Kilogram (kg)

- The kilogram is the base unit for mass or weight.

Gram (g)

- Grams are commonly used to measure smaller objects, food items, and in cooking recipes.

Milligram (mg)

- Milligrams are used for very small quantities of substances, especially in the field of medicine, where precise dosages of drugs or supplements are required.

Converting from Kilograms to Grams and Vice Versa

To convert from **kilograms** to **grams**, multiply by 1000 or simply *move the decimal point 3 places to the right*.

Since,

$$1 \text{ kg} = 1000 \text{ g}$$

(**larger** unit to **smaller** unit)

For example,
Convert 4985 kg to grams (g).

$$4985 \text{ kg} = \text{ ______ } \text{ g ?}$$

Multiply by 1000 or move the decimal point 3 places to the right.

$$4985 \times 1000 = 4\,985\,000 \text{ g}$$

*Therefore, the equivalent value of 4985 kg to grams is **4 985 000 g**.*

What if you were asked to convert **grams** to **kilograms**?

For example,
Convert 12 472 grams to kilograms (kg).

$$12\,472 \text{ g} = \text{ ______ } \text{ kg ?}$$

To convert from **grams** to **kilograms**, divide by 1000 or simply *move the decimal point 3 places to the left*.

Since,

$$1000 \text{ g} = 1 \text{ kg}$$

(**smaller** unit to **larger** unit)

Divide by 1000 or move the decimal point 3 places to the left.

$$12\,472 \text{ g} \div 1000 = 12.472 \text{ kg}$$

*Therefore, the equivalent value of 12 472 g to kilograms is **12.472 kg**.*

Converting from Grams to Milligrams and Vice Versa

To convert from **grams** to **milligrams**, multiply by 1000 or simply *move the decimal point 3 places to the right*.

Since,

$$1 \text{ g} = 1000 \text{ mg}$$

(**larger** unit to **smaller** unit)

For example,

Convert 256.98 g to milligrams (mg).

$$256.98 \text{ g} = \text{_____ mg ?}$$

Multiply by 1000 or move the decimal point 2 places to the right.

$$256.98 \text{ g} \times 1000 = 256\,980 \text{ mg}$$

*Therefore, the equivalent value of 256.98 g to milligrams is **256 980 mg**.*

What if you were asked to convert **milligrams** to **grams**?

For example,

Convert 85 972 mg to grams (g).

$$85\,972 \text{ mg} = \text{_____ g ?}$$

To convert from **milligrams** to **grams**, divide by 1000 or simply *move the decimal point 3 places to the left*.

Since,

$$1000 \text{ mg} = 1 \text{ g}$$

(**smaller** unit to **larger** unit)

Divide by 1000 or move the decimal point 3 places to the left.

$$85\,972 \text{ mg} \div 1000 = 85.972 \text{ g}$$

*Therefore, the equivalent value of 85 972 mg to grams is **85.972 g**.*

Fundamental Units of Measurement for Capacity or Volume

Liters (L) and milliliters (mL) are units of measurement used to quantify volume or capacity, particularly in the metric system. They are used to measure the amount of space occupied by a substance, liquid, or object.

Liters (L)

- The liter is the base unit for capacity or volume.
- The liter is typically used for measuring larger volumes of liquids, such as water, milk, gasoline, and other beverages or fluids.

Milliliters (mL)

- The milliliter is a smaller unit of capacity or volume compared to the liter. There are 1000 milliliters in one liter.
- Milliliters are commonly used when measuring smaller quantities of liquids or substances, especially in medical and laboratory settings, where precision is important.

Converting from Liters to Milliliters and Vice Versa

To convert from **Liters** to **Milliliters**, multiply by 1000 or simply *move the decimal point 3 places to the right*.

Since,

$$1 \text{ L} = 1000 \text{ mL}$$

(**larger** unit to **smaller** unit)

For example,

Convert 47 L to milliliters (ml).

$$47 \text{ L} = \text{ ______ } \text{ mL ?}$$

Multiply by 1000 or move the decimal point 3 places to the right.

$$47 \times 1000 = 47\,000 \text{ mL}$$

Therefore, the equivalent value of 47 L to milliliters is **47 000 mL**.

What if you were asked to convert **milliliters** to **liters**?

For example,

Convert 12 478 mL to liters (L).

$$12\,478\text{ mL} = \underline{\hspace{2cm}}\text{ L} ?$$

To convert from **milliliters** to **liters**, divide by 1000 or simply *move the decimal point 3 places to the left*.

Since,

$$1000\text{ mL} = 1\text{ L}$$

(**smaller** unit to **larger** unit)

Divide by 1000 or move the decimal point 3 places to the left.

$$12\,478\text{ mL} \div 1000 = 12.478\text{ L}$$

*Therefore, the equivalent value of 12 478 mL to liters is **12.478 L**.*



Put to Practice

Convert the following common units of measurement.

Task 1: Convert 48 965 mg to kg

1. What is the basic unit for mass in the metric system?
2. How many milligrams (mg) are in one gram (g)?
3. How many grams are in one kilogram (kg)?
4. What is the relationship between milligrams and kilograms?
5. How can you use the conversion factor to convert milligrams to kilograms?
6. Perform the conversion from milligrams to kilograms for the given value (48 965 mg).

Task 2: Convert 58.72 km to cm

1. What is the basic unit for length in the metric system?
2. How many meters (m) are in one kilometer (km)?
3. How many centimeters are in one meter (cm)?
4. What is the relationship between kilometers and centimeters?
5. How can you use the conversion factor to convert kilometers to centimeters?
6. Perform the conversion from kilometers to centimeters for the given value (58.72 km).



Skills Builder

I. Read each question and encircle the letter of the correct answer.

1. What is the basic unit for measuring length in the metric system?
a. Centimeter b. Meter c. Kilogram d. Milligram
2. How many centimeters are in one meter?
a. 10 b. 100 c. 1000 d. 10 000
3. To convert 3 kilometers to meters, you should:
a. Multiply by 10 c. Divide by 10
b. Multiply by 100 d. Divide by 100
4. Which is larger, a kilogram or a gram?
a. Kilogram b. Gram
5. How many milligrams are in one gram?
a. 10 b. 100 c. 1000 d. 10 000
6. The basic unit for measuring volume in the metric system is:
a. Liter b. Milliliter c. Kilogram d. Gram
7. To convert 500 milliliters to liters, you should:
a. Multiply by 10 c. Divide by 10
b. Multiply by 100 d. Divide by 100

8. What is the relationship between kilometers and meters?

a. $1 \text{ km} = 1 \text{ m}$

c. $1 \text{ km} = 100 \text{ m}$

b. $1 \text{ km} = 10 \text{ m}$

d. $1 \text{ km} = 1000 \text{ m}$

II. Match the correct unit to its equivalent in the other unit.

1. Kilogram

a. Milliliter

2. Meter

b. Gram

3. Liter

c. Centimeter

4. Kilometer

d. Millimeter

5. Gram

e. Kiloliter

6. Millimeter

f. Kilometer

7. Milliliter

g. Decimeter

8. Centimeter

h. Liter

III. Answer the following questions. Show your step-by-step solution.

1. Jamie has a rope that is 2.5 meters long. Convert the length of the rope to centimeters.
2. The distance between two cities is 150 kilometers. Convert this distance to meters.
3. A bag of flour weighs 3.6 kilograms. Convert the weight of the flour to grams.
4. Sara has a water bottle that can hold 750 milliliters of water. Convert the volume of the water bottle to liters.
5. Mark has a pencil that is 15 centimeters long. Convert the length of the pencil to millimeters.



Portfolio Prompts

Length

Meters and Centimeters

Let's start with the basic buddies, meters and centimeters. Ever wonder how to go from big to small and vice versa? We've got the secret formula! Join me as we explore real-life situations where knowing this helps us measure things like room length and fabrics.

Kilometers and Meters

Now, let's step into the land of kilometers and meters. Imagine measuring how far your favorite spots are from each other! We'll break down the magic behind converting these distances and even understand how long a marathon really is.

Mass

Kilograms and Grams

Time to weigh in on kilograms and grams! Ever tried cooking up a storm in the kitchen? We'll discover how to convert weights like a kitchen maestro, ensuring our recipes turn out just right.

Grams and Milligrams

Get ready for some tiny transformations with grams and milligrams. It's like magic for small quantities! We'll see how precision in measurements plays a crucial role, especially when working with small stuff in science experiments.

Capacity

Liters and Milliliters

Last but not least, let's splash into liters and milliliters. Imagine you're a scientist mixing potions! We'll learn how to convert liquid volumes and make sure our experiments are top-notch.

Write what you learned about length, mass, and capacity.



Challenge Yourself

It's time to challenge yourself. Solve the following problems. Show your step-by-step solution.

Problem 1: The Great Race

In a city, there are three friends: Alice, Bob, and Carol. They decide to have a friendly race around the city. Alice covers 2.5 kilometers, Bob covers 3750 meters, and Carol covers 4500 centimeters. Convert all their distances to the same unit, then find the total distance they covered in meters.

Problem 2: Cooking Challenge

You are helping your mom in the kitchen. She gives you a recipe that requires 1.8 liters of milk, 750 milliliters of water, and 2.5 deciliters of oil. You want to know the total volume of the liquids needed in milliliters and also convert it to liters. After that, you realize you only have a measuring cup in milliliters. How many times will you need to fill the measuring cup to get the required volume?

Problem 3: Garden Makeover

Tom has a rectangular garden with dimensions 4.5 meters by 6.75 meters. He decides to increase the garden's size by adding a walkway around it, measuring 0.25 meters wide. After the expansion, he wants to know the new area of the garden. Calculate the new area of the garden, then convert it to square centimeters. If each square centimeter of the garden costs PHP 15 to maintain, find the cost of maintaining the entire garden each month.

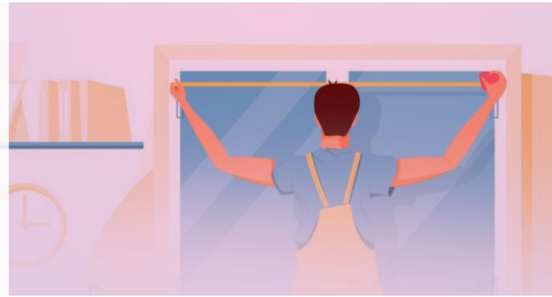


Interactives

To learn more about this lesson, you may visit TekTeach (Learning Management System).

LESSON 5

Time



Objectives

- ♦ Find the elapsed time in minutes and seconds.
- ♦ Estimate the duration of time in minutes.
- ♦ Solve problems involving elapsed time.



Vocabulary Bank

- **elapse** - (for time) to pass



Math Tale

Harry and Heidi joined their school's 5-kilometer fun run. They started at exactly 7:15:20 am. Heidi ended her run at 7:57:30 am and Harry finished his run at 8:09:35 am.

How long did Harry and Heidi finish the 5-kilometer fun run?





Let's Explore

To compute for the elapsed time, we simply subtract the starting time from the end time. Let's try to get the difference between Heidi's start and end times first.

Write the end time and the start time aligned according to hours, minutes, and seconds. Write the end time on top so it will be easy to subtract values.



	Hours	Minutes	Seconds
End Time	7	57	30
Start Time	7	15	20

	Hours	Minutes	Seconds
End Time	7	57	30
Start Time	7	15	20
Time Elapsed			10

Subtract the number of seconds in the start time from the number of seconds in the end time.
 $30 - 20 = 10$

	Hours	Minutes	Seconds
End Time	7	57	30
Start Time	7	15	20
Time Elapsed		42	10

Proceed to the minutes column. $57 - 15 = 42$

	Hours	Minutes	Seconds
End Time	7	57	30
Start Time	7	15	20
Time Elapsed	0	42	10

Proceed to the hours column. $7 - 7 = 0$

Heidi finished the 5-kilometer fun run in 42 minutes, 10 seconds.





Fun Facts

According to the Guinness World Records, Usain Bolt holds the record breaking time of 9.58 seconds for running a 100-meter distance. He made the record during the Berlin World Championships in 2009.



Now, let's solve for Harry's elapsed time.

Again, we align the start and end time according to hours, minutes, and seconds.



	Hours	Minutes	Seconds
End Time	8	09	35
Start Time	7	15	20
Time Elapsed			15

Start with the seconds column.
 $35 - 20 = 15$.

	Hours	Minutes	Seconds
End Time	8	09	35
Start Time	7	15	20
Time Elapsed			15

In the minutes column, we have to subtract 15 from 9. We need to regroup or borrow from the hours column.

	Hours	Minutes	Seconds
End Time	7	9 + 60	35
Start Time	7	15	20
Time Elapsed			15

Remember that 1 hour is equal to 60 minutes. Borrowing 1 hour from the hours column means adding 60 minutes to the minutes column.

	Hours	Minutes	Seconds
End Time	7	69	35
Start Time	7	15	20
Time Elapsed		54	15

We can now subtract.
 $69 - 15 = 54$

	Hours	Minutes	Seconds
End Time	7	69	35
Start Time	7	15	20
Time Elapsed	0	54	15

Finally, we do the hours column.
 $7 - 7 = 0$

Harry finished the 5-kilometer fun run in 54 minutes, 15 seconds. If we estimate this to the nearest minute, it rounds down to 54 minutes.



Keep in Mind

1 hour = 60 minutes and 1 minute = 60 seconds. In rounding minutes and seconds, we round up if the value is 30 and above.

Examples:

2 minutes and 38 seconds rounds to 3 minutes.

4 hours and 15 minutes rounds to 4 hours.

While waiting for Harry, Heidi saw her friend Peter. He started the fun run together with Harry and Heidi. Peter finished at exactly 7:42:14 am. How long did it take for Peter to finish the run? Give an estimate (in minutes) first before filling the table.

	Hours	Minutes	Seconds
End Time			
Start Time			
Time Elapsed			



Put to Practice

The table shows the final result for the top 3 runners in the Fun Run 5-kilometer category.

5 km Top Finishers (age 10-12)		
Name	Start	End
1. Patrick Ramos	7:15:20	7:41:11
2. Julian Santos	7:15:20	7:42:14
3. Billy Reyes	7:15:20	8:07:08

Task 1

Determine how long it took Patrick to finish the fun run.

Task 2

Find the gap between Julian's and Billy's end times.



Skills Builder

I. Encircle the letter of the correct answer.

1. Matthew goes to school at 7:45 in the morning and goes home at 4:15 in the afternoon. How long does Matthew stay in school?
 - a. 8 hours, 15 minutes
 - b. 8 hours, 30 minutes
 - c. 8 hours, 45 minutes
 - d. 9 hours, 15 minutes
2. Alexandra is a swimmer. Her record last year for swimming 100 meters is 2 minutes, 19 seconds. She can now swim the same distance in 1 minute, 54 seconds. How many seconds is her improvement from last year?
 - a. 2 seconds
 - b. 16 seconds
 - c. 25 seconds
 - d. 46 seconds
3. Paul usually eats his breakfast at exactly 6:20 am. He takes his lunch at exactly 11:30 a.m. How long is the gap between Paul's breakfast and lunch?
 - a. 4 hours, 10 minutes
 - b. 4 hours, 20 minutes
 - c. 5 hours, 10 minutes
 - d. 5 hours, 20 minutes
4. Which of the following times has the least time lapse?
 - a. 4:11:21 and 4:39:28
 - b. 5:27:54 and 5:56:11
 - c. 6:03:24 and 6:31:32
 - d. 7:42:19 and 4:15:18
5. Which of the following times will have an elapsed time of 3 hours, 15 minutes, and 9 seconds?
 - a. 6:11:18 and 9:27:09
 - b. 8:45:37 and 11:30:28
 - c. 7:06:45 and 10:22:54
 - d. 5:48:05 and 9:03:14

II. Estimate the elapsed time in Column A and Column B. Then, compare the values you got for each number. Draw a:

- if the value in Column A is **greater than** the value in Column B.
- if the value in Column B is **greater than** the value in Column A.
- = if the two estimated values are **equal**.

	COLUMN A	COLUMN B
1.	09:15 am – 11:11 am	07:45 am – 09:28 am
2.	06:45 am – 05:08 pm	05:15 pm – 04:12 am
3.	6:05:18 am – 3:28:21 pm	11:04:21 am – 7:27:24 pm
4.	2:12:43 am – 5:16:04 pm	12:43:18 pm – 15:40:56 pm
5.	0:24:16 am – 1:12:46 pm	11:52:14 am – 2:10:35 pm

III. Read the statements for each number. Tell whether what is given is enough to answer what is asked. Write:

- T** if statement A alone is enough to answer the question.
- I** if statement B alone is enough to answer the question.
- M** if you need both statements A and B to answer the question.
- E** if statements A and B together are not enough to answer the question.

1. **A.** Betty arrived 18 minutes ahead of Erika.
B. Erika arrived at 6:52 am.

QUESTION: What time did Betty arrive?

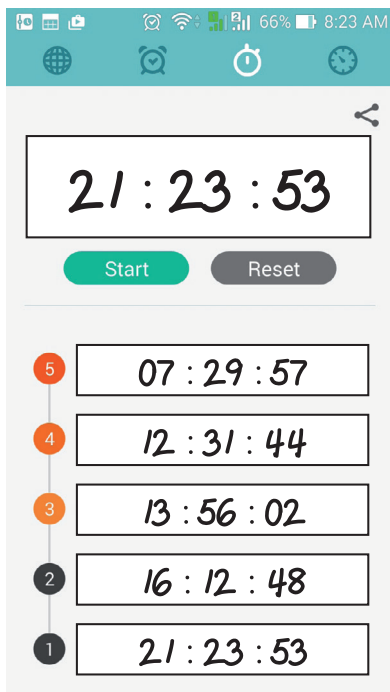
2. **A.** The time lapse of Patrick's running time is less than that of Paul.
B. Paul's total running time is 48 minutes, 15 seconds.

QUESTION: What is Patrick's total running time?

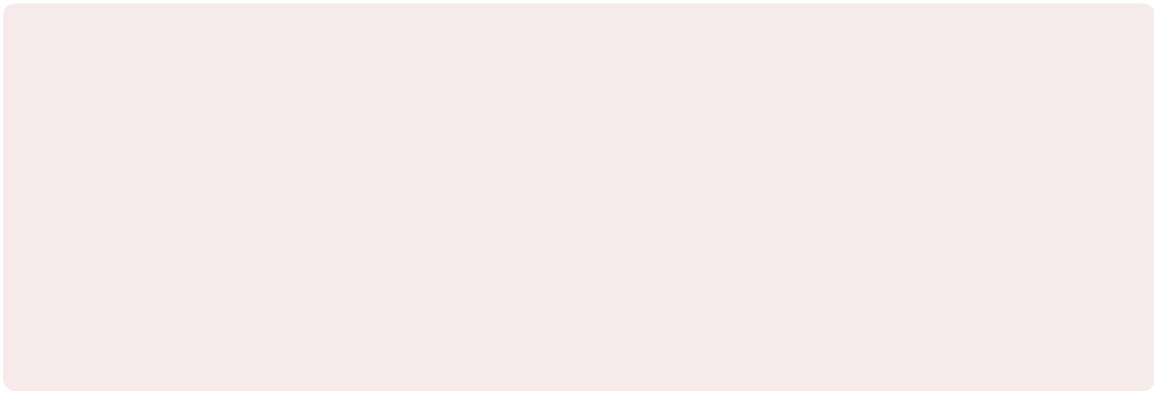
IV. Read and answer each problem carefully.

1. Karina was baking cookies for her mom's birthday. She started baking at exactly 5:48 pm. If her average baking time is 1 hour and 45 minutes, at around what time would Karina finish baking the cookies?

2. Rachelle borrowed her brother's cellphone. While browsing some applications, she came across a stop watch that had the last five lap readings. Give an estimate of the elapsed time for each in minutes.



3. Irene is flying to her hometown in Davao City. Her time of departure from the Ninoy Aquino International Airport is 14:12, while her time of arrival in Davao Airport is 15:27. How long is her flight from NAIA to Davao?



Portfolio Prompts

Make a 1-day activity plan on the illustration board. List all your activities from 6 am to 6 am the next day. Approximate the time needed to accomplish these activities in hours or minutes. Share your work with the class and submit it to your teacher afterwards.



Challenge Yourself

Problem Solving Strategy: Make a Table

Heidi went to the mall with her mom. They left their house at 11:55 am. Upon arrival, they ate lunch for 27 minutes, then went to the mall theater. They watched a movie for 2 hours and 15 minutes. After the movie, they went shopping in the department store for 2 hours and 12 minutes and then spent another 1 hour and 45 minutes in the grocery store before going home.

What time did Heidi and her mom go home?

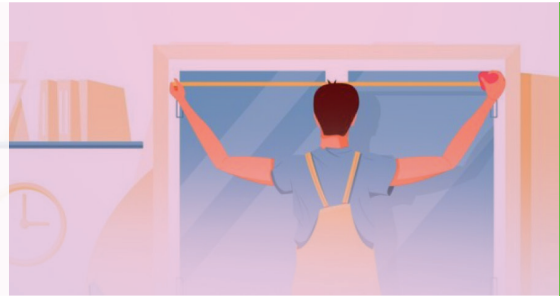


Interactives

To learn more about this lesson, you may visit TekTeach (Learning Management System).

LESSON 6

Problem Solving Measurements



Objectives

- ◇ Solve problems involving length, mass, capacity, and time, including problems involving elapsed time in hours and minutes.



Vocabulary Bank

- **traverse** - to travel or move across a particular area
- **culinary** - related to cooking or the practice of cooking
- **chronicle** - a detailed and factual account of events in the order of their occurrence



Math Tale

Jeric is planning to take a bike ride with his friends, and he wants to know how far he will travel. He knows that the trail he wants to ride is 5 kilometers long. However, his bike's speedometer measures distance in meters.

What Jeric should do so that he can keep track of his distance on his speedometer?





Let's Explore

To answer the given problem, let's apply the 4 steps in solving a problem:

STEP 1: Understand

STEP 2: Plan

STEP 3: Solve

STEP 4: Check

LENGTH

Let us go back to our problem. Let's follow the steps in solving a problem.

Step 1: Understand

What is asked?

What Jeric should do so that he can keep track of his distance on his speedometer?

What is the given information?

5 kilometers to meters

Step 2: Plan

Convert the 5 kilometers to meters.

Step 3: Solve

5 km = _____ m?

Since,

1 km = 1000 m

Multiply by 1000.

$5 \times 1000 = 5000 \text{ m}$

Step 4: Check

5000 meters = 5 kilometers.

Thus, the trail's length in meters is 3000 meters.

MASS

On the way home, Jeric bought 3000 grams of bananas. What is the equivalent measure of bananas in kilogram?

Solution:

Step 1: Understand

What is asked?

What is the equivalent measure of bananas in kilogram?

What is the given information?

3000 grams to kilograms

Step 2: Plan

Convert 3000 grams to kilograms.

Step 3: Solve

$$3000 \text{ g} = \text{ ______ } \text{ kg?}$$

Since,

$$1000 \text{ g} = 1 \text{ kg}$$

Divide by 1000.

$$3000 \div 1000 = 3 \text{ kg}$$

Step 4: Check

$$3 \text{ kg} = 3000 \text{ g}$$

Therefore, the equivalent measure of a banana in kilogram is 3 kg.

CAPACITY

Jeric also bought two liters of water and gave them to his two friends. How many milliliters does 2 liters of water have?

Solution:

Step 1: Understand

What is asked?

How many milliliters does 2 liters of water have?

What is the given information?

2 liters to milliliters

Step 2: Plan

Convert 2 liters to milliliters.

Step 3: Solve

$$2 \text{ L} = \underline{\hspace{2cm}} \text{ mL?}$$

Since,

$$1 \text{ L} = 1000 \text{ mL}$$

Multiply by 1000.

$$2 \times 1000 = 2000 \text{ mL}$$

Step 4: Check

$$2 \text{ L} = 2000 \text{ mL}$$

Meaning, we have 2000 milliliters in 2 liters.

TIME

Jeric was told that in 4 years he will become a grade 9 student. Jeric wants to know the number of weeks in 4 years. What is the answer?

Solution:

Step 1: Understand

What is asked?

What is the number of weeks in 4 years?

What is the given information?

4 years to weeks

Step 2: Plan

- Convert years to months.
- Convert months to weeks.

Step 3: Solve

Convert 4 years to months.

Since,

$$1 \text{ year} = 12 \text{ months}$$

We multiply by 12.

Formula: Months = number of years $\times$ 12

$$\text{Months} = 4 \times 12$$

$$\text{Months} = 48$$

Next, convert 48 months to weeks.

Since,

$$1 \text{ month} = \text{approximately equal to } 4 \text{ weeks}$$

We multiply by 4.

Formula: Weeks = number of months $\times$ 4

$$\text{Weeks} = 48 \times 4$$

$$\text{Weeks} = 192$$

Step 4: Check

$$192 \div 4 = 48$$

$$48 \div 12 = 4$$

Therefore, the number of weeks in 4 years is equal to 192 weeks.

Elapsed Time

Heidi joined their school's 5-kilometer fun run. She started at exactly 7:15:20 am. She ended her run at 8:09:35. How long did Heidi finish the 5-kilometer fun run?

To compute the elapsed time, we simply subtract the starting time from the end time. But, **how do we get the difference between the end time and starting time?**

First, write the end time and the start time aligned according to hours, minutes, and seconds. Write the end time on top so it will be easy to subtract values starting at the seconds column (left to right).

	Hours	Minutes	Seconds
End Time	8	09	35
Start Time	7	15	20
Time Elapsed			15

In the minutes column, we have to subtract 15 from 9. We need to regroup or borrow from the hour's column.

	Hours	Minutes	Seconds
End Time	8	09	35
Start Time	7	15	20
Time Elapsed			15

Remember that 1 hour is equal to 60 minutes. Borrowing 1 hour from the hour's column means adding 60 minutes to the minute's column.

	Hours	Minutes	Seconds
End Time	7	9 + 60	35
Start Time	7	15	20
Time Elapsed			15

We can now proceed with subtraction.

	Hours	Minutes	Seconds
End Time	7	69	35
Start Time	7	15	20
Time Elapsed		54	15

Finally, we proceed to the hour's column.

	Hours	Minutes	Seconds
End Time	7	69	35
Start Time	7	15	20
Time Elapsed	0	54	15

Therefore, Heidi finished the 5-kilometer fun run in 54 minutes, and 15 seconds.



Put to Practice

The graduation begins at 9:00 am and ends at 11:30 am. How long does the graduation last in hours and minutes?

Task 1: Understanding the Problem

1. What is the main question being asked in this problem?
2. When does the graduation begin, and when does it end?
3. How do we express time in terms of hours and minutes?

Task 2: Solving the Problem

1. How can we calculate the duration of the graduation?
2. What is the difference between the starting time and ending time?
3. When subtracting the starting time from the ending time, how do we handle the minutes and hours separately?



Skills Builder

I. Choose the correct answer for each question by circling the letter. There is only one correct answer for each question.

1. What unit do we use to measure the length of a piece of string?
a. Gram b. Meter c. Liter
2. Which of the following is a unit of mass?
a. Kilogram b. Centimeter c. Milliliter
3. How is capacity measured?
a. Centimeters b. Milliliters c. Kilometers
4. What is the appropriate unit for measuring the weight of a bag of rice?
a. Kilogram b. Liter c. Millimeter
5. If an event starts at 1:45 pm and ends at 3:30 pm, how long does it last?
a. 1 hour and 45 minutes b. 1 hour and 30 minutes c. 1 hour and 15 minutes
6. Which of the following is a unit of time?
a. Gram b. Meter c. Minute
7. What is the unit for measuring the length of a table?
a. Kilogram b. Meter c. Milliliter
8. If a bottle can hold 750 milliliters of juice, and you pour in 300 milliliters, how much juice is left in the bottle?
a. 350 milliliters b. 450 milliliters c. 550 milliliters
9. If a bookshelf is 2 meters tall, how many centimeters is it?
a. 200 centimeters b. 120 centimeters c. 20 centimeters
10. If a toy car race starts at 10:30 AM and ends at 12:15 PM, how long does the race last?
a. 1 hour and 45 minutes b. 1 hour and 15 minutes c. 1 hour and 30 minutes

II. Write down the correct unit or measurement for each question. Be specific and check your spelling.

1. Identify the unit used to measure the mass of a banana.
2. Name a unit of measurement for the capacity of a cup.
3. Point out the unit of measurement for the length of a pencil.
4. Choose the correct unit for measuring the weight of a cat.
5. Identify the unit of time used when we say "quarter past 9."
6. Name a unit of measurement for the length of a soccer field.
7. Point out the unit of measurement for the capacity of a water bottle.
8. Choose the correct unit for measuring the height of a building.
9. Identify the unit used to measure the length of a school bus.
10. Name a unit of measurement for the capacity of a milk carton.

III. Solve each problem, show your work, and include units in your final answers. Double-check your calculations for accuracy.

1. A ribbon is 5 meters long. If you cut it into pieces, and each piece is 2 meters long, how many pieces do you have?
2. Mia has 8 candies, and she gives 3 candies to her friend. How many candies does Mia have now?

3. If a jar can hold 300 milliliters of water, and you pour in 150 milliliters, how much space is left in the jar?
4. If a toy train race starts at 2:00 pm and ends at 4:45 pm, how long does the race last?
5. A bag of chocolates weighs 3 kilograms. If you share the chocolates equally among 5 friends, how many grams does each friend get?



Challenge Yourself

Problem 1: The Grand Adventure

Lucas is on a road trip with his family. They drive for 3 hours and 45 minutes, covering a distance of 210 kilometers. If they stop for lunch for 30 minutes and then continue driving at a speed of 60 kilometers per hour, determine the total time of their trip and the distance they will cover by the end of the day.

Problem 2: The Kitchen Challenge

Sarah is baking a cake for a special occasion. She needs 250 grams of flour, 150 milliliters of milk, and 200 grams of sugar for the recipe. If she realizes she only has half the amount of flour required, what adjustments should she make to the other ingredients to maintain the correct proportions? Express your answer in grams and milliliters.

Problem 3: The Science Experiment

In a science experiment, students are given a rectangular prism-shaped container to fill with water. The dimensions of the container are 15 centimeters in length, 8 centimeters in width, and 10 centimeters in height. If each milliliter of water weighs 1 gram, find the total mass of the water in the container. If they pour out half of the water, determine the new mass of the water remaining in the container.



Portfolio Prompts

Do the following activities. You may choose one to work on.

A Day in the Life of Time and Distance

Describe a typical day in your life, focusing on how you encounter and solve problems involving time and distance. Discuss activities where you have to manage your time effectively or situations where distance plays a crucial role. Explore the challenges you face and how understanding the concept of elapsed time helps you navigate your daily routine.

The Marvels of Measurement in Cooking

Reflect on a cooking or baking experience where you had to solve problems related to length, mass, and capacity. Share a specific recipe or cooking adventure where precise measurements were essential. Discuss any adjustments you made and the impact they had on the final dish. Highlight the importance of accurate measurements in achieving culinary success.

Time Travel in History Class

Imagine you have a time-traveling device that allows you to visit historical events. Describe a journey to a specific time period and detail how you would solve problems involving elapsed time. Discuss the challenges you might encounter and how understanding hours and minutes would be crucial in navigating through the past. Explore the historical significance of the events you would witness.



Interactives

To learn more about this lesson, you may visit TekTeach (Learning Management System).

LESSON 7

Fractions



Objectives

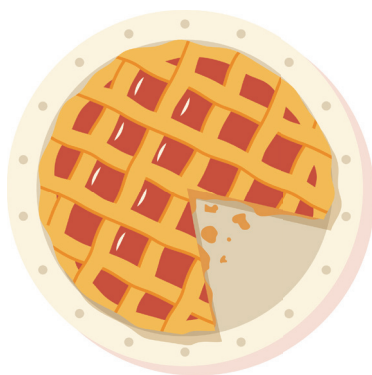
- ◇ Identify proper fractions, improper fractions, and mixed numbers.
- ◇ Rewrite improper fractions into mixed numbers, and vice versa.
- ◇ Plot fractions (proper fractions, improper fractions, and mixed numbers) with denominators 2, 4, 5, and 10 on the number line.



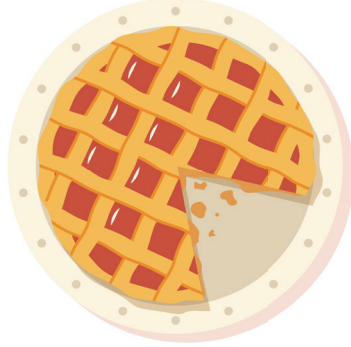
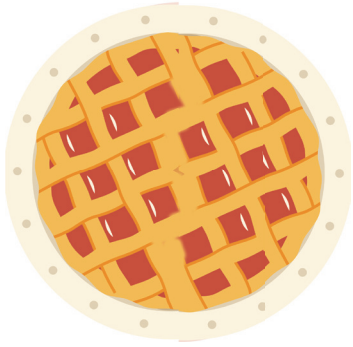
Math Tale

It's "Bring and Share Your Favorite Snack to School" Day.

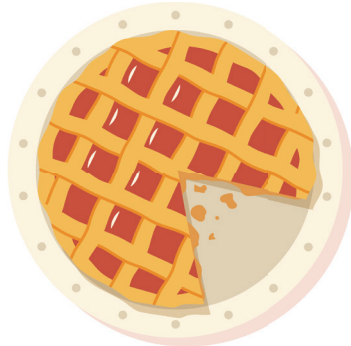
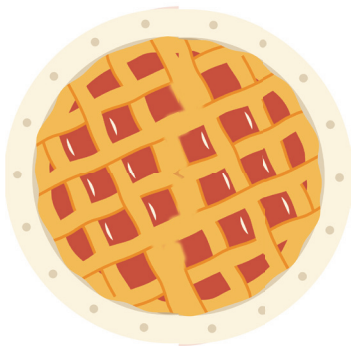
Janica, Daisy, and Inah brought their favorite pie. After everyone has taken a slice, these are what was left.



$$\frac{3}{4}$$



$$\frac{7}{4}$$

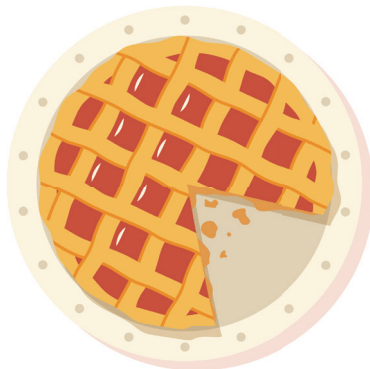


$$1\frac{3}{4}$$

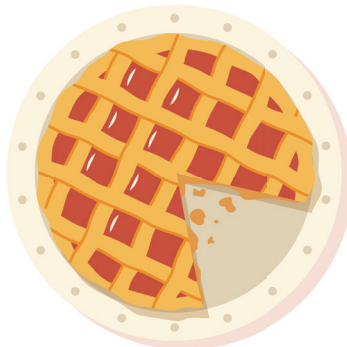
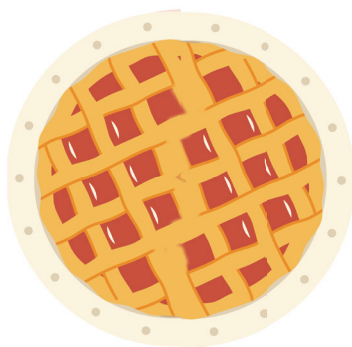


Let's Learn

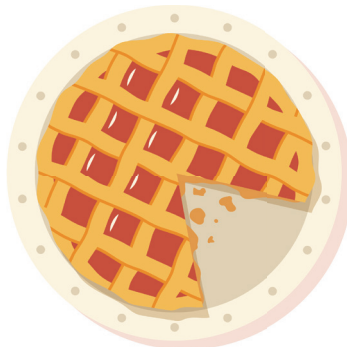
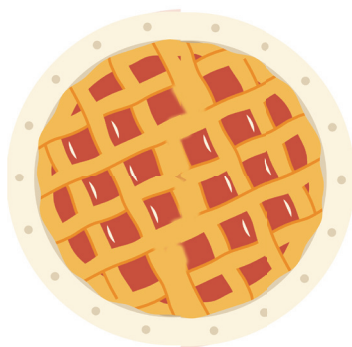
What differences can you see among the three fractions?



$$\frac{3}{4}$$



$$1\frac{3}{4}$$



$$\frac{7}{4}$$

Proper Fractions

A proper fraction is a fraction whose numerator is smaller than the denominator.

Improper Fractions

An improper fraction is a fraction whose numerator is bigger than its denominator.

Mixed Numbers

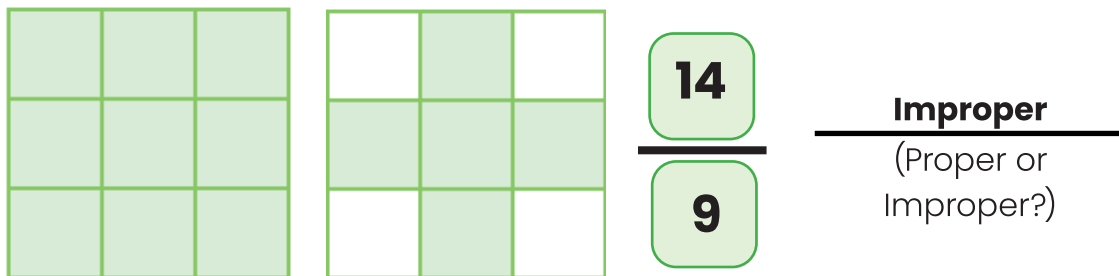
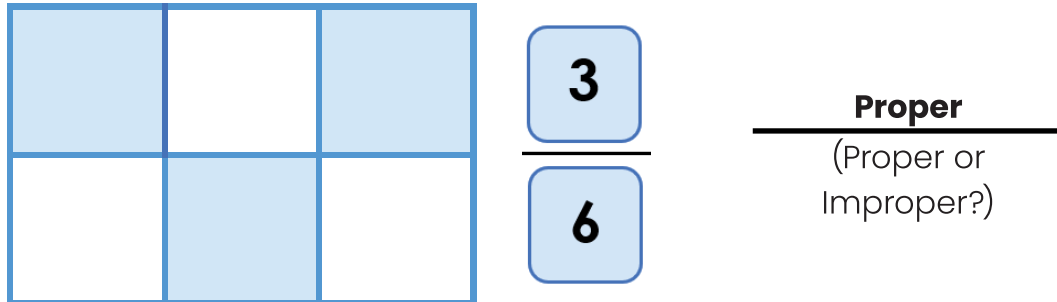
A mixed number is a combination of a whole number and a proper fraction.

Proper and Improper Fractions

Looking at the first two fractions in the board, we can say that the first fraction, $\frac{3}{4}$, is a **proper fraction** because the *numerator is smaller than the denominator*. On the other hand, $\frac{7}{4}$, is an **improper fraction** because ***the numerator is bigger than the denominator***.

Now study the figures below.

What fractions does the shaded area of each figure represents? Which is a proper fraction? Which is an improper fraction?

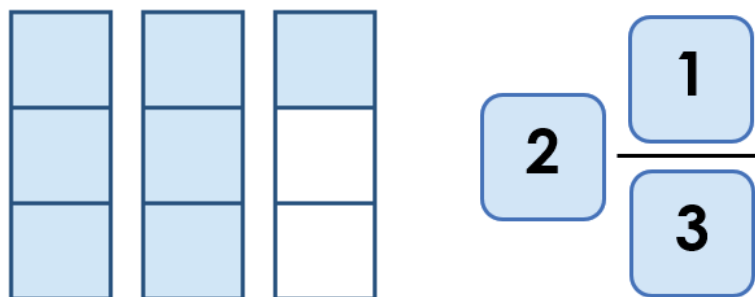


Mixed Number

The third fraction $1\frac{3}{4}$, is called a **mixed number** because it is composed **of a whole number and a fraction**.

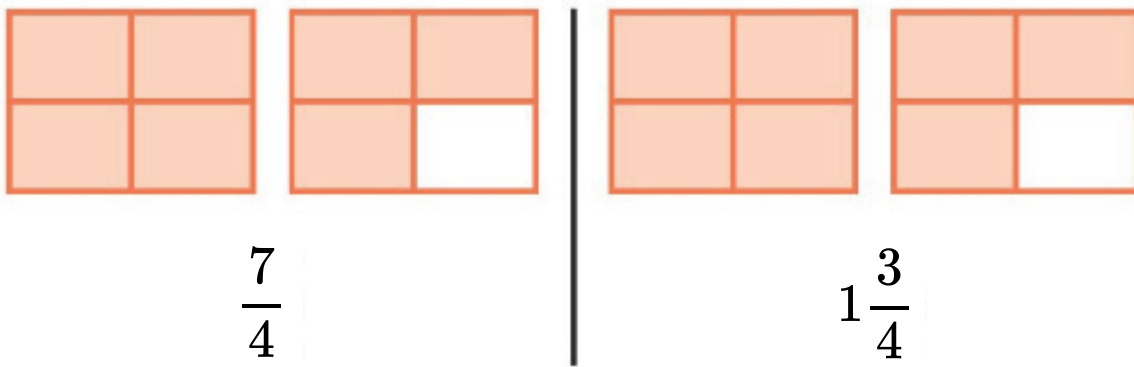
Now study the figures below.

What mixed number represents the figures? Why is it a mixed number?



Changing an Improper Fraction to a Mixed Number

Let us consider the second and third figures on the board.



We can see that the two figures are the same. The fractions $\frac{7}{4}$ and $1\frac{3}{4}$ must also be the same. **An improper fraction can be expressed as a mixed number.**

$$\begin{array}{r} 1 \\ 4 \overline{) 7} \\ \underline{-4} \\ 3 \end{array}$$

To change an improper fraction to a mixed number, divide the numerator of the improper fraction by the denominator.

The quotient is the whole number part of the mixed number. The remainder is the numerator, and the divisor is the denominator.

The quotient is 1, the remainder is 3, and the divisor is 4. Therefore, the **mixed number equivalent to $\frac{7}{4}$ is $1\frac{3}{4}$.**

We can also change a mixed number back to an improper fraction. Let's try with $1\frac{3}{4}$, which we already know that it is equal to $\frac{7}{4}$.

$$1 \times 4 = 4$$

First, multiply the whole number by the denominator.

$$4 + 3 = 7$$

Then, add the numerator to the product. The sum will become the numerator of the improper fraction.

The denominator of the mixed number is retained.

$$1\frac{3}{4} = \frac{7}{4}$$

Plotting Fractions with Denominators 2, 4, 5, & 10 on the Number Line

To plot fractions with denominators 2, 4, 5, and 10 on a number line, we'll first need to determine the appropriate scale for the number line. Let's assume that you want to create a number line that goes from 0 to 1. Here's how you can plot fractions with these denominators on the number line:

Denominator 2 or $(\frac{1}{2})$:

Locate the midpoint between 0 and 1 on the number line, which is 0.5.

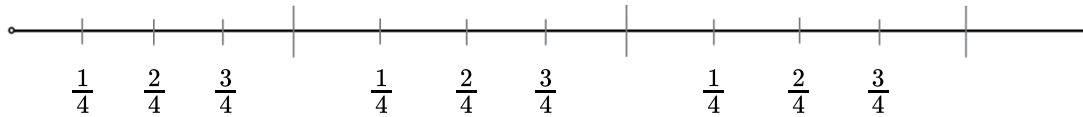
Place a point or mark on the number line at 0.5 to represent the fraction $\frac{1}{2}$.



Denominator 4 or ($\frac{1}{4}$):

Divide the space between 0 and 0.5 into four equal parts.

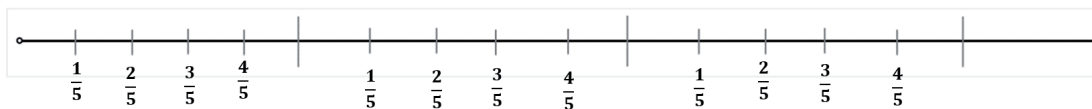
Mark the points at 0.125, 0.25, and 0.375 to represent the fractions $\frac{1}{4}$, $\frac{1}{2}$, and $\frac{3}{4}$.



Denominator 5 or ($\frac{1}{5}$):

Divide the space between 0 and 1 into five equal parts.

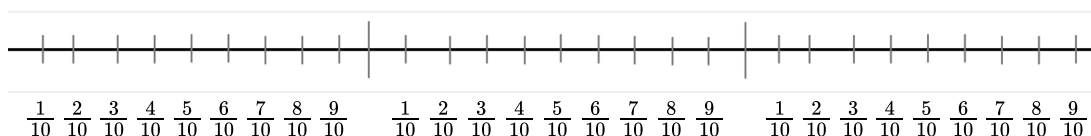
Mark the points at 0.2, 0.4, 0.6, and 0.8 to represent the fractions $\frac{1}{5}$, $\frac{2}{5}$, $\frac{3}{5}$, and $\frac{4}{5}$.



Denominator 10 or ($\frac{1}{10}$):

Divide the space between 0 and 1 into ten equal parts.

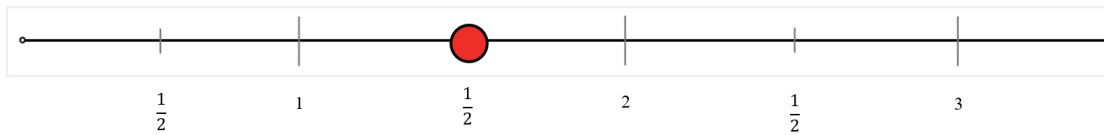
Mark the points at 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, and 0.9 to represent the fractions $\frac{1}{10}$, $\frac{2}{10}$, $\frac{3}{10}$, ..., $\frac{8}{10}$, and $\frac{9}{10}$.



Denominator 2 or ($\frac{1}{2}$):

Example.

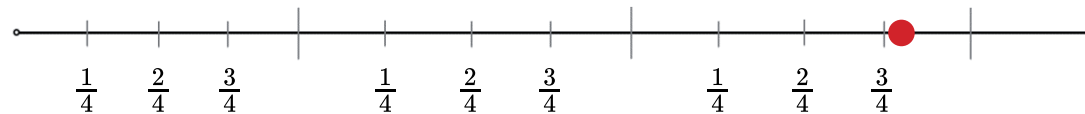
Locate $1\frac{1}{2}$ on the number line.



Denominator 4 or ($\frac{1}{4}$)

Example.

Locate $2\frac{3}{4}$ on the number line.



Denominator 5 or ($\frac{1}{5}$)

Example.

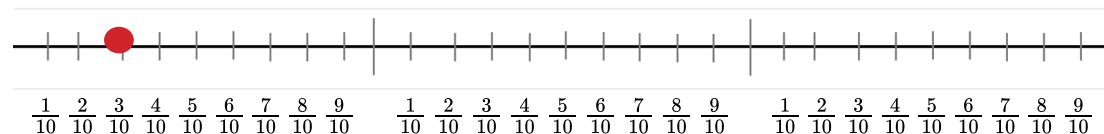
Locate $2\frac{2}{5}$ on the number line.



Denominator 10 or ($\frac{1}{10}$)

Example.

Locate $\frac{3}{10}$ on the number line.





Put to Practice

Using constructions papers, create different figures that represent the following fractions:

$$\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \frac{1}{6}, \frac{1}{7}, \frac{1}{8}, \text{ and } \frac{1}{9}$$



Skills Builder

I. Read each question below. Encircle the letter of the correct answer.

1. Which of the following is a proper fraction?

a. $\frac{7}{2}$

b. 3

c. $\frac{5}{3}$

d. $\frac{4}{5}$

2. What type of fraction is $\frac{9}{2}$?

a. Proper Fraction

c. Mixed Number

b. Improper Fraction

d. Whole Number

3. Which of the following represents a mixed number?

a. $\frac{8}{3}$

b. $\frac{2}{7}$

c. 5

d. $1\frac{1}{5}$

4. What is the mixed number equivalent of the improper fraction $\frac{17}{4}$?

a. $4\frac{1}{4}$

b. $4\frac{3}{4}$

c. $4\frac{1}{2}$

d. $4\frac{2}{4}$

5. Which of the following fractions cannot be simplified into a mixed number?

a. $\frac{13}{5}$

b. $\frac{11}{3}$

c. $\frac{7}{2}$

d. $\frac{3}{4}$

6. Convert the mixed number $3\frac{2}{5}$ into an improper fraction.

a. $\frac{17}{5}$

b. $\frac{15}{5}$

c. $\frac{13}{5}$

d. $\frac{12}{5}$

7. Which of the following fractions is not a proper fraction?

a. $\frac{2}{3}$

b. $\frac{7}{8}$

c. $\frac{3}{2}$

d. $\frac{5}{6}$

8. What is the mixed number representation of the fraction $11/4$?

a. $2\frac{3}{4}$

b. $3\frac{1}{4}$

c. $4\frac{2}{3}$

d. $2\frac{2}{4}$

9. Which of the following fractions is equivalent to $\frac{2}{8}$?

a. $\frac{1}{2}$

b. $\frac{1}{4}$

c. $\frac{3}{4}$

d. $\frac{4}{8}$

10. Plot the fraction $\frac{3}{5}$ on a number line with denominators 2, 4, 5, and 10.
Which number line is the correct one?

a. Denominator 2

c. Denominator 5

b. Denominator 4

d. Denominator 10

II. Which of the following fractions represents the shaded parts of the given figure below?

1.



For numbers 2 – 3

Change the given improper fraction to the proper fraction or vice versa.

2. $\frac{21}{8}$

3. $3\frac{5}{6}$

For numbers 4 – 5

Plot the following points on the number line.

4. $\frac{17}{5}$

5. $2\frac{3}{10}$



Portfolio Prompts

Write the given improper fraction to mixed number or vice versa.

1. $\frac{11}{4}$

2. $\frac{16}{5}$

3. $3\frac{2}{3}$

4. $4\frac{7}{9}$



Challenge Yourself

Identify the type of fraction. Plot the fraction on a number line.

$$\frac{3}{4}, \frac{11}{5}, 1\frac{1}{10}$$

$$\frac{3}{5}, \frac{7}{4}, 2\frac{3}{4}$$

$$\frac{1}{2}, \frac{9}{5}, 3\frac{4}{10}$$



Interactives

To learn more about this lesson, you may visit TekTeach (Learning Management System).

LESSON 8

Adding and Subtracting Similar Fractions



Objectives

- ◇ Visualize addition and subtraction of similar fractions.
- ◇ Solve problems involving addition and/or subtraction of similar fractions.



Vocabulary Bank

- **similar fractions** – fractions with the same denominator



Math Tale

Science Club Meeting

Heidi brought a box of brownie squares and a box of egg pie for the Science Club meeting. Some members ate $\frac{2}{9}$ of the brownie squares before the meeting and then $\frac{6}{9}$ after the meeting. What part of the Science Club members ate the brownie squares?

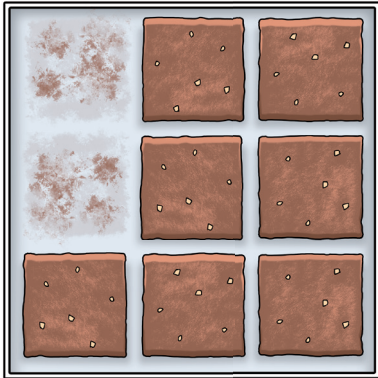




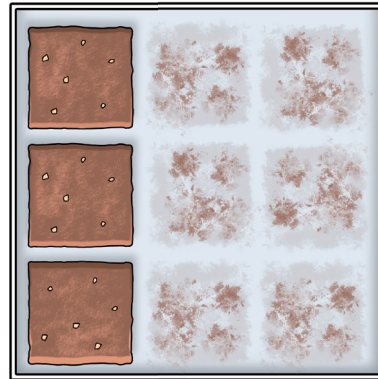
Let's Explore

Before the meeting started, some members already ate $\frac{2}{9}$ of the brownie squares. They also ate $\frac{6}{9}$ after the meeting. To get the part of the brownie squares eaten by the members, we just need to add the part of the brownies eaten before and after the meeting.

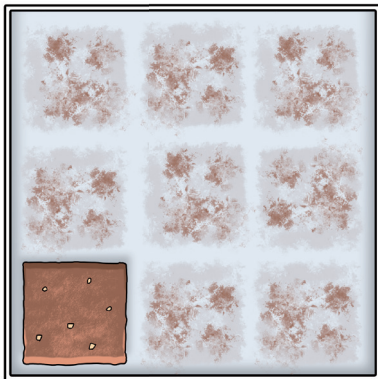
eaten **before** the meeting



eaten **after** the meeting



If we put them together,
we get:



This represents $\frac{8}{9}$.

Therefore,

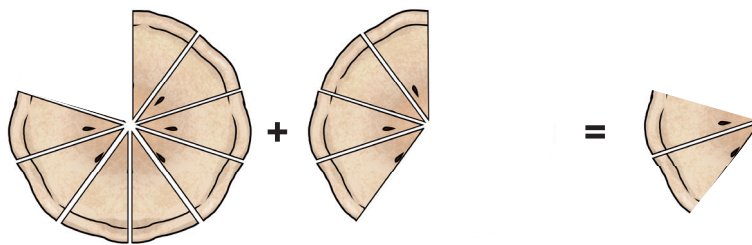
$$\frac{2}{9} + \frac{6}{9} = \frac{8}{9}$$



Keep in Mind

When adding similar fractions, just add the numerators and use the same denominator.

Before the meeting started, some members ate $\frac{2}{10}$ of the egg pie. Right after the meeting, they ate $\frac{6}{10}$ more. What part of the egg pie was eaten by the Science Club members?



What part of the egg pie was eaten before the meeting?

What part of the egg pie was eaten after the meeting?

What part of the egg pie was eaten?



Fun Facts

December 8 is recognized in the United States as National Brownie Day.

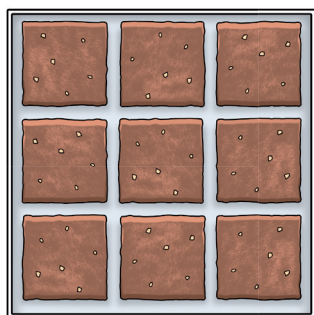


Let's Explore

What part of the box of brownies was left?

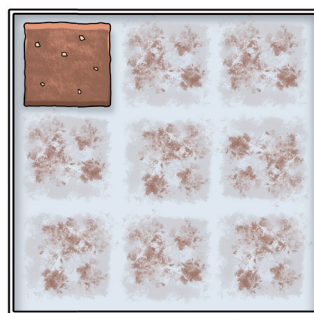
The Science Club members ate $\frac{8}{9}$ of the brownie squares. To know the remaining brownie squares left, we subtract the part of the brownies that was eaten from the original brownies.

original brownies



$\frac{9}{9}$

eaten brownies



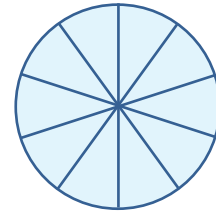
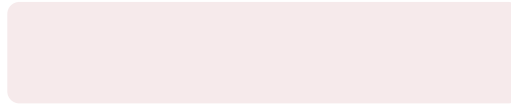
$\frac{8}{9}$

$\frac{1}{9}$ or 1 out of 9 brownie squares was left.

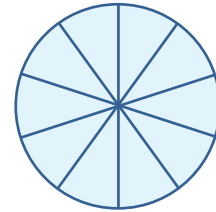
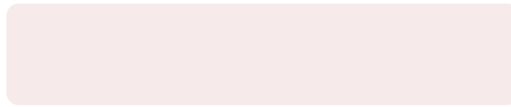
$$\frac{\boxed{9}}{\boxed{9}} - \frac{\boxed{8}}{\boxed{9}} = \frac{\boxed{1}}{\boxed{9}}$$

Consider the slices of egg pie eaten by the members.

What was the total part eaten? Shade the figure to show it.



What part was left? Shade the figure to show it.



Put to Practice

Before the meeting started, only $\frac{11}{18}$ of the members were present. But as the meeting progressed, $\frac{5}{18}$ of the members arrived.

Attendance Sheet

Science Club Meeting

August 24, 2020

1. Anna	✓	7. Lhoyd	late	13. Jessy	✓
2. Belle	✓	8. Heidi	✓	14. Claudia	✓
3. Trina	✓	9. Raquel	A	15. Paul	late
4. Cassy	late	10. Karina	✓	16. Rannie	✓
5. June	✓	11. Glenn	A	17. Allaina	✓
6. Ryan	✓	12. Pete	late	18. Pauline	late

Task 1

What fraction of the total number of members attended the meeting?

Task 2

What fraction of the total number of members were not able to attend the meeting?



Skills Builder

I. Find the sum or difference of the following similar fractions. Write your answers in simplest form.

1.

$$\frac{\boxed{4}}{\boxed{15}} + \frac{\boxed{5}}{\boxed{15}} = \frac{\boxed{}}{\boxed{}}$$

2.

$$\frac{\boxed{10}}{\boxed{14}} - \frac{\boxed{2}}{\boxed{14}} = \frac{\boxed{}}{\boxed{}}$$

3.

$$\frac{\boxed{7}}{\boxed{18}} + \frac{\boxed{9}}{\boxed{18}} = \frac{\boxed{}}{\boxed{}}$$

4.

$$\frac{\boxed{17}}{\boxed{20}} - \frac{\boxed{11}}{\boxed{20}} = \frac{\boxed{}}{\boxed{}}$$

5.

$$\frac{\boxed{24}}{\boxed{25}} + \frac{\boxed{9}}{\boxed{25}} = \frac{\boxed{}}{\boxed{}} \text{ or } \boxed{} \frac{\boxed{}}{\boxed{}}$$

II. Read and answer each problem carefully.

1. Harry actively helps in doing chores at home. He usually spends $\frac{2}{5}$ of an hour watering his mom's orchids and spends another $\frac{1}{5}$ of an hour watering the herbal plants in their garden. How long does Harry spend watering the plants in their garden?

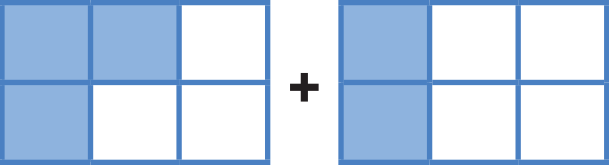
2. Karina likes to walk. This morning, she walked $\frac{4}{7}$ km from her house to Raquel's house. Then, Karina walked another $\frac{2}{7}$ km from Raquel's house to their school. How far did Karina walk?

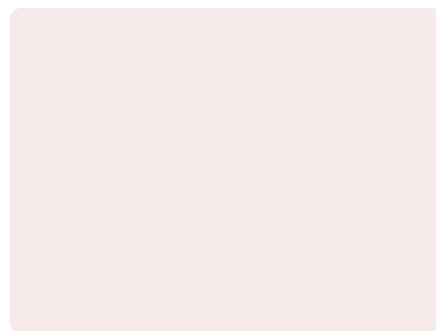
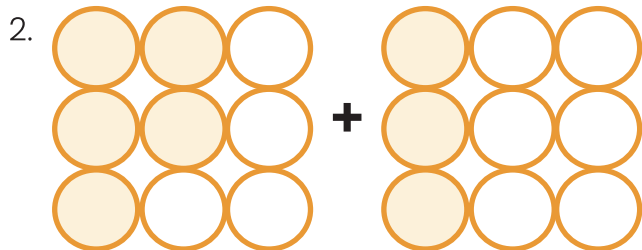
3. Harry's mom bought a dozen eggs. If his mom used $\frac{5}{12}$ of the eggs to cook an omelet and boiled the other $\frac{3}{12}$ of the eggs, what fraction of the eggs was left?

4. Glenn brought a box of pizza to school. It was sliced equally into eight pieces. He ate $\frac{1}{8}$ of the pizza and shared $\frac{6}{8}$ of the pizza with his classmates. How many slices of pizza were left?

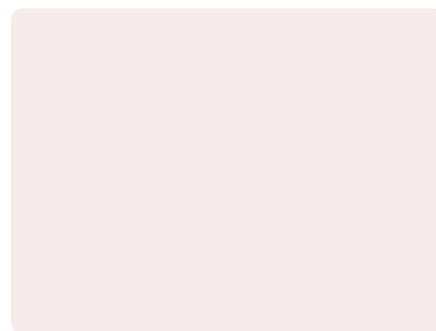
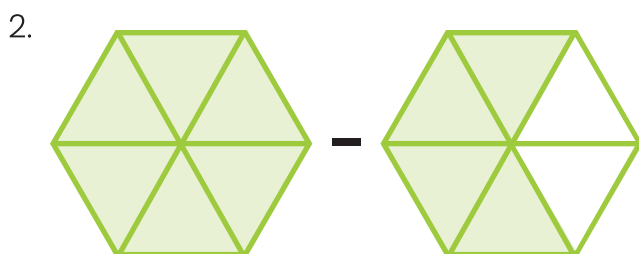
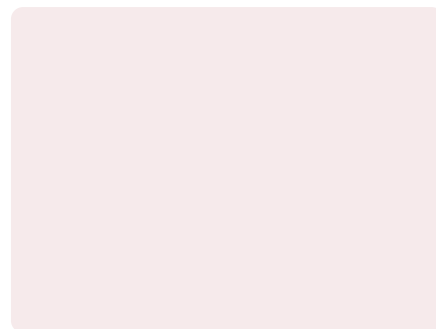
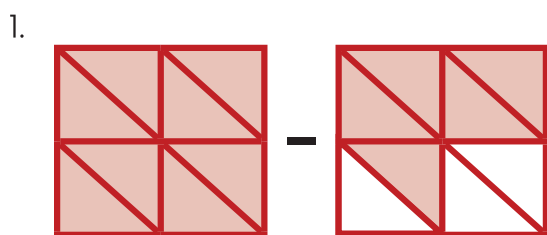
5. Mr. Amplayo, Heidi's Home Economics teacher, brought a string for the class to fence their monggo and cassava plants. He used $\frac{7}{12}$ of the string for the monggo plants. If $\frac{6}{12}$ of the string is needed to fence the cassava plants, will there still be enough string to fence them? Why?

III. A. Make a problem about addition of similar fractions. Make use of the given illustrations.

1. 



B. Construct a problem about subtraction of similar fractions. Make use of the given illustrations.





Challenge Yourself

Problem Solving Strategy: Addition and Subtraction of Three or More Similar Fractions

Heidi bought a box of rubber bands with 100 pieces. The box of rubber bands consists of the following:

$\frac{4}{20}$ yellow rubber bands

$\frac{5}{20}$ red rubber bands

$\frac{6}{20}$ blue rubber bands

$\frac{3}{20}$ white rubber bands

How many rubber bands were neither yellow, blue, red, nor white?

Unit Performance Task

You are having a rice and goods distribution. 100 sacks of rice and 1000 canned goods will be distributed. Each sack of rice is 25 kg to be equally shared to 500 people. As a community leader, you are to present a breakdown of food distribution to community officers. This breakdown should include conversion of units of mass with application of multiplication and division of whole numbers.

You will be rated according to the given criteria:

Score	Criteria		
	Multiplication of whole numbers	Division of whole numbers	Conversion of units
4	Multiplication of whole numbers are shown appropriately and correctly with complete solutions.	Division of whole numbers are shown appropriately and correctly with complete solutions.	Conversion of units are shown appropriately and correctly with complete solutions.
3	Multiplication of whole numbers are shown appropriately and correctly.	Division of whole numbers are shown appropriately and correctly.	Conversion of units are shown appropriately and correctly.
2	Multiplication of whole numbers are shown but with one error.	Division of whole numbers are shown but with one error.	Conversion of units are shown but with one error.
1	Multiplication of whole numbers are shown but with two or more errors.	Division of whole numbers are shown but with two or more errors.	Conversion of units are shown but with two or more errors.

UNIT 3

In this unit, we're going to dive into some important math ideas. We'll start by getting really good at fractions – you'll learn how to draw them, compare them, put them in order, and even find other fractions that mean the same thing. After that, we'll talk about numbers in a special way, looking at things like multiples, factors, and ways to make fractions simpler.

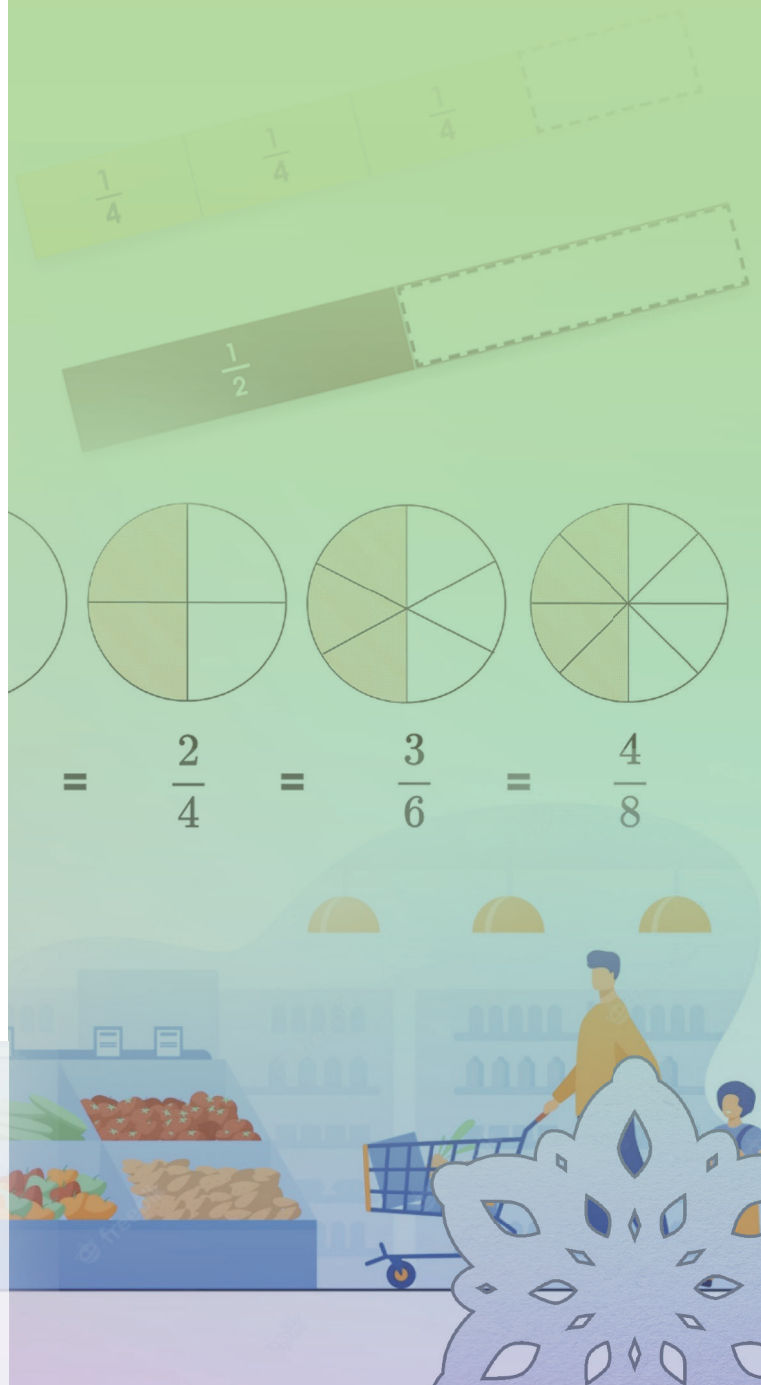
Next up, we'll take on some math problems involving fractions. We'll add and subtract them, even when they look different, and we'll tackle some tricky multi-step problems too. Finally, we'll finish off the unit by talking about shapes and how they can be balanced. You'll learn to spot when something's symmetrical, finish pictures that are symmetrical, and play around with flipping shapes in cool ways.

By the time we're done with this unit, you'll have a strong foundation in math, and you'll be really good at thinking about how shapes work.



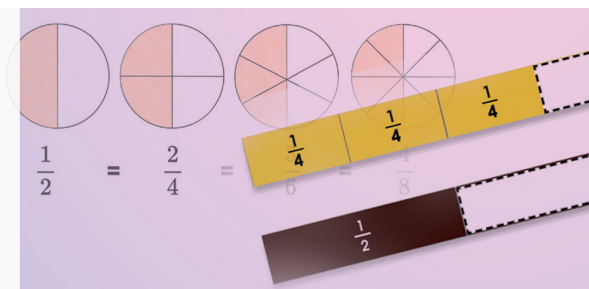
3 groups of 2 blocks

$$6 \div 3 = 2$$



LESSON 1

Dissimilar Fractions



Objectives

- ◇ Visualize dissimilar fractions.
- ◇ Compare dissimilar fractions.
- ◇ Arrange dissimilar fractions in ascending or descending order.



Vocabulary Bank

- **ascending** - from smallest to biggest
- **descending** - biggest to smallest
- **ingredient** - material needed to make a food product
- **recipe** - a list of steps and materials needed to prepare a dish



Math Tale

Baking Ingredients

Corrine joined Carlos and his mom for a baking session. They brought out the ingredients needed to bake monay. Carlos prepared $\frac{3}{4}$ cups sugar and $\frac{1}{2}$ cups butter. Which ingredient had a bigger amount?





Let's Explore

Recall that similar fractions are fractions having the same denominator. They are compared simply by comparing their numerators. The fraction having the greatest numerator is the largest fraction. The fraction having the least numerator is the smallest fraction.

Fractions that have different denominators are called dissimilar fractions. The fractions $\frac{3}{4}$ and $\frac{1}{2}$ are dissimilar.

Let's show the fractions using bars.

$\frac{3}{4}$ cups sugar



$\frac{1}{2}$ cups butter



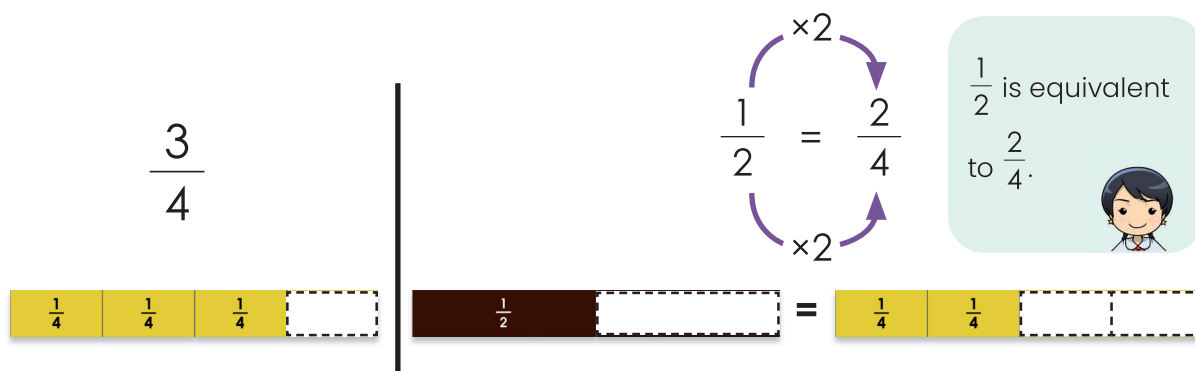
We can compare the size of the shaded parts of each bar.



Based on the bars, $\frac{3}{4}$ has more shaded parts. Therefore, recipe needed more sugar than butter.



We can also compare dissimilar fractions by **changing** them **to similar fractions**. We do this by using **equivalent fractions**.



The two fractions are now similar. We can now compare them easily.



Keep in Mind

We can compare dissimilar fractions by changing them to similar fractions using equivalent fractions.

Let's try comparing three dissimilar fractions.

Aside from $\frac{3}{4}$ cups sugar and $\frac{1}{2}$ cups butter, the recipe also needed $\frac{2}{3}$ cups powdered milk. Which ingredient had the most amount? Which ingredient had the least amount?

Let's change the fractions to similar fractions.

$$\frac{3}{4} = \frac{6}{8} = \frac{9}{12} = \frac{12}{16} = \frac{15}{20} = \frac{18}{24}$$

$$\frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{4}{8} = \frac{5}{10} = \frac{6}{12}$$

$$\frac{2}{3} = \frac{4}{6} = \frac{6}{9} = \frac{8}{12} = \frac{10}{15} = \frac{12}{18}$$

Find the equivalent fractions that have the same denominator.



$$\frac{3}{4} = \frac{9}{12}$$

$$\frac{1}{2} = \frac{6}{12}$$

$$\frac{2}{3} = \frac{8}{12}$$

Arrange the fractions from least to greatest.

$$\frac{1}{2} < \frac{2}{3} < \frac{3}{4}$$

Sugar had the most amount needed and butter had the least amount needed.



Carlos' mom also wanted to make hamburger patties. The recipe needed $\frac{1}{8}$ tablespoons of cayenne pepper sauce, $\frac{3}{4}$ tablespoons of soy sauce, and $\frac{1}{3}$ tablespoons of barbeque sauce. Compare the fraction of each ingredient and arrange them in ascending order.

Find the equivalent fractions with the same denominator.

$$\frac{1}{8} =$$

$$\frac{3}{4} =$$

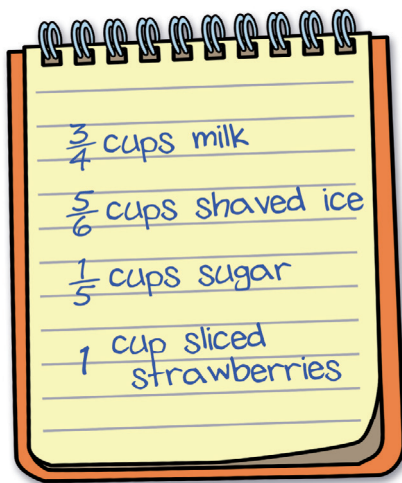
$$\frac{1}{3} =$$

Arrange the fractions from greatest to least.



Put to Practice

Carlos and Corrine made a strawberry smoothie using the recipe below. Study the ingredients and do the tasks that follow.



Task 1

Compare the amount of milk and shaved ice by indicating which ingredient needed a greater amount.

Task 2

Arrange the ingredients in descending order according to the amount needed for the recipe.



Skills Builder

I. Shade the bars according to the given fractions then compare the fractions using the symbols $>$, $<$, and $=$.

1. $\frac{5}{6}$



$\frac{7}{9}$



$\frac{5}{6}$  $\frac{7}{9}$

2. $\frac{2}{3}$



$\frac{4}{6}$



$\frac{2}{3}$  $\frac{4}{6}$

3. $\frac{4}{10}$



$\frac{4}{7}$



$\frac{4}{10}$  $\frac{4}{7}$

4. $\frac{2}{8}$ 

$\frac{3}{12}$ 

$\frac{2}{8}$  $\frac{3}{12}$

5. $\frac{6}{15}$ 

$\frac{5}{12}$ 

$\frac{6}{15}$  $\frac{5}{12}$

II. Change the fractions into similar fractions and arrange them in descending order.

1. $\frac{8}{10}$, $\frac{3}{5}$, and $\frac{1}{2}$



2. $\frac{1}{2}$, $\frac{5}{6}$, and $\frac{2}{3}$



3. $\frac{2}{3}$, $\frac{2}{12}$, and $\frac{3}{4}$



Change the fractions into similar fractions and arrange them in ascending order.

1. $\frac{1}{8}$, $\frac{3}{4}$, and $\frac{1}{2}$

--	--	--

2. $\frac{8}{10}$, $\frac{3}{5}$, and $\frac{1}{4}$

--	--	--

3. $\frac{4}{15}$, $\frac{2}{3}$, and $\frac{3}{5}$

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Portfolio Prompts

Let's Play: Comparing Fractions

You will need:

- 10 fraction cards

Number of players: 2

How to play:

1. Get 10 small pieces of cardboard and write the following fractions: $\frac{2}{3}$, $\frac{1}{4}$, $\frac{5}{6}$, $\frac{4}{10}$, $\frac{3}{5}$, $\frac{7}{12}$, $\frac{1}{9}$, $\frac{2}{5}$, $\frac{3}{9}$, and $\frac{4}{5}$.
2. Place the fraction cards face down.
3. Each player will pick a card.
4. The player with the bigger fraction will get both cards picked or drawn.
5. The player who gets the most cards wins.



Fun Facts

Jams and jellies are different. Jams are made from crushed fruits while jellies are made strictly from juice of a fruit.

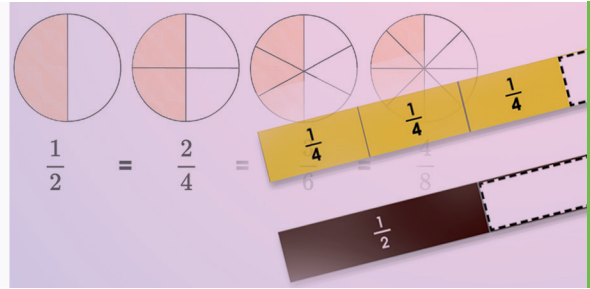


Interactives

To learn more about this lesson, you may visit TekTeach (Learning Management System).

LESSON 2

Equivalent Fractions



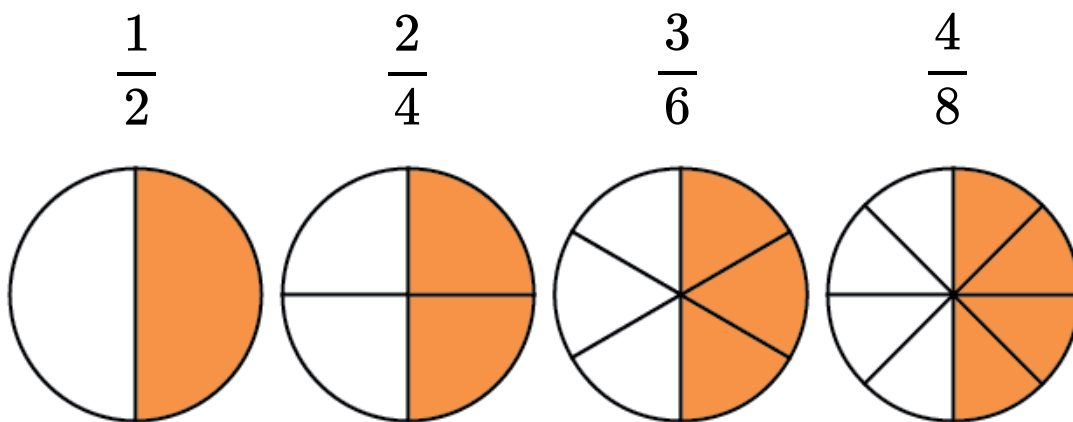
Objectives

- ◇ Determine equivalent fractions.
- ◇ Generate equivalent fractions.
- ◇ Have fun drawing in discovering and unveiling the concept of equivalent fractions.



Math Tale

While reading a book in the school library, Pete notices something on the following pictures below:



What have you noticed on the fractions?

What do you call these kinds of fractions?

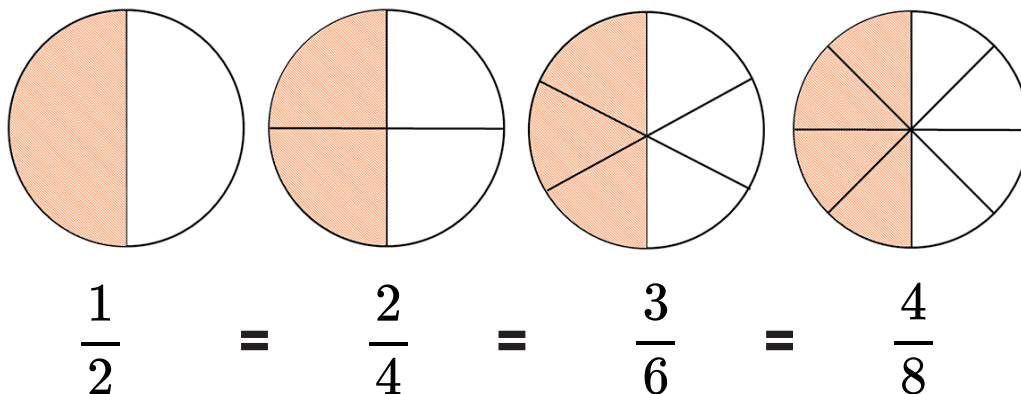


Let's Explore

This kind of fractions is what we call **Equivalent fractions**.

What are equivalent fractions?

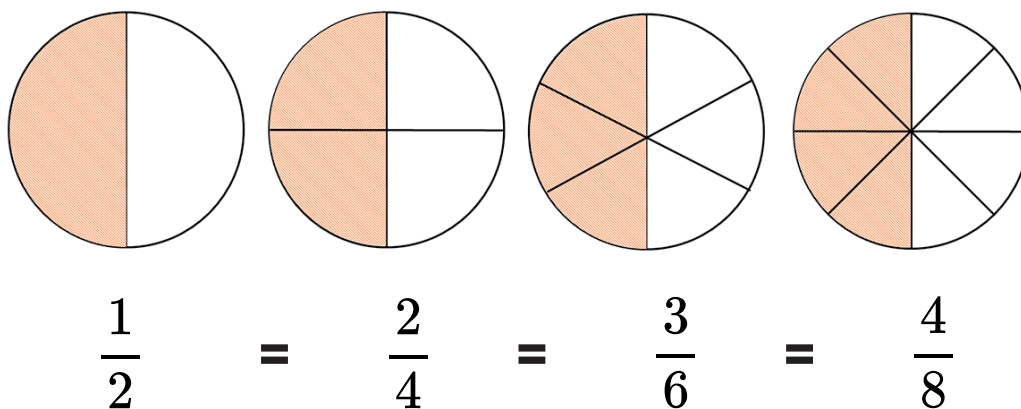
Equivalent fractions are the fractions that have different numerators and denominators but are equal to the same value.



Why do we have equal values despite having different numbers?

Even though the numerator and denominator are not co-prime numbers, still they have common multiple, which on division gives the same value.

Look on our example:



As you notice, the fractions have different numerators and denominators.

But as we divide both the numerator and denominator by their common factor, we have:

$$\frac{2 \div 2}{4 \div 2} = \frac{1}{2}$$

$$\frac{3 \div 3}{6 \div 3} = \frac{1}{2}$$

$$\frac{4 \div 4}{8 \div 4} = \frac{1}{2}$$

As you can see, they are all equal to $\frac{1}{2}$.

But aside from dividing both the numerator and denominator, we can identify equivalent fractions through visual representation using the same-sized shape and blocks like the picture above.



Put to Practice

You and your friend are exploring equivalent fractions by drawing shapes and dividing them into equal parts. You decide to draw a circle and divide it into 10 equal sectors. You color 4 of these sectors.

Task 1: Finding Equivalent Fractions

1. How much of the circle did you color? (Hint: You colored 4 out of 10 sectors.)
2. What fraction of the circle did you color? Can you write it as a fraction?
3. Can you find another way to write the fraction for the uncolored part of the circle?

Task 2: Creating More Fractions

1. If you divide each sector of the circle into smaller parts, can you find new fractions for the colored area?
2. What if you split the circle into 5 equal parts instead of 10? How do the fractions change?
3. Can you explain how the number of parts you divide the circle into affects the fractions you get?



Skills Builder

I. Match the fractions on the left with their equivalent fractions on the right.
Write the corresponding letter next to the fraction number.

1. $\frac{2}{4}$

2. $\frac{3}{6}$

3. $\frac{4}{8}$

4. $\frac{5}{10}$

5. $\frac{6}{12}$

6. $\frac{7}{14}$

7. $\frac{8}{16}$

8. $\frac{9}{18}$

9. $\frac{10}{20}$

10. $\frac{11}{22}$

a. $\frac{6}{9}$

b. $\frac{5}{10}$

c. $\frac{2}{3}$

d. $\frac{1}{2}$

e. $\frac{3}{4}$

f. $\frac{4}{6}$

g. $\frac{7}{8}$

h. $\frac{8}{12}$

i. $\frac{9}{15}$

j. $\frac{10}{14}$

II. Read each problem carefully. Solve each problem and show your work or draw your solution on the provided space. Have fun exploring equivalent fractions through drawing and problem-solving!

1. You have a rectangle divided into 8 equal parts, and you've shaded 3 of those parts. What fraction of the rectangle have you shaded?
2. Can you draw another rectangle divided into equal parts and shade the same fraction?
3. If you want to express the shaded area as an equivalent fraction with a denominator of 24, what would the numerator be?
4. How many more parts do you need to shade to make the shaded area half of the whole rectangle?



Challenge Yourself

These challenge problems aim to push your understanding of fractions and problem-solving skills. Take your time and enjoy the challenge.

Problem 1: The Pizza Party

Sarah and her friends ordered a large pizza. The pizza was divided into 16 equal slices. Sarah ate 5 slices of pizza. Her friend Emily ate 3 slices, and their other friend Jack ate 8 slices.

1. What fraction of the pizza did Sarah eat?
2. Can you express the total slices eaten by Sarah, Emily, and Jack as a fraction of the whole pizza?
3. How many slices are left after they finish eating? What fraction of the pizza is left?

Problem 2: Fraction Equations

If $\frac{2}{5}$ of a certain amount is equal to 8, what is the total amount?

Problem 3: Sharing Candies

There are 36 candies in a jar. If you want to share them equally among 9 friends, how many candies will each friend get? Can you express this as a fraction of the total candies in the jar?



Portfolio Prompts

1. Why are equivalent fractions important in everyday life?
2. In your opinion, how can the concept of equivalent fractions empower you as a student in your mathematical journey?
3. How do you see yourself applying the knowledge of equivalent fractions beyond the corners of the classroom?

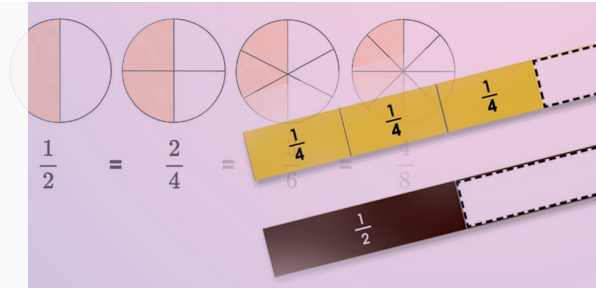


Interactives

To learn more about this lesson, you may visit TekTeach (Learning Management System).

LESSON 3

Factors and Multiples



What are the different ways of dividing 6 blocks into equal groups?

What are the multiples of 3?

Understanding factors and multiples of numbers can help you perform mathematical operations easily.



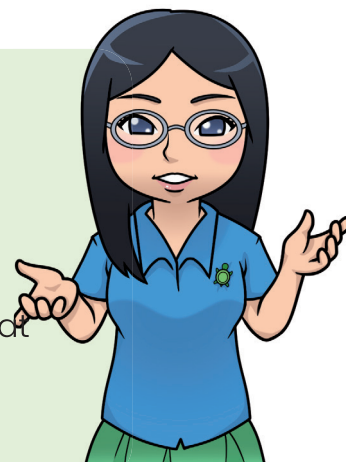
Are you ready to explore factors and multiples?

Factor

The factors of a given number are the numbers that can exactly divide it.

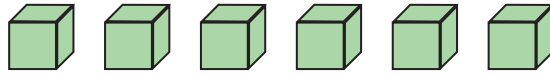
Multiple

The multiples of a given number are the products of that number and any whole number.

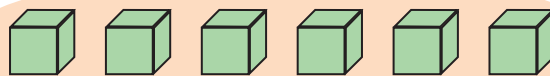


Factors of a Number

Let's answer the first question posted on the board. Consider the six blocks below.



Divide the blocks by encircling them into groups. Each group should contain the same number of blocks.



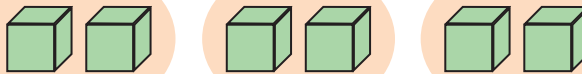
1 group of 6 blocks

$$6 \div 1 = 6$$



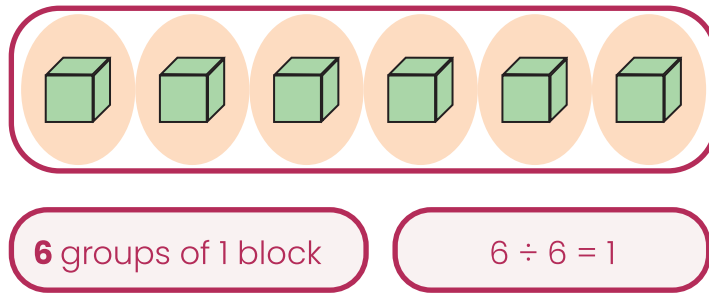
2 groups of 3 blocks

$$6 \div 2 = 3$$



3 groups of 2 blocks

$$6 \div 3 = 2$$



The six blocks can be grouped into 1, 2, 3, and 6 groups with every group having the same number of blocks.

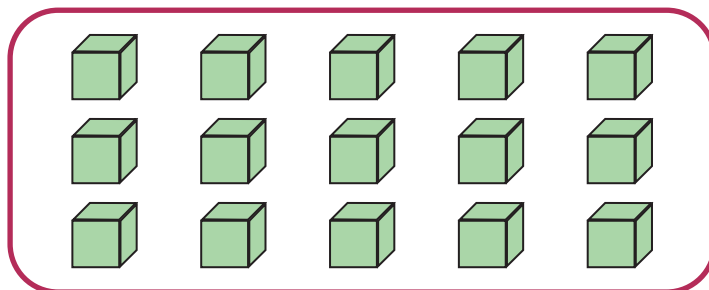
Combining the division sentences formed:

$6 \div 1 = 6$
 $6 \div 2 = 3$
 $6 \div 3 = 2$
 $6 \div 6 = 1$

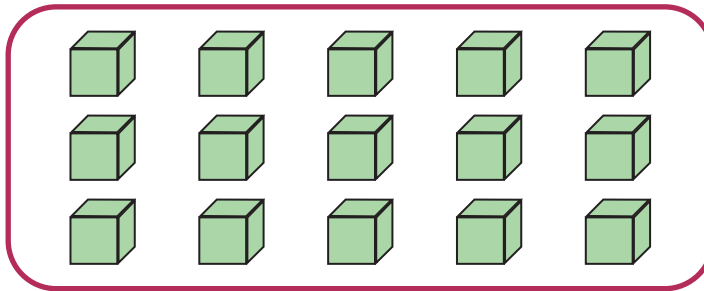
The factors of 6 are 1, 2, 3, and 6.

Now, it's your turn to find the factors of 15.

Consider the 15 blocks shown below.

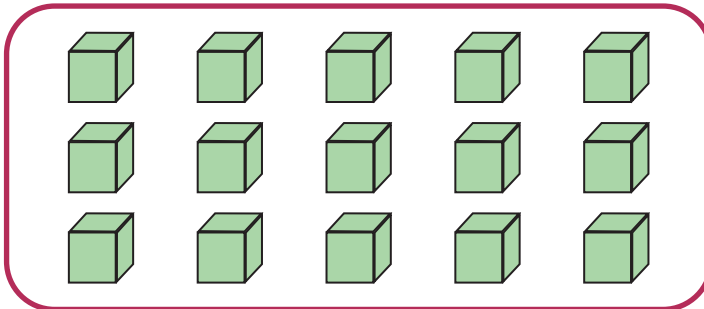


Group the blocks. Each group should have the same number of blocks.



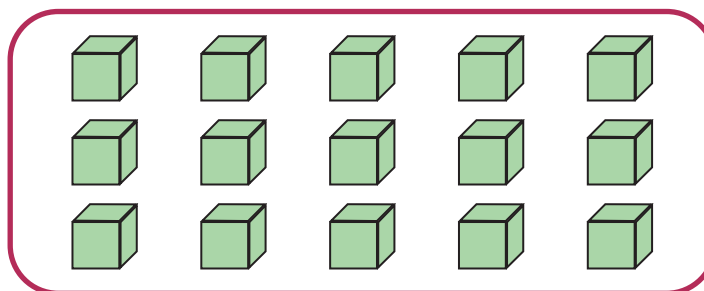
_____ group of 15
blocks

$$15 \div ______ = ______$$



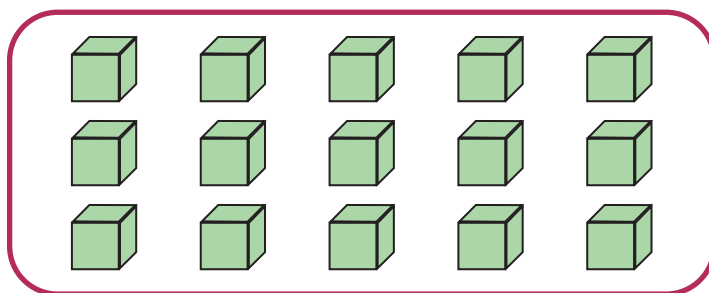
_____ groups of 5 blocks

$$15 \div ______ = ______$$



_____ groups of 3 blocks

$$15 \div ______ = ______$$



_____ groups of 1 block

$$15 \div ______ = ______$$

The 15 blocks can be grouped into , , and groups with every group having the same number of blocks. Therefore, the factors of 15 are , , , and .



Keep in Mind

If a number is even, you can easily divide it by 2. Otherwise, try to use the numbers 3, 5, 7, and so on.



Fun Facts

The digits of the first five multiples of 142 857 are the same.

$$142\,857 \times 1 = 142\,857$$

$$142\,857 \times 2 = 285\,714$$

$$142\,857 \times 3 = 428\,571$$

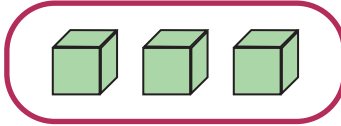
$$142\,857 \times 4 = 571\,428$$

$$142\,857 \times 5 = 714\,285$$

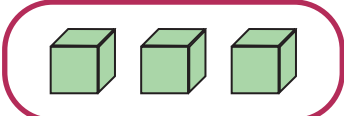
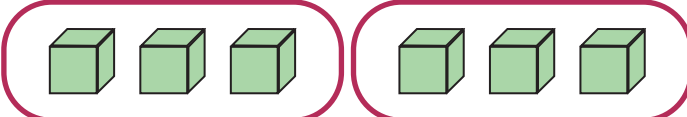
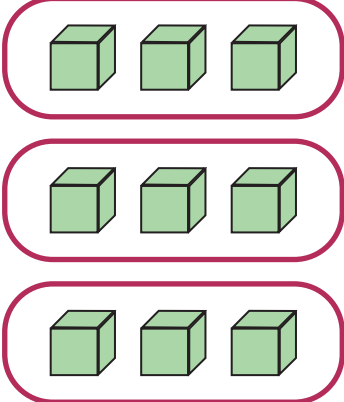
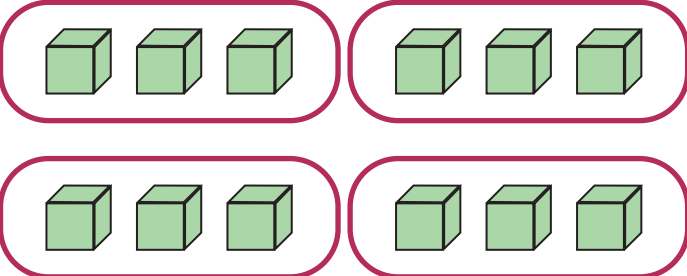
Multiples of a Number

Going back to the second question posted on the board, what are the multiples of three?

Consider a set with three blocks.



What will happen if we make multiple copies of the set? How many blocks will be there?

 1 group, 3 blocks $1 \times 3 = 3$	 2 groups, 6 blocks $2 \times 3 = \mathbf{6}$
 3 groups, 9 blocks $3 \times 3 = 9$	 4 groups, 12 blocks $4 \times 3 = 12$

Combining the multiplication sentences formed, we have:

$$1 \times 3 = 3$$

$$2 \times 3 = 6$$

$$3 \times 3 = 9$$

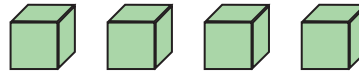
$$4 \times 3 = 12$$

3, 6, 9, and 12
are the first four
multiples of 3.



Try to find the first 5 multiples of 4.

Consider a set of 4 blocks.

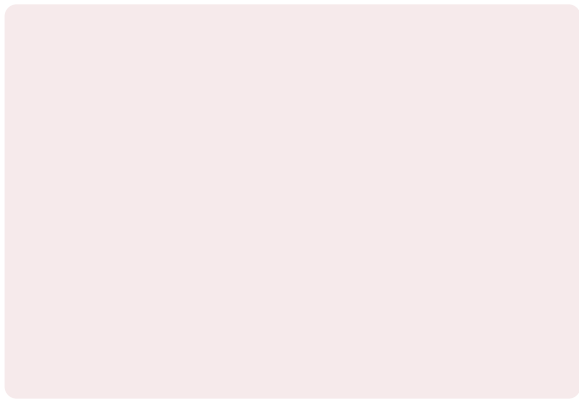


1 group, _____ blocks

$$1 \times 4 = \underline{\hspace{2cm}}$$

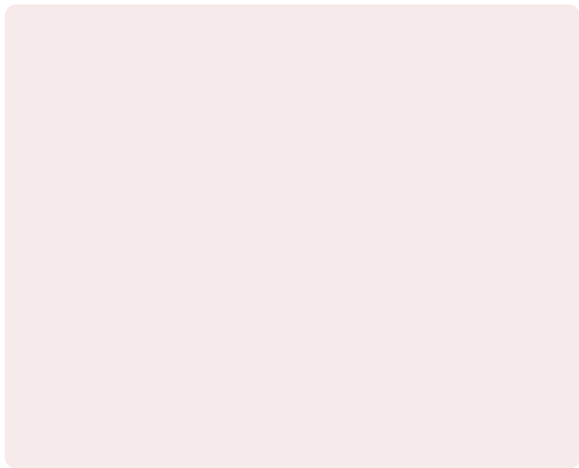
2 groups, _____ blocks

$$2 \times 4 = \underline{\hspace{2cm}}$$



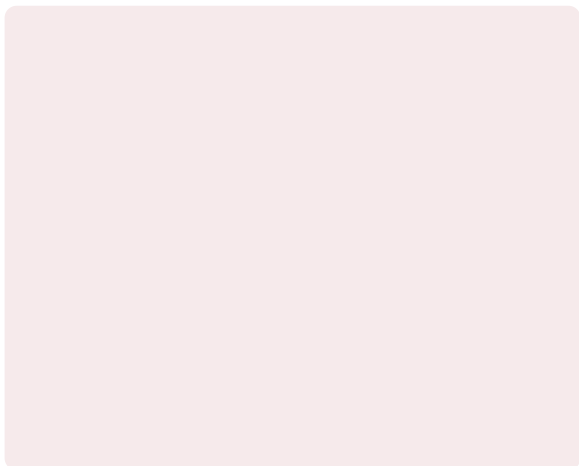
3 groups, _____ blocks

$$3 \times 4 = \underline{\hspace{2cm}}$$



4 groups, _____ blocks

$$4 \times 4 = \underline{\hspace{2cm}}$$



5 groups, _____ blocks

$$5 \times 4 = \underline{\hspace{2cm}}$$

Now, combine all the multiplication sentences formed.

$1 \times 4 = \underline{\quad}$

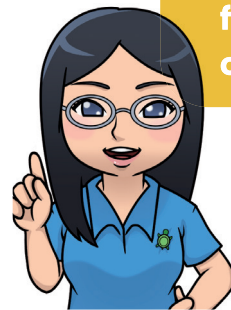
$4 \times 4 = \underline{\quad}$

$2 \times 4 = \underline{\quad}$

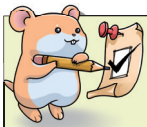
$5 \times 4 = \underline{\quad}$

$3 \times 4 = \underline{\quad}$

Answer:



What are the first 5 multiples of 4?



Keep in Mind

Unlike factors of a number, multiples of a number are countless, so you will usually be asked only for the first few multiples of a number.



Challenge Yourself

Problem Solving Strategy:

Make a Table/Guess and Check

Which among the numbers between 1 to 100 has the most number of factors?



Skills Builder

I. Encircle each number that is NOT a factor of the given number.

- | | | | | |
|---------------|----------|----------|----------|-----------|
| 1. 24 | 3 | 5 | 8 | 12 |
| 2. 35 | 3 | 5 | 7 | 9 |
| 3. 42 | 2 | 3 | 6 | 21 |
| 4. 81 | 2 | 3 | 7 | 8 |
| 5. 100 | 5 | 7 | 8 | 18 |

II. Give the first four multiples of the given number.

- | | | | | |
|--------------|----------------------|----------------------|----------------------|----------------------|
| 1. 6 | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| 2. 9 | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| 3. 15 | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| 4. 18 | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| 5. 23 | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |

III. Find the 5th multiple of the given number.

- | | | |
|----|-----------|----------------------|
| 1. | 12 | <input type="text"/> |
| 2. | 25 | <input type="text"/> |
| 3. | 64 | <input type="text"/> |
| 4. | 75 | <input type="text"/> |
| 5. | 90 | <input type="text"/> |

IV. Answer the following.

1. How many multiples of 5 are there that are less than 100?
2. How many multiples of 9 are between 9 and 999?

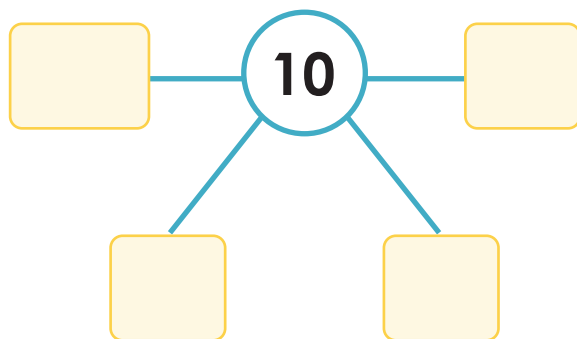


Interactives

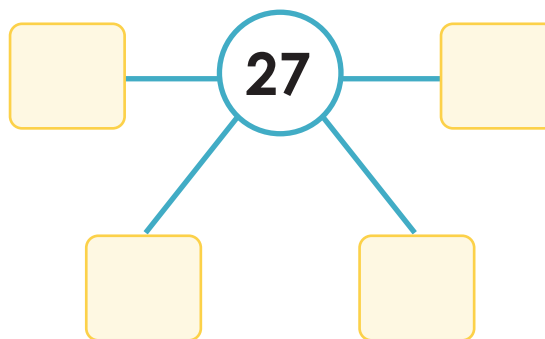
To learn more about this lesson, you may visit TekTeach (Learning Management System).

V. Give the factors of each number in 

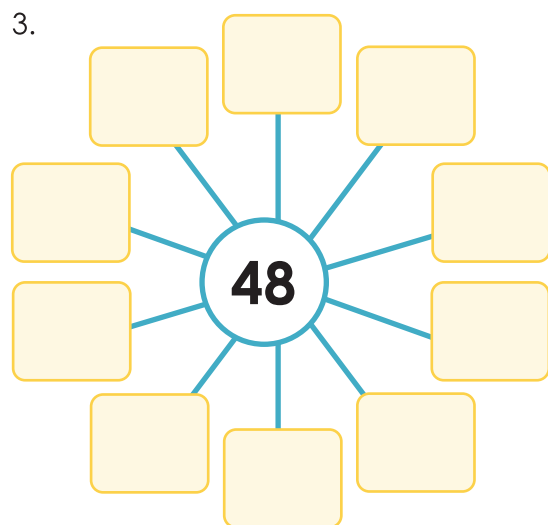
1.



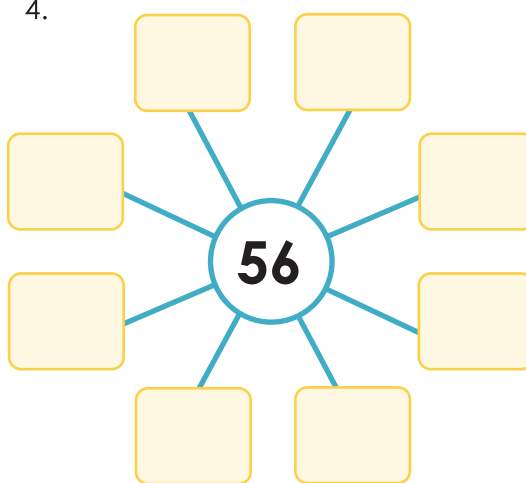
2.



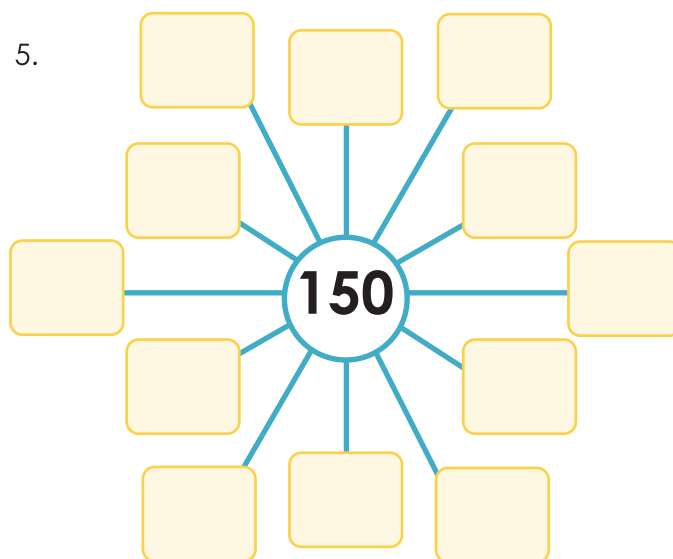
3.



4.

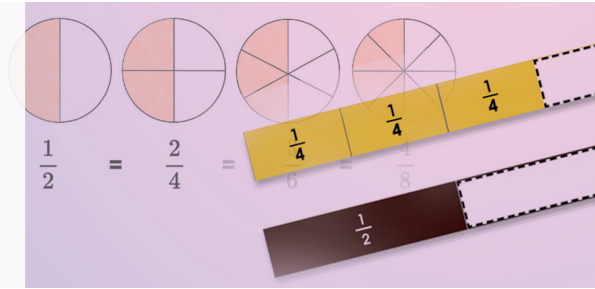


5.



LESSON 4

Lowest Term



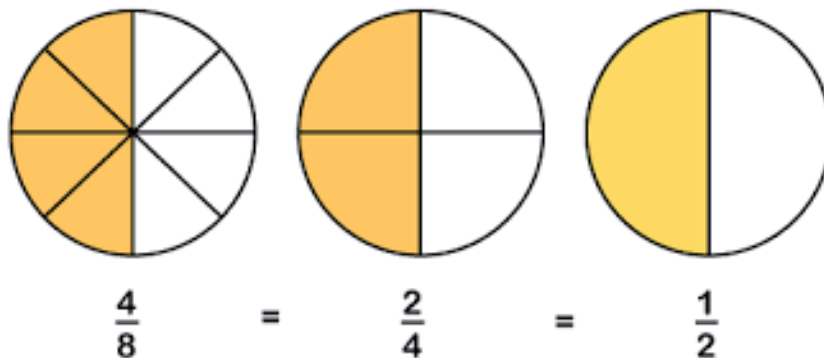
Objectives

- ◇ Determine the simplest form of a fraction.
- ◇ Use different techniques to get the simplest form of fractions.
- ◇ Apply the simplest form of fraction in everyday life.



Math Tale

While reading a book in mathematics, George noticed something strange about the illustrations of two fractions below:



What have you noticed in the illustrations about fractions?

In which topic you can relate the illustrations above?



Let's Explore

Lowest Terms of Fractions

There are two ways to get the lowest terms of fractions:

1. By Repeated Division

In this method, we divide both the numerator and the denominator repeatedly by the same number until the numerator and denominator is a prime number.

2. Dividing by the Greatest Common Factor (GCF)

In this method, we look for the greatest common factor of both the numerator and the denominator. Then, we divide both by the GCF.

Example:

Find the lowest term of $\frac{32}{48}$.

Solution:

Using the repeated division method, we will divide both numerator and denominator with the same number.

Since both are even numbers, they can be divided by 2.

$$\frac{32}{48} \div \frac{2}{2} = \frac{16}{24}$$

We know that 16 and 24 can be divided by 8.

$$\frac{16}{24} \div \frac{8}{8} = \frac{2}{3}$$

Since there is no other number that can divide 2 and 3 except for 1.

Solution:

Using the greatest common factor or GCF

First let us look for the GCF of 32 and 48.

In our previous lesson, we know how to get the factors of numbers.



Since the GCF of 32 and 48 is 16. Divide both the numerator and denominator by 16.

$$\frac{32}{48} \div \frac{16}{16} = \frac{2}{3}$$

The simplest form of $\frac{32}{48}$ is $\frac{2}{3}$.

We still get the same result using the GCF Method.



Put to Practice

Sarah has a pizza divided into 8 equal slices. She eats $\frac{3}{8}$ of the pizza for lunch and saves the rest for later. She wants to share the remaining pizza equally with her two friends.

Task 1

1. How many slices did Sarah eat for lunch?
2. How many slices of pizza does Sarah have left after eating lunch?
3. How many slices of pizza will each friend get if Sarah shares the remaining pizza equally with them?

Task 2

1. Express the number of slices each friend gets as a fraction in its simplest form.
2. Can you explain why it's important for Sarah to express the number of slices each friend gets in its simplest form?



Skills Builder

1. What is the simplest form of the fraction $\frac{12}{18}$?

a. $\frac{2}{3}$

b. $\frac{3}{4}$

c. $\frac{4}{5}$

d. $\frac{5}{6}$

2. Which fraction is in its simplest form?

a. $\frac{16}{24}$

b. $\frac{3}{9}$

c. $\frac{10}{15}$

d. $\frac{8}{12}$

3. Reduce the fraction $\frac{20}{30}$ to its simplest form.

a. $\frac{5}{6}$

b. $\frac{2}{3}$

c. $\frac{3}{4}$

d. $\frac{4}{5}$

4. What is the simplest form of $\frac{24}{36}$?

a. $\frac{2}{3}$

b. $\frac{3}{4}$

c. $\frac{5}{6}$

d. $\frac{4}{5}$

5. Reduce $\frac{14}{21}$ to its simplest form.

a. $\frac{1}{2}$

b. $\frac{2}{3}$

c. $\frac{3}{4}$

d. $\frac{4}{5}$

6. Which fraction is not in its simplest form?

a. $\frac{9}{15}$

b. $\frac{6}{10}$

c. $\frac{4}{8}$

d. $\frac{7}{14}$

7. Simplify $\frac{28}{35}$.

a. $\frac{4}{5}$

b. $\frac{5}{6}$

c. $\frac{6}{7}$

d. $\frac{7}{8}$

8. What is the simplest form of $\frac{45}{63}$?

a. $\frac{5}{7}$

b. $\frac{7}{9}$

c. $\frac{3}{5}$

d. $\frac{9}{11}$

9. Reduce $\frac{32}{48}$ to its simplest form.

a. $\frac{2}{3}$

b. $\frac{3}{4}$

c. $\frac{4}{5}$

d. $\frac{5}{6}$

10. What is the simplest form of $\frac{60}{90}$?

a. $\frac{3}{4}$

b. $\frac{4}{5}$

c. $\frac{2}{3}$

d. $\frac{5}{6}$

III. Match each item on the left with its correct partner on the right by writing the letter of the match.

1. $\frac{16}{24}$

2. $\frac{10}{20}$

3. $\frac{18}{27}$

4. $\frac{9}{15}$

5. $\frac{24}{40}$

6. $\frac{12}{18}$

7. $\frac{20}{25}$

8. $\frac{30}{42}$

9. $\frac{14}{21}$

10. $\frac{36}{48}$

a. $\frac{3}{5}$

b. $\frac{2}{3}$

c. $\frac{4}{5}$

d. $\frac{3}{4}$

e. $\frac{2}{5}$

f. $\frac{1}{2}$

g. $\frac{3}{4}$

h. $\frac{5}{6}$

i. $\frac{2}{3}$

j. $\frac{4}{7}$

IV. Read the problems carefully, show your work neatly.

1. Mary baked 24 cookies. She ate $\frac{3}{8}$ of them and gave $\frac{1}{6}$ of what was left to her friend. How many cookies did Mary's friend receive?
2. A recipe calls for $\frac{3}{4}$ cups of sugar, but Sam only has $\frac{1}{3}$ cups. How much more sugar does Sam need?
3. There are 48 students in a class. If $\frac{5}{6}$ of them passed the test, how many students failed?
4. A piece of ribbon is 36 inches long. Sarah cuts $\frac{3}{8}$ of the ribbon for her project. How many inches of ribbon does Sarah have left?
5. David has 15 stickers. He gives away $\frac{3}{5}$ of them to his sister. How many stickers does David have left?



Challenge Yourself

Shade the box that contains the simplest form of the given fraction.

1. $\frac{12}{24}$	$\frac{1}{2}$	$\frac{2}{3}$	$\frac{3}{4}$
2. $\frac{14}{28}$	$\frac{3}{7}$	$\frac{1}{2}$	$\frac{7}{8}$



Portfolio Prompts

Read these questions and share your thoughts about it.

1. Why it is important to simplify fractions to their lowest terms?
2. Think of a real-life scenario where knowing how to reduce fractions to their lowest terms would be useful?
3. What strategies can you use to quickly identify the greatest common factor when simplifying fractions?

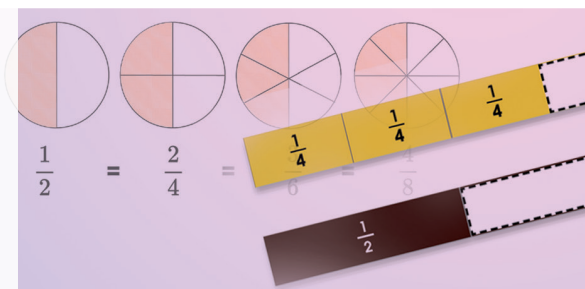


Interactives

To learn more about this lesson, you may visit TekTeach (Learning Management System).

LESSON 5

Adding and Subtracting Dissimilar Fractions



Objectives

- ◇ Visualize addition and subtraction of dissimilar fractions.
- ◇ Solve problems on addition and subtraction of fractions.



Vocabulary Bank

- **dissimilar fractions** - fractions that have different denominators
- **LCD (Least Common Denominator)** - the LCM of the denominators of the given fractions



Math Tale

Harry and his mom went to the market to buy ingredients for their weekend family salusalo. His mom bought $\frac{3}{4}$ kg of fish and $\frac{1}{2}$ kg of chicken.

What was the combined weight of the fish and the chicken?





Let's Explore

In the given problem, we need to look for the total weight of the fish and the chicken. To solve this, we need to add $\frac{3}{4}$ kg to $\frac{1}{2}$ kg. Unlike in the previous lesson, these fractions are **dissimilar** because they **do not have the same denominators**.

To add them, we need to write them as similar fractions.

First, find the **Least Common Denominator (LCD)** of the two fractions. The LCD is the LCM of the two denominators, 4 and 2.



The LCM of 4 and 2 is 4. Write $\frac{3}{4}$ and $\frac{1}{2}$ as fractions with 4 as their denominator.

$$\frac{3}{4} = \frac{3}{4}$$

$$\frac{1}{2} = \frac{2}{4}$$

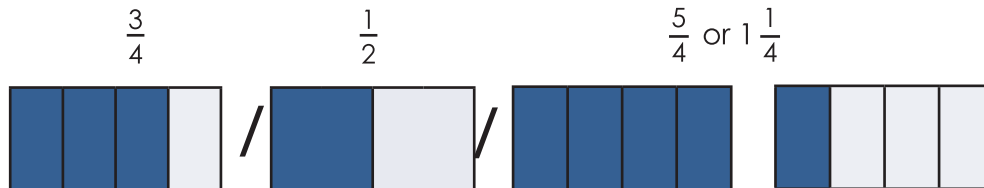
We only need to write $\frac{1}{2}$ as a fraction with 4 as its denominator.

Multiply the numerator and the denominator of $\frac{1}{2}$ by 2.

$$\frac{1}{2} = \frac{1 \times 2}{2 \times 2} = \frac{2}{4}$$

$$\frac{3}{4} + \frac{2}{4} = \frac{5}{4}$$

We can easily add them now that they are similar fractions.





Keep in Mind

To find any equivalent fraction with a new denominator:

Divide the new denominator by the original denominator.

Multiply the result with the original numerator. The result will be the new numerator.

For example: To find an equivalent fraction for $\frac{3}{4}$ that has 20 as the denominator.

Divide 20 by 4. ($20 \div 4 = 5$)

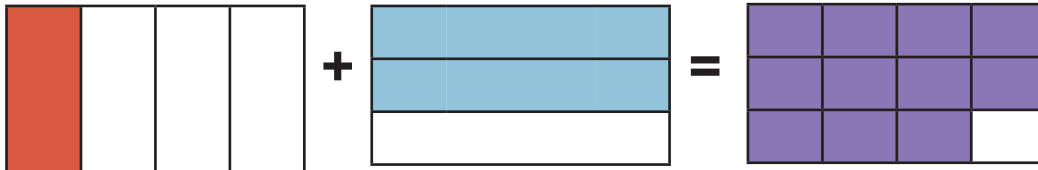
Multiply 5 by 3. ($5 \times 3 = 15$)

The fraction equivalent to $\frac{3}{4}$ is $\frac{15}{20}$.

We can also just multiply 3 and 4 by 5.

$$\left(\frac{3 \times 5}{4 \times 5} = \frac{15}{20} \right)$$

Harry's mom bought $\frac{1}{4}$ kg of garlic and $\frac{2}{3}$ kg of tomatoes. What was the combined weight of the garlic and tomatoes?



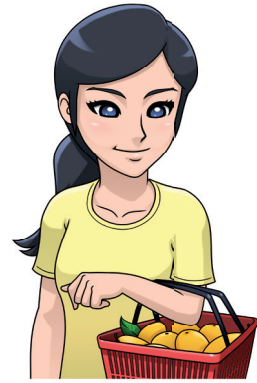
What is the LCD of the two dissimilar fractions?

Write each fraction with the LCD as the denominator.

What is the sum of the two similar fractions?



Let's Explore



Harry's mom picked a 3 kg basket of ripe mangoes but decided to return $\frac{3}{4}$ kg of it. How many kilograms of mangoes did Harry's mom buy?

We are looking for the weight of mangoes that Harry's mom bought.

We can solve for it by subtracting $\frac{3}{4}$ kg from 3 kg.

The steps in subtracting dissimilar fractions is shown below:

$$\boxed{} \boxed{} \boxed{} - \boxed{} \boxed{} \boxed{} = ?$$

$$3 \rightarrow \frac{3}{1}$$

First, note that $3 = \frac{3}{1}$.

Find the LCD of the two fractions. This is the LCM of the denominators, 1 and 4, which is 4. So, the LCD of $\frac{3}{1}$ and $\frac{3}{4}$ is 4.

Now, find the fractions equivalent to $\frac{3}{1}$ and $\frac{3}{4}$ with 4 as the denominator.

$$\frac{3}{1} \rightarrow \frac{12}{4}$$

$$\frac{3}{4} \rightarrow \frac{3}{4}$$

$$\frac{12}{4} - \frac{3}{4} = \frac{9}{4}$$

Subtract the similar fractions.



Therefore, Harry's mom bought $\frac{9}{4}$ kg or $2\frac{1}{4}$ kg of ripe mangoes.





Keep in Mind

Before subtracting dissimilar fractions, you must first change the fractions to similar fractions.

Study the example on how to subtract mixed numbers.

$$4\frac{3}{5} - 1\frac{1}{2} = ?$$

Method 1

$$\begin{array}{r} 4\frac{3}{5} = 4\frac{6}{10} \\ - 1\frac{1}{2} = 1\frac{5}{10} \\ \hline 3\frac{1}{10} \end{array}$$

Method 2

$$\begin{array}{r} 4\frac{3}{5} = \frac{23}{5} = \frac{46}{10} \\ - 1\frac{1}{2} = \frac{3}{2} = \frac{15}{10} \\ \hline \frac{31}{10} \text{ or } 3\frac{1}{10} \end{array}$$

Let's try another example.

$$3\frac{1}{3} - 1\frac{5}{6} = ?$$

Method 1

$$\begin{array}{r} 3\frac{1}{3} = 3\frac{2}{6} = 2\frac{8}{6} \\ - 1\frac{5}{6} = 1\frac{5}{6} = 1\frac{5}{6} \\ \hline 1\frac{3}{6} \text{ or } 1\frac{1}{2} \end{array}$$

Method 2

$$\begin{array}{r} 3\frac{1}{3} = \frac{10}{3} = \frac{20}{6} \\ - 1\frac{5}{6} = \frac{11}{6} = \frac{11}{6} \\ \hline \frac{9}{6} \text{ or } 1\frac{3}{6} \text{ or } 1\frac{1}{2} \end{array}$$

After buying ripe mangoes, Harry's mom bought green mangoes. She picked a $\frac{1}{2}$ kg basket of green mangoes but decided to remove $\frac{1}{3}$ kg of it. How much did she buy?

$$\frac{1}{2} - \frac{1}{3} = ?$$

What is the LCD of the two dissimilar fractions?

What are the two similar fractions?

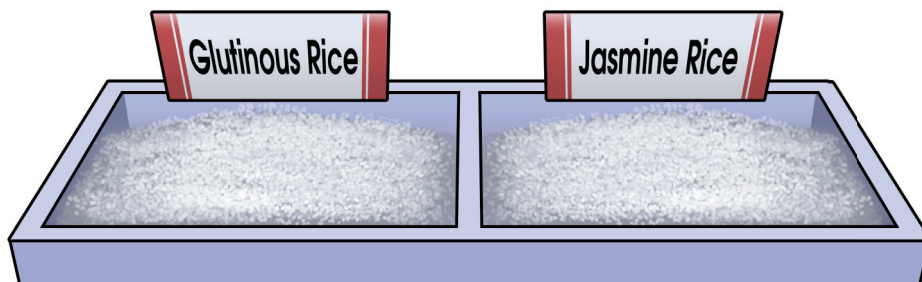
What is the difference of the two similar fractions?

Is your answer in simplest form? If not, simplify it.



Put to Practice

Harry's mom also bought $1\frac{3}{4}$ kg of jasmine rice and $1\frac{1}{2}$ kg of glutinous rice.



Task 1

Determine the total weight of the rice Harry's mother purchased.

Task 2

Determine how much more jasmine rice was bought than glutinous rice.



Challenge Yourself

Problem Solving Strategy:

Addition and Subtraction of Three or More Dissimilar Fractions

The canteen chef baked five chocolate cakes. Mrs. Santos planned to buy $1\frac{3}{5}$ of the cakes. Mr. Calizo planned to bring home to his family $2\frac{1}{2}$ of the cakes. Miss Pilar also planned to buy $1\frac{1}{4}$ of the cakes. Would the chocolate cakes in the canteen be enough for the three teachers? Why? Explain your answer.



Skills Builder

I. Find the sum or difference of the following dissimilar fractions. Write your answer in the simplest form.

1. $\frac{3}{5} + \frac{3}{4} = \boxed{-}$

4. $\frac{7}{8} - \frac{3}{4} = \boxed{-}$

2. $\frac{3}{4} + \frac{5}{6} = \boxed{-}$

5. $-\frac{7}{3} = \boxed{-}$

3. $\frac{3}{4} + \frac{3}{5} = \boxed{-}$

II. Draw α :

- $>$ if the value in Column A is greater than the value in Column B.
 $<$ if the value in Column B is greater than the value in Column A.
 $=$ if the two values are equal.

COLUMN A

1. $\frac{3}{8} + \frac{5}{6}$

2. $8 - \frac{12}{5}$

3. $\frac{8}{9} - \frac{2}{3}$

4. $\frac{7}{6} + \frac{1}{4}$

COLUMN B

$\frac{2}{3} + \frac{1}{2}$

$\frac{7}{2} + \frac{8}{3}$

$1 - \frac{7}{9}$

$\frac{1}{3} + \frac{5}{4}$

III. Read and answer each problem carefully. Use the space provided to show your solution.

1. The distance from Harry's house to the park is $\frac{3}{5}$ km, while the park is $\frac{11}{6}$ km away from the mall. How far is Harry's house from the mall?

2. Tita Linda's basket has $\frac{4}{5}$ kg of bananas and $\frac{5}{6}$ kg of strawberries. How much fruit is in Tita Linda's basket?

3. Aling Winda has a special weighing scale that can only weigh up to 5 kg. If she puts $3\frac{1}{2}$ kg of rice on it, how much more weight can she add without breaking the special weighing scale?

4. Mang Leo painted $\frac{3}{8}$ of the new clinic and Mang Jose painted $\frac{2}{5}$ of it. What part of the clinic is not yet painted?

5. Don Henricko owns 8 hectares of farm land. $3\frac{1}{3}$ hectares are planted with calamansi trees and $2\frac{2}{5}$ hectares are planted with pineapples. How much is more land available for other plants?

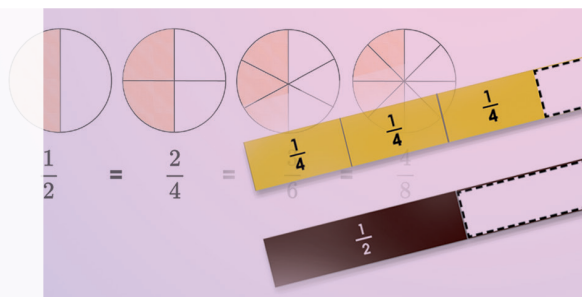


Interactives

To learn more about this lesson, you may visit TekTeach (Learning Management System).

LESSON 6

Adding and Subtracting Dissimilar and Mixed Fractions



Objectives

- ◇ Add or subtract mixed fractions and dissimilar fractions.
- ◇ Express the sum and difference of dissimilar fractions in simplest form.
- ◇ Utilized addition and subtraction of dissimilar and mixed fractions to solve mathematical scenarios.



Vocabulary Bank

- **contribute** – to give something, such as time, money, or effort, to help achieve a goal or purpose
- **perseverance** – the quality of persisting in a task despite challenges, obstacles, or difficulties
- **abundance** – a large quantity or plenty of something; a state of having more than enough



Math Tale

Alvin accompanied his father to the grocery store to buy some vegetables his mother asked. On their way to the vegetable section, he noticed that they are buying $2\frac{3}{5}$ kg of carrots and $\frac{17}{10}$ kg of potatoes.



What was the combined weight of the carrots and potatoes?



Let's Explore

For today, we are going to talk about **adding and subtracting dissimilar and mixed fractions**.

In the given problem above, we need to look for the total weight of the carrots and potatoes. To solve this, we have two methods you can do.

Method 1:

Here are our steps in solving using the first method.

1. We can change the improper fraction into a mixed fraction.
2. If the fractions are still dissimilar find the LCD.
3. Compute for the desired operation.

Let's change first $\frac{17}{10}$ to mixed fraction:

$$\frac{17}{10} \longrightarrow 1\frac{7}{10}$$

To get the mixed fraction just simply divide the number and the remainder becomes the numerator of the fraction and copy only the denominator.

Since we already changed the improper fraction, we can now find the LCD of the fractions.

$$\begin{array}{r}
 2\frac{3}{5} = 2\frac{6}{10} \\
 + \quad 1\frac{7}{10} = 1\frac{7}{10} \\
 \hline
 3\frac{13}{10} = \frac{10}{10} + \frac{3}{10} \\
 \mathbf{4\frac{3}{10}}
 \end{array}$$

Since the fraction exceeds the denominator, we can say that it is same as $\frac{10}{10} + \frac{3}{10}$ and $\frac{10}{10}$ is equal to 1. Therefore, we add 1 to the whole number.

Method 2:

Here are the steps in solving using the second method:

1. Change the mixed fraction into improper fraction.
2. Find the LCD of the fractions.
3. Compute for the desired operation.

Let's change the mixed fraction into an improper fraction.

$$2\frac{3}{5} \longrightarrow \frac{13}{5}$$

To get the improper fraction simply multiply the denominator to the whole number and add the numerator and copy the denominator.

Since we already changed the mixed numbers, we can now find the LCD of the denominators.

$$\begin{array}{r}
 2\frac{3}{5} = \frac{13}{5} = \frac{26}{10} \\
 + \quad \frac{17}{10} = \frac{17}{10} \\
 \hline
 \mathbf{\frac{43}{10} \text{ or } 4\frac{3}{10}}
 \end{array}$$



Put to Practice

During a bake sale, Emily sold $2\frac{1}{2}$ dozen cookies in the morning and $3\frac{3}{4}$ dozen cookies in the afternoon. Each dozen cookies sold for PhP 550. How much money did Emily make in total from selling cookies during the bake sale?

1. What information is given in the problem?
2. What operation do you need to perform to solve the problem? Addition, subtraction, multiplication, or division?
3. What steps do you need to take to solve the problem?
4. Calculate each part of the problem step by step.
5. Does your answer make sense? Did you perform the calculations accurately?



Skills Builder

I. Read each question below. Encircle the letter of the correct answer.

1. What is the result of adding $\frac{2}{5}$ and $\frac{3}{8}$?
a. $\frac{37}{40}$ b. $\frac{31}{40}$ c. $\frac{35}{40}$ d. $\frac{33}{40}$
2. If you have $2\frac{1}{2}$ apples and you eat $1\frac{3}{4}$ apples, how many apples left?
a. $\frac{1}{4}$ b. $1\frac{1}{4}$ c. $1\frac{2}{4}$ d. $\frac{2}{4}$
3. Which of the following is the correct way to subtract $3\frac{1}{4}$ from $5\frac{2}{3}$?
a. $2\frac{3}{7}$ b. $1\frac{3}{4}$ c. $2\frac{5}{12}$ d. $2\frac{3}{4}$
4. If you add $\frac{1}{5}$ to $3\frac{1}{4}$, what is the result?
a. $3\frac{9}{20}$ b. $4\frac{3}{15}$ c. $3\frac{7}{20}$ d. $4\frac{9}{20}$

5. What is the difference between $4\frac{3}{8}$ and $2\frac{5}{6}$?
- a. $1\frac{1}{4}$ b. $1\frac{13}{24}$ c. $1\frac{11}{24}$ d. $1\frac{5}{8}$
6. What is the sum of $2\frac{1}{5}$ and $3\frac{1}{3}$?
- a. $5\frac{4}{15}$ b. $5\frac{7}{15}$ c. $5\frac{8}{15}$ d. $5\frac{6}{15}$
7. If you have $1\frac{3}{4}$ cups of water and you pour out $\frac{3}{5}$ cups, how much water do you have left?
- a. $\frac{7}{4}$ cups b. $1\frac{4}{21}$ cups c. $1\frac{3}{20}$ cups d. $\frac{5}{4}$ cups
8. What is the result of subtracting $\frac{2}{9}$ from $\frac{4}{8}$?
- a. $\frac{7}{18}$ b. $\frac{4}{18}$ c. $\frac{9}{18}$ d. $\frac{5}{18}$
9. If you take $4\frac{1}{2}$ kg of fish from a 7 kg bucket of fish, how many kilograms are left?
- a. $3\frac{1}{2}$ kg b. $2\frac{1}{2}$ kg c. $4\frac{1}{2}$ kg d. $1\frac{1}{2}$ kg
10. If you add $3\frac{2}{3}$ and $1\frac{4}{5}$, what is the total?
- a. $5\frac{7}{15}$ b. $5\frac{9}{15}$ c. $5\frac{3}{8}$ d. $5\frac{1}{3}$

II. Compare the following fractions and decide if they are greater than, less than, or equal to each other. Just use the following symbols $>$, $<$, or $=$ in putting inside the box.

$1\frac{3}{5} + \frac{18}{5}$		$\frac{20}{5} + \frac{15}{2}$
$5\frac{1}{3} - 1\frac{1}{2}$		$3\frac{1}{2} - \frac{1}{4}$

III. Problem Solving

1. Sarah has $3\frac{1}{2}$ pizzas, and her friend brings $2\frac{3}{4}$ pizzas to their party. How many pizzas do they have altogether?
2. If you have $5\frac{2}{3}$ cups of flour and you use $3\frac{1}{4}$ cups to bake cookies, how much flour will you have left?
3. Jason has $7\frac{3}{5}$ action figures, and he buys $4\frac{2}{3}$ more. How many action figures does he have in total now?
4. There are $9\frac{1}{4}$ candies in a jar. If $5\frac{3}{4}$ candies are shared among friends, how many candies remain in the jar?
5. A school trip requires $12\frac{1}{2}$ sandwiches for the students. If they already have $8\frac{3}{4}$ sandwiches packed, how many more sandwiches do they need to prepare?



Challenge Yourself

Answer the following questions. Show your complete step-by-step solutions.

1. Sarah is making a fruit salad and needs to combine $\frac{2}{3}$ cup of strawberries with $\frac{1}{4}$ cup of blueberries. She also wants to add $\frac{1}{2}$ cup of mangoes. After combining these fruits, she realizes the total amount is too much for her bowl. If her bowl can only hold 1 cup of fruit, how much of the fruit mixture does she need to remove to fit it into the bowl?
2. Mark is building a rectangular fence for his garden. He uses $\frac{3}{5}$ meter of wooden planks for the length and $\frac{2}{3}$ meter for the width. If he wants the fence to be exactly 2 meters around, how much does he need to cut off from the length and the width combined to achieve the desired perimeter?
3. Emily and her friends order a pizza with $\frac{3}{8}$ pepperoni, $\frac{1}{6}$ sausage, and $\frac{1}{4}$ mushrooms. If they want to split the pizza equally among 4 friends, how much of each topping should each friend get? Express your answer as a fraction in its simplest form.



Portfolio Prompts

Read these questions and share your thoughts about them.

1. How do you decide whether to add or subtract when working with mixed fractions? Can you give an example of a real-life situation where adding mixed fractions would be more appropriate and another where subtracting them would be the better choice?
2. What strategies or tools have you found most helpful when adding and subtracting mixed fractions? Are there any patterns or shortcuts you've discovered that make these operations easier to understand and perform?
3. Can you explain why it's essential to convert mixed fractions into improper fractions before adding or subtracting them? How does this conversion make the calculations more straightforward? Can you provide an example to illustrate this concept?

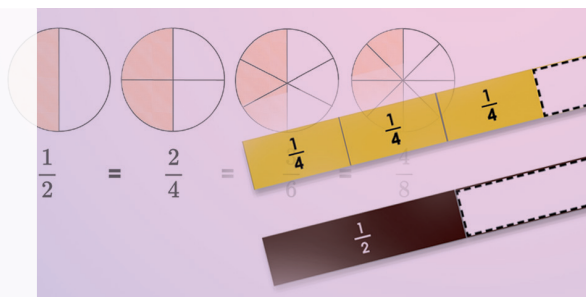


Interactives

To learn more about this lesson, you may visit TekTeach (Learning Management System).

LESSON 7

Problem Solving – Fractions



Objectives

- ◇ Remember the process of solving addition and subtraction of fractions.
- ◇ Analyze and select appropriate different strategies for solving real-world problems involving addition and subtraction of fractions.
- ◇ Collaborate with peers in groups and discussions to explore and solve fraction-based problems.



Vocabulary Bank

- **curious** – wanting to know or learn about something
- **abundant** – having a lot of something
- **reliable** – you can trust something or someone to do what they are supposed to do



Math Tale

Peter the pirate wants to find the treasure he has been looking for a long time, when he finds the map of the location of the treasure, he notices on the bottom part that there is a mathematical problem wherein it decodes the final location of the treasure.



Would you help Peter to find the treasure?



Let's Explore

The problem written in the map states that: *"On the location of the treasure, you need to dig up to $4\frac{1}{3}$ feet and then remove $\frac{5}{8}$ feet of layered rocks."* How deep is the location of the treasure?

Remember that we have steps to follow in answering word problems:

Step 1: Write/List down the given.

Step 2: Write what is being asked in the problem.

Step 3: Determine the operation to be used.

Step 4: Show your complete solution.

Step 5: Write your conclusion.

Let's now help Peter to find the answer on the problem stated in the bottom part of the map.

Step 1: The given in the problem are the following:

$4\frac{1}{3}$ feet and $\frac{5}{8}$ feet

Step 2: Write what is being asked in the problem:

How deep is the location of the treasure?

Step 3: Determine the operation to be used:

Since there are two layers, we need to use **addition**.

Step 4: Solution:

$$\begin{array}{r} 4\frac{1}{3} = \frac{13}{3} = \frac{104}{24} \\ + \frac{5}{8} = \frac{5}{8} = \frac{15}{24} \\ \hline \frac{119}{24} \text{ or } 4\frac{23}{24} \end{array}$$

Step 5: Write a conclusion:

Therefore, the treasure is $4\frac{23}{24}$ feet deep buried in the soil and rocks.



Put to Practice

Sarah baked a batch of cookies for her friends. She made $\frac{3}{4}$ of the batch chocolate chip cookies and $\frac{2}{5}$ of the batch oatmeal raisin cookies.

Task 1

1. How many cookies did Sarah make in total?
2. If Sarah wants to share the cookies equally among 6 friends, how many cookies will each friend receive?

Task 2

1. Sarah's brother, Michael, ate $\frac{1}{3}$ of the chocolate chip cookies and $\frac{1}{4}$ of the oatmeal raisin cookies. How many cookies did Michael eat in total?
2. How many cookies are left after Michael ate his share?



Skills Builder

I. Choose the letter of the correct answer.

1. What is the result of $\frac{5}{8} + \frac{3}{8}$?

a. $\frac{1}{4}$

b. $\frac{1}{2}$

c. $\frac{1}{8}$

d. $\frac{7}{8}$

2. Subtract $\frac{2}{3}$ from $\frac{5}{6}$.

a. $\frac{1}{6}$

b. $\frac{1}{3}$

c. $\frac{1}{2}$

d. $\frac{2}{3}$

3. If a recipe calls for $\frac{3}{4}$ cup of sugar and you want to make half of the recipe, how much sugar do you need?

a. $\frac{1}{4}$ cup

b. $\frac{1}{2}$ cup

c. $\frac{3}{8}$ cup

d. $\frac{2}{3}$ cup

4. Which of the following represents $\frac{2}{5}$ as a decimal?

a. 0.25

b. 0.4

c. 0.5

d. 0.2

5. Simplify the expression $\frac{10}{15}$.

a. $\frac{2}{3}$

b. $\frac{1}{2}$

c. $\frac{3}{5}$

d. $\frac{4}{5}$

6. If you have $\frac{3}{8}$ of a pizza and your friend gives you $\frac{1}{4}$ of their pizza, how much pizza do you have in total?

a. $\frac{5}{8}$

b. $\frac{1}{2}$

c. $\frac{7}{8}$

d. $\frac{5}{4}$

7. Which of the following is equivalent to $\frac{6}{9}$?

a. $\frac{1}{3}$

b. $\frac{2}{3}$

c. $\frac{3}{4}$

d. $\frac{2}{5}$

8. Add $\frac{4}{7}$ and $\frac{3}{14}$.

a. $\frac{10}{14}$

b. $\frac{17}{14}$

c. $\frac{7}{14}$

d. $\frac{12}{14}$

9. If $\frac{2}{3}$ of a garden is planted with flowers, what fraction of the garden is not planted with flowers?

a. $\frac{1}{6}$

b. $\frac{1}{3}$

c. $\frac{2}{3}$

d. $\frac{3}{4}$

10. Multiply $\frac{5}{6}$ by $\frac{2}{3}$.

a. $\frac{5}{9}$

b. $\frac{1}{2}$

c. $\frac{5}{8}$

d. $\frac{1}{3}$

II. Solve the following.

1. $\frac{1}{3} + \frac{2}{3}$

6. $\frac{5}{6} - \frac{1}{3}$

2. $\frac{4}{7} - \frac{2}{7}$

7. $\frac{2}{3} \times \frac{4}{5}$

3. $\frac{2}{3} \times \frac{3}{4}$

8. $\frac{2}{3} \div \frac{1}{4}$

4. $\frac{2}{3} \div \frac{1}{3}$

9. $\frac{2}{5} + \frac{3}{5}$

5. $\frac{1}{4} + \frac{3}{8}$

10. $\frac{5}{8} - \frac{3}{8}$

III. Solve the following problems. Show your complete solution.

1. Sarah wants to make a fruit salad recipe that serves 6 people. The recipe requires $\frac{2}{3}$ cup of strawberries, $\frac{1}{4}$ cup of blueberries, and $\frac{1}{2}$ cup of grapes. If Sarah only has $\frac{1}{2}$ cup of strawberries, $\frac{1}{8}$ cup of blueberries, and $\frac{3}{4}$ cup of grapes, how much more fruit does she need to buy to complete the recipe?
2. John is building a rectangular fence for his backyard. He needs $\frac{3}{4}$ of a foot of wood to make one section of the fence. If the backyard is 12 feet wide and 16 feet long, how many sections of the fence does John need to build, and how much wood in total does he need?

3. Emily has a bag of candy to share with her friends. The bag contains $\frac{3}{5}$ pound of chocolates and $\frac{1}{3}$ pound of gummies. If Emily wants to share the candies equally among herself and two friends, how much candy will each person receive, and how much candy will be left in the bag after sharing?



Challenge Yourself

Answer the following questions. Show your complete solution.

1. **Fractional Pizza Challenge:** Maria has a pizza divided into 8 equal slices. She eats 3 slices, while her brother eats 2 slices. What fraction of the pizza did Maria eat? What fraction of the pizza did her brother eat? How many slices are left uneaten?
2. **Fractional Garden Challenge:** Sarah planted a garden with 20 flowers. $\frac{1}{4}$ of the flowers are tulips, $\frac{1}{5}$ are daisies, and the rest are roses. How many roses did Sarah plant? How many tulips? How many daisies? Express the number of each type of flower as a fraction of the total number of flowers.
3. **Fractional Sharing Challenge:** Three friends, Tom, Jane, and Mark shared a chocolate bar equally. If Tom ate $\frac{1}{3}$ of his share and Jane ate $\frac{1}{4}$ of hers, how much of the whole chocolate bar did each of them eat? How much of the chocolate bar remains uneaten? Express the answers as fractions.



Portfolio Prompts

Read these questions and share your thoughts about them.

1. What strategy did you use to solve the word problem involving fractions, and why did you choose that strategy?
2. Can you explain how you checked your answer for accuracy after solving the fraction word problem?

3. What did you find most challenging about solving this fraction word problem, and what would you do differently next time to overcome that challenge?

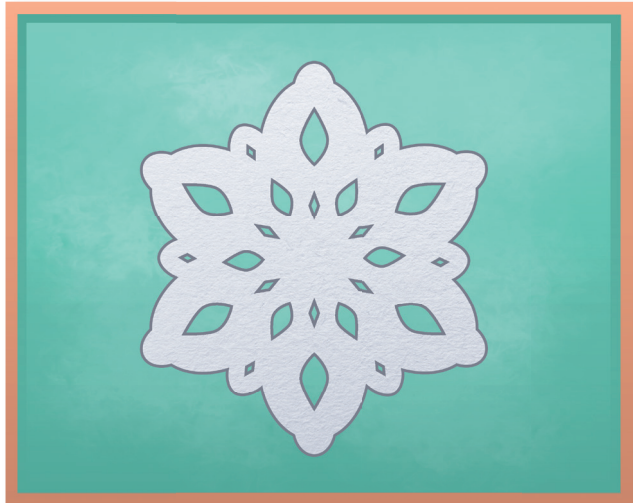
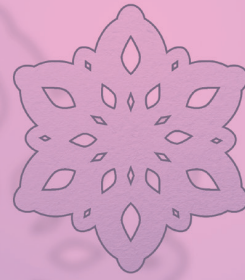


Interactives

To learn more about this lesson, you may visit TekTeach (Learning Management System).

LESSON 8

Symmetry



Symmetry can be found all around us.

Is the paper snowflake symmetrical?



A figure is **symmetrical** if it can be divided into two equal parts.

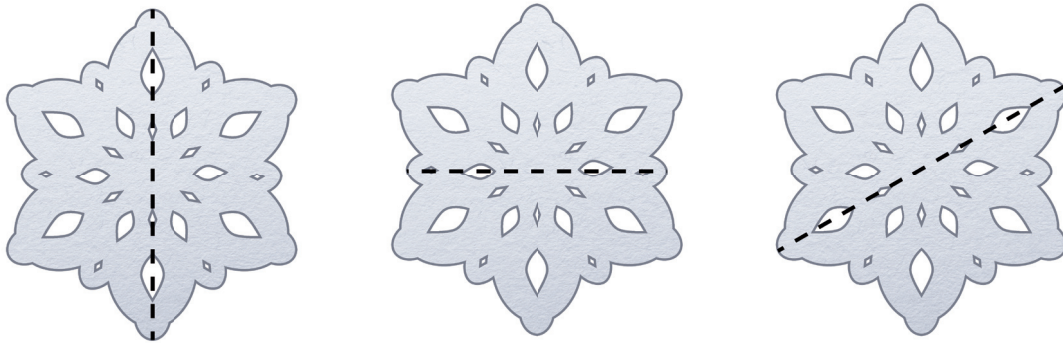
The **line of symmetry** divides an object or a figure in two equal halves.

A figure can have **many** lines of symmetry.

A figure that has no line of symmetry is **asymmetrical**.

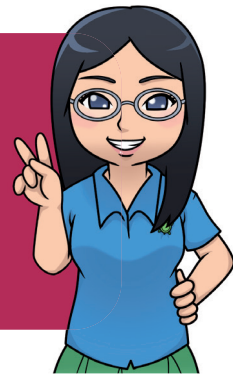


Let's look at the figure below.

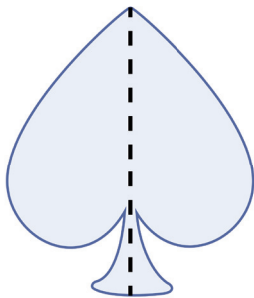


Use a ruler to draw straight lines in the figure. These lines are the lines of symmetry.

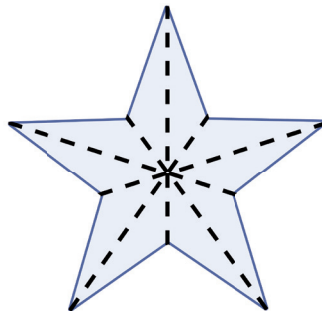
The paper snowflake is symmetrical. We can find many lines of symmetry in the figure.



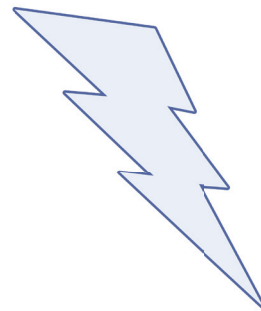
Let's look at the following figures.



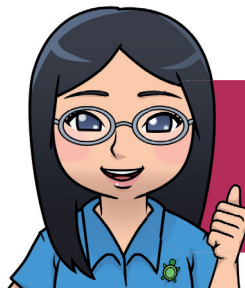
1 line of symmetry



5 lines of symmetry



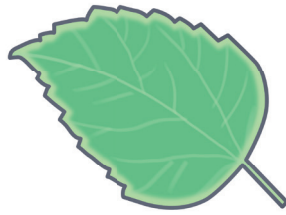
No line of symmetry



The first two figures are symmetrical. The last figure is asymmetrical.

If a figure has no line of symmetry, it is **asymmetrical**.

Determine if the following figures are symmetrical or asymmetrical.



Draw the lines or lines of symmetry in each figure.

Which figures are symmetrical? Asymmetrical?



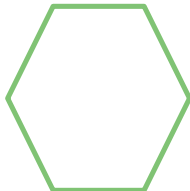
Skills Builder

I. Draw as many lines of symmetry as possible in the following figures.

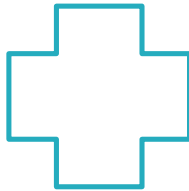
A



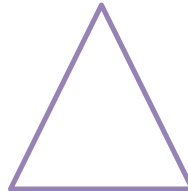
B



C



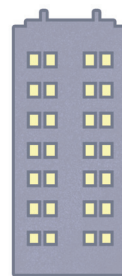
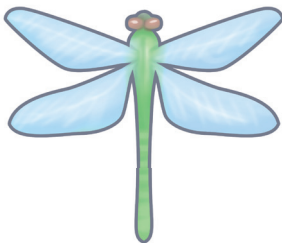
D



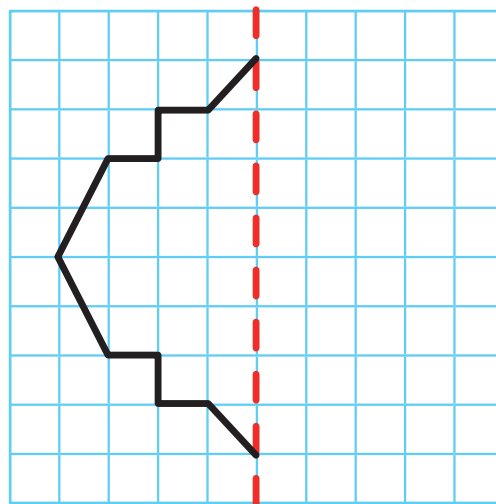
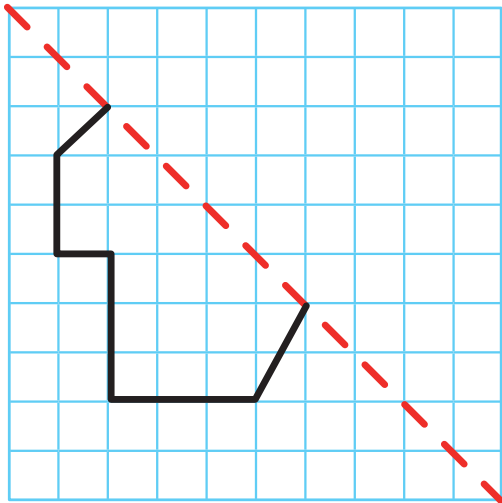
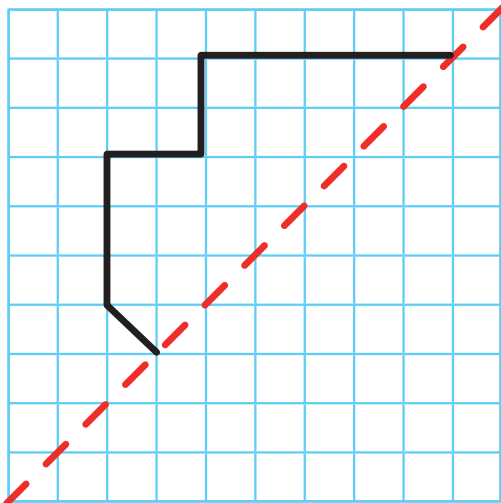
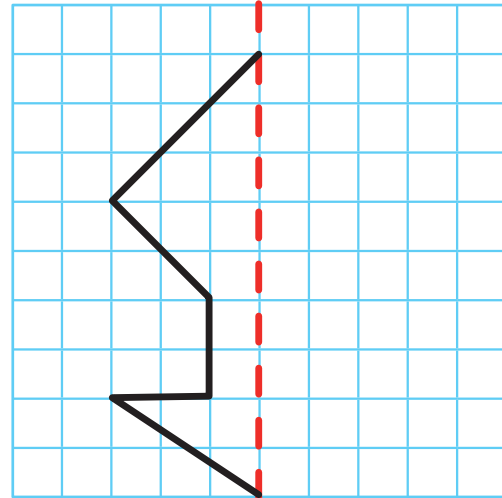
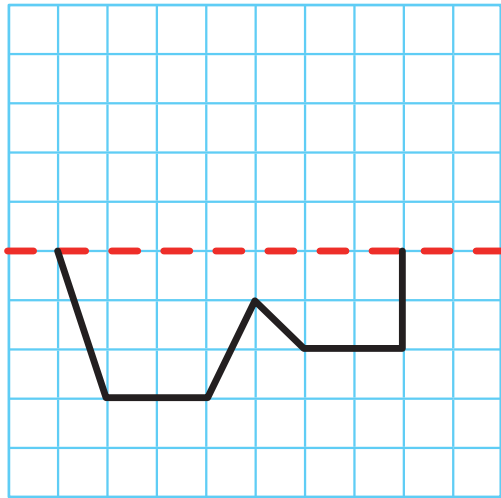
E



II. Encircle the symmetrical figures.



III. Complete the figures below by following the lines of symmetry.





Challenge Yourself

- Find a partner.
- Show some poses or movements similar to stretching. For example, bending your body to the right, raising both arms upward, ...
- Your partner will identify the lines of symmetry and then mirror your image/pose.



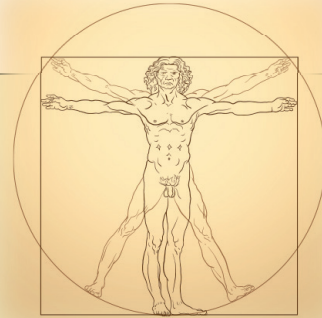
Portfolio Prompts

Find 5 pictures of things that have symmetry and paste them on a sheet of colored paper.



Fun Facts

Leonardo da Vinci's 'Vitruvian Man' represents the symmetry in the human body.



Interactives

To learn more about this lesson, you may visit TekTeach (Learning Management System).

Unit Performance Task

Goal: The students' goal is to demonstrate their understanding of fractions and symmetry by creating an artwork.

Role: Visual Artists

Audience: Students, Teachers, and other people.

Situation: Suppose that your school will open a walk-in gallery that composes of math concepts that are presented in a form of art. With that, the school encourages students to showcase their own artistic way on how they understand Math, especially fractions and symmetry.

Product: Artwork integrating Fractions and Symmetry

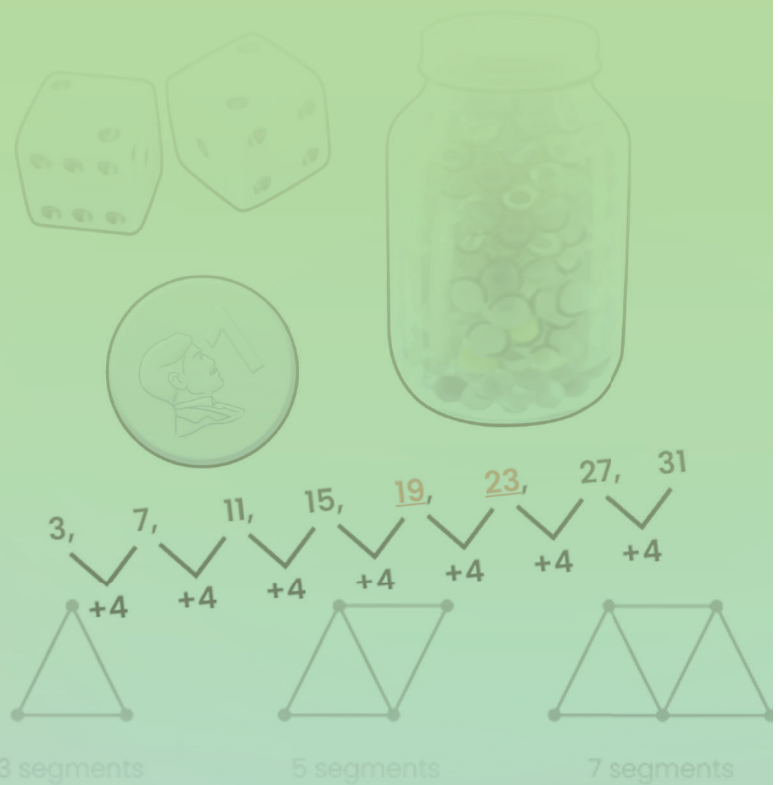
Standards: The students will be graded according to the given criteria.

Criteria	Advanced (4 points)	Proficient (3 points)	Basic (2 points)	Limited (1 point)
Creativity	The artwork is exceptionally creative, visually engaging, and demonstrates a high level of effort.	The artwork is creative and visually appealing but may have some areas for improvement.	The artwork shows some creativity but is not visually engaging.	The artwork is bland, lacks creativity, and shows minimal effort.
Presentation	The presentation is clear, wellorganized, and provides a thorough explanation of the artwork and concepts.	The presentation is clear but lacks depth or detail in explaining the artwork and concepts.	The presentation is unclear and lacks organization or detail.	The student does not present or fails to provide a clear explanation of their artwork and concepts.

Overall Understanding of Fractions and Symmetry	The student exhibits a strong understanding of both fractions and symmetry.	The student displays a good understanding of either fractions or symmetry and a basic understanding of the other.	The student demonstrates partial understanding of either fractions or symmetry but not both.	The student shows a lack of understanding of both fractions and symmetry.
Fraction Understanding	The student exhibits an excellent understanding of fractions and skillfully applies them to create a visually appealing artwork.	The student demonstrates a good understanding of fractions and effectively uses them in their artwork.	The student shows a basic understanding of fractions but struggles to apply them effectively.	The student demonstrates minimal or no understanding of fractions in their artwork.
Symmetry	The student achieves excellent symmetry in their artwork with precision and balance.	The student demonstrates a fair level of symmetry in their artwork.	The student attempts to create symmetry but does so with significant errors.	The student's artwork lacks symmetry entirely.

UNIT 4

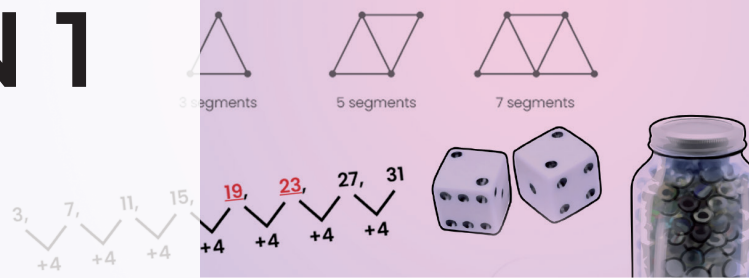
In this unit, we embark on a comprehensive mathematical exploration. We start by collecting time-stamped data from various sources and then learn to present it using tables or line graphs. Interpreting such data becomes a key skill, as does solving problems involving two variables. We delve into discovering patterns and mastering number sentences representing properties of operations. Decimal numbers take center stage, from understanding their relationship to fractions to reading and writing them with precision. We delve deep into place value and digit values, master decimal-fraction conversions, plot decimal numbers on a line, and hone our skills in comparing, ordering, and rounding decimals. Throughout this journey, we'll gain essential mathematical proficiency while appreciating the practical applications of these concepts in our daily lives.



Place Value	Tens	Ones		Tenths	Hundredths
Digits	7	8	.	4	6

LESSON 1

Probability



Probability is the likelihood that an event will happen.

What is the probability that heads will come up when a coin is tossed 3 times?



There are two kinds of probability in mathematics.

Theoretical probability is the ratio of favorable outcomes to the total number of possible outcomes.

Experimental probability is determined by performing experiments. The experimental probability of an event is the ratio of favorable outcomes to the number of trials.



A group of students tossed a coin 10 times to find out the probability of tails coming out. The results are recorded below:

1	2	3	4	5	6	7	8	9	10
T	H	T	H	T	T	H	T	H	H

To get the experimental probability, divide the number of favorable outcomes by the total number of trials:

1	T
2	H
3	T
4	H
5	T
6	T
7	H
8	T
9	H
10	H

The total number of trials is 10.

Tails showed 5 times.

$$\begin{aligned}
 \text{Experimental Probability} &= \frac{\text{Number of favorable outcomes}}{\text{Total number of trials}} \\
 &= \frac{5}{10} \\
 &= \frac{1}{2}
 \end{aligned}$$



Interactives

To learn more about this lesson, you may visit TekTeach (Learning Management System).

According to this experiment, the probability of getting tails in a coin toss is $\frac{1}{2}$.



Another group of students performed the same experiment with the following results: What is the probability of getting a tail according to their experiment?

1	2	3	4	5	6	7	8	9	10
H	H	H	H	H	H	T	T	T	H

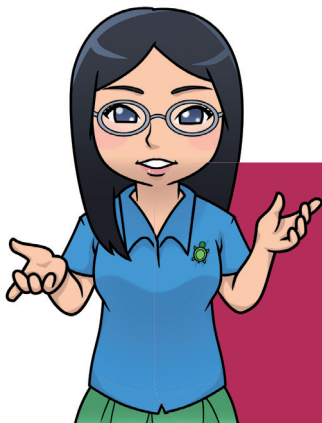
1	H
2	H
3	H
4	H
5	H
6	H
7	T
8	T
9	T
10	H

The total number of trials is 10.

Tails showed 3 times.

$$\text{Experimental Probability} = \frac{\text{Number of favorable outcomes}}{\text{Total number of trials}}$$

$$= \frac{3}{10}$$



According to their experiment, the probability of getting a tail in a coin toss is $\frac{3}{10}$.



Skills Builder

Read and answer the following problems

1. You flipped a coin five times, and you got two heads. What is the probability of three tails?

2. You are going to roll a die four times. What is the probability of getting a 6 three times?

3. You are going to roll two dice three times. What is the probability that the same number will come up?

4. You will flip two coins five times. What is the probability that you will get:
- a. head, head
 - b. tail, tail
 - c. tail, head



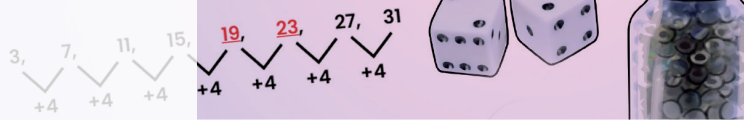
Portfolio Prompts

Make flashcards with numbers 1–20. Shuffle the cards. Draw two cards, record the result, and then return the cards to the deck. Shuffle again and draw two cards. Do this ten times. Write the results in table form and find the probability of the following:

- 1. getting two consecutive numbers
- 2. getting two even numbers
- 3. getting two odd numbers
- 4. getting two prime numbers
- 5. getting two composite numbers

LESSON 2

Number Patterns



3, 7, 11, 15, ____, ____, 27, 31, ...



What two numbers are missing in the list of numbers?

Looking for Patterns

A sequence is a set of numbers, figures, or objects arranged using a pattern or a specific rule.

Examples:

1. **2, 4, 6, 8, 10, 12, 14, 16, 18, ...**

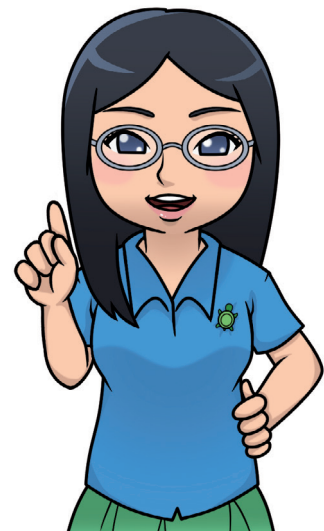
The sequence is a list of even numbers.

2. **5, 10, 15, 20, 25, 30, 35, 40, ...**

The sequence is a list of multiples of 5.

3. **1, 10, 100, 1000, 10 000, 100 000, ...**

The succeeding number in the sequence is multiplied by 10 from the previous number.



Look for a pattern in the given list of numbers.

3, 7, 11, 15, —, —, 27, 31, ...

Try to look for the difference between two consecutive numbers.

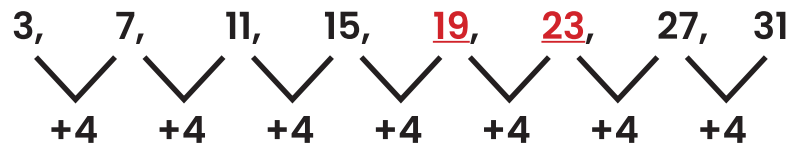
$$7 - 3 = 4$$

$$11 - 7 = 4$$

$$15 - 11 = 4$$

$$31 - 27 = 4$$

The difference between consecutive numbers is always 4. We can now determine the two missing terms.



Therefore, 19 and 23 are the two missing numbers because $19 - 15 = 4$ and $23 - 19 = 4$.

Let's try another set of numbers. Look for the next 3 numbers in the sequence

2, 3, 5, 7, —, —, —, ...

As we observed, the differences between consecutive numbers are not equal unlike in the previous example. We have to think and use our previous knowledge to come up with the correct pattern. Observing further, we realize that the numbers are prime, which means that the next three prime numbers after 7 are 11, 13, and 17.

2, 3, 5, 7, 11, 13, 17, ...



Keep in Mind

When looking for patterns, the easiest way to proceed is to check if there is a common difference between two consecutive terms.

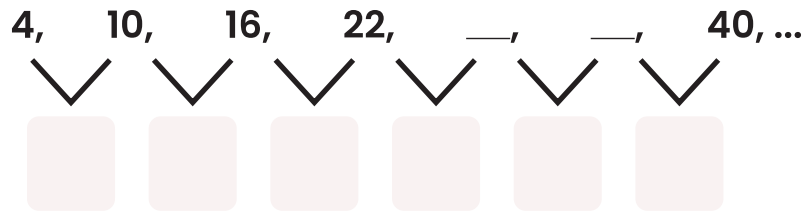
Now it's your turn to find the missing numbers in the sequence below.

4, 10, 16, 22, —, —, 40, ...

What is the difference between 10 and 4?

What is the difference between 16 and 10?

What is the difference between 22 and 16?



What is the difference between consecutive numbers?

What is the pattern used in the sequence?

What are the two missing numbers in the sequence?

Try another one. Find the next three numbers in the sequence below.

1, 2, 4, 8, —, —, —, ...

$1 \times 2 =$

What is the pattern used in the sequence?

$2 \times 2 =$

What are the three missing numbers in the number sequence?

$4 \times 2 =$



Skills Builder

I. Identify the pattern in each of the following number sequences.

1. 4, 6, 8, 10, 12, 14, ...

Pattern:

2. 8, 16, 24, 32, 40, 48, ...

Pattern:

3. 6, 15, 24, 33, 42, 51, ...

Pattern:

4. 5, 15, 25, 35, 45, 55, ...

Pattern:

5. 48, 44, 40, 36, 32, 28, ...

Pattern:



Interactives

To learn more about this lesson, you may visit TekTeach (Learning Management System).

II. Find the missing numbers in the given number sequence.

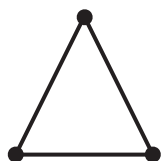
1. 2, 5, 8, , , 17, 29, ...
2. 2, 7, , , 22, 27, 32, ...
3. 4, 8, 12, , , 24, 28, ...
4. 1, 3, 9, 27, , , 729, ...
5. , , 33, 44, 55, 66, 77, ...

III. Each sequence of figures below is composed of segments which join two points.

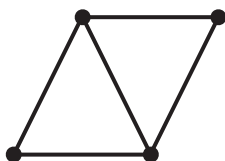
For each sequence:

- A. Write down the number of line segments as a number sequence.
- B. Find the pattern in the number sequence.
- C. Draw the next figure.

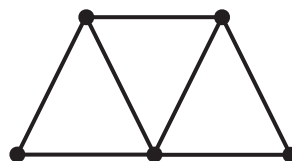
Example:



3 segments



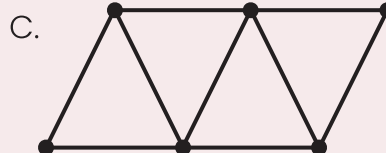
5 segments



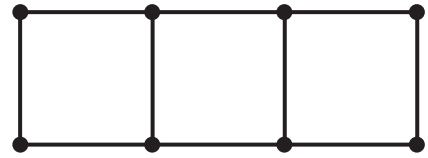
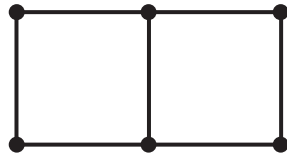
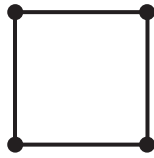
7 segments

A. 3, 5, 7

B. The succeeding figure has two more line segments than the previous one.



1.

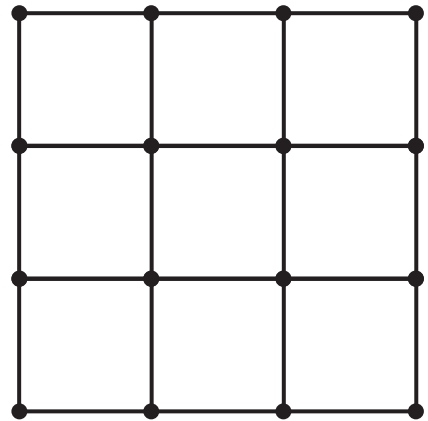
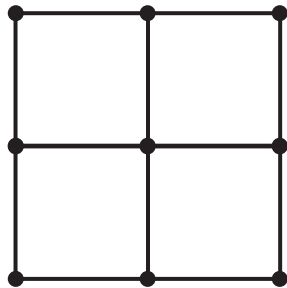
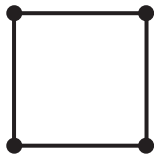


A.

B.

C.

2.

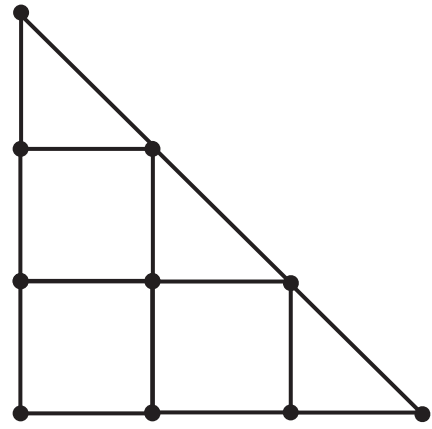
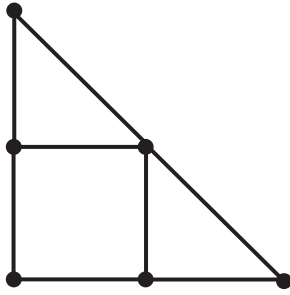
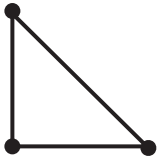


A.

B.

C.

3.

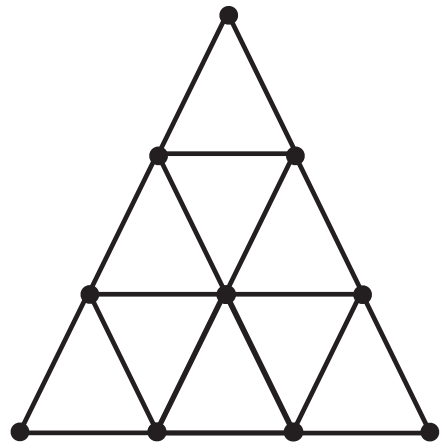
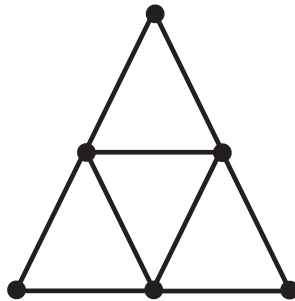
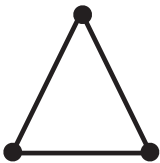


A.

B.

C.

4.



A.

B.

C.



Challenge Yourself

Problem Solving Strategy: Critical Thinking

Find the next three numbers in this number sequence.

1, 1, 2, 3, 5, 8, —, —, —

LESSON 3

Patterns in Number Sentences



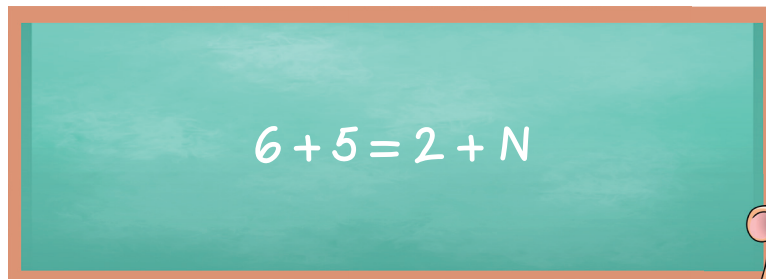
3 segments



5 segments



7 segments



What is the missing number in the number sentence?

Looking for Patterns in Number Sentences

A **number sentence** is a collection of numbers that includes any of the four basic operations along with an equal sign. A number sentence is true or correct if the left and right sides of the equation are equal after performing the operations.

Example of a true or correct number sentence:

$$3 + 8 = 1 + 10$$

If we simplify the left and the right side of the equation, we get equal values.

$$3 + 8 = 11 \text{ and } 1 + 10 = 11$$

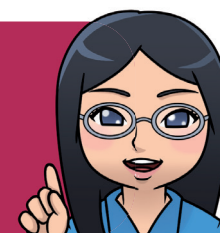
Example of a false or incorrect number sentence:

$$5 - 2 = 4 + 2$$

if we simplify both sides of the equation, we arrive at different values.

$$5 - 2 = 3 \text{ while } 4 + 2 = 6$$

To look for the missing number in a number sentence is to find the number that will make the given number sentence true.



Let's study the number sentence given on the previous page.

$$6 + 5 = 2 + N$$

$$11 = 2 + N$$

$$11 - 2 = N$$

$$9 = N$$

Therefore, **the value of N is 9.**

The missing number is on the right side of the equation. Simplify the left side first.

The sum on the left side is 11. What should we add to 2 to get 11?

Let us try another one.

$$4 + 5 \times 3 = N + 2$$

$$4 + 15 = N + 2$$

$$19 = N + 2$$

$$19 - 2 = N$$

$$17 = N$$

Therefore, **the value of N is 17.**

Simplify the left side first. According to the MDAS Rule, multiplication comes first before addition.

What must be added to 2 to get 19?



Fun Facts

$$9 \times 9 + 7 = 88$$

$$98 \times 9 + 6 = 888$$

$$987 \times 9 + 5 = 8888$$

$$9,876 \times 9 + 4 = 88,888$$

$$98,765 \times 9 + 3 = 888,888$$

Find the missing number in the number sentences below.

$$14 - N = 6 + 3$$

What is the result after performing the operations on the right side of the equation?

What should be the value of N?

$$8 + 7 \times 2 = 9 + N$$

What is the result after performing the operations on the left side of the equation?

What should be the value of N?

$$N + 18 - 1 = 7 - 2 + 11$$

What is the result after performing the operations on both sides of the equation?

What should be the value of N?



Skills Builder

I. Find the missing number in the number sentences below.

1. $6 - 1 = \underline{\quad} + 3$

Missing Number =

2. $14 + \underline{\quad} = 18 - 2$

Missing Number =

3. $\underline{\quad} - 21 - 15 = 3 + 9 - 6$

Missing Number =

4. $17 + \underline{\quad} - 5 = 18 + (5 \times 2)$

Missing Number =

5. $24 \div 3 + 4 = \underline{\quad} - 5 + 9$

Missing Number =

II. Encircle the number that will make the number sentence true.

1. $\underline{\quad} + 3 = 11 - 2$

3 4 6 8 1

2. $7 - 3 + 1 = 15 - \underline{\quad}$

3 6 8 10 12

3. $18 - 12 + 9 = 3 \times \underline{\quad}$

4 5 6 7 8

4. $3 + 27 \div \underline{\quad} = (2 \times 3) + 6$

3 7 9 15 18

5. $\underline{\quad} \times 8 - 4 = 5 + 23 - 8$

2 5 8 10 14

III. Fill in the blanks with the numbers that will make the number sentences true.

Example: $\underline{5} + 4 - 4 = 8 - \underline{5} - 2$

1. $6 + \underline{\quad} - 5 = 1 + \underline{\quad}$

2. $\underline{\quad} - 3 = 8 - 11 \underline{\quad}$

3. $\underline{\quad} + 9 - 5 = 4 \times \underline{\quad} - 6$

4. $12 \div 4 \times \underline{\quad} = 5 + 1 + \underline{\quad}$

5. $\underline{\quad} \times 8 \div 4 = 24 \div \underline{\quad} \times 3$



Portfolio Prompts

Write 5 number sentences with one missing number each on a 10" × 3" cardboard. Pick a partner and let her/him give the missing number that will make your number sentence true. Then exchange roles with your partner. Submit your cardboard to your teacher afterwards.

LESSON 4

Decimal Numbers

Place Value	Tens	Ones		Tenths	Hundredths
Digits	7	8	.	4	6

0.7

3.25

We need to learn to represent quantities that are less than one whole.

What do these numbers mean?



We use decimal numbers to represent quantities that are less than 1.

Examples:

1. 25 centavos is less than PhP 1, so we write it as PhP 0.25.
2. Since 1 is represented by a whole modeling block, a decimal number can be represented by dividing the block.



3. On a number line, the numbers on the space between two whole numbers are decimal quantities.



Let us show 0.7 using modeling blocks, grid, number line, and money.

Modeling Blocks



Since there is only one number after the decimal point, we are using a Base-Ten block. Seven of the ten blocks are highlighted to represent 0.7. In fraction form, we can write 0.7 as $\frac{7}{10}$.

We read 0.7 as **seven-tenths**.

Grid



7 out of the 10 squares in the grid are highlighted.

Number Line



The decimal 0.7 is bigger than 0 but smaller than 1. Using the number line we can show the location of 0.7.

Money



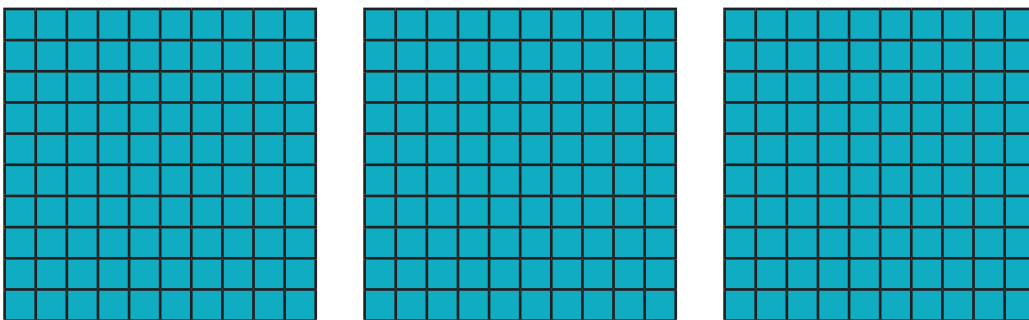
A peso is equivalent to ten 10-centavo coins (10 ¢ or PHP 0.1).

Seven 10 ¢ is the same as PHP 0.7. It can also be represented by two 25 ¢ and two 10 ¢ coins.

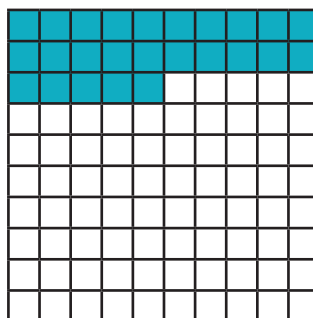
Let's represent 3.25 using grid, number line, and money.

Grid

3.25 is a mixed number. It has a whole number part and a decimal part. When representing mixed numbers, we can treat these two parts separately:



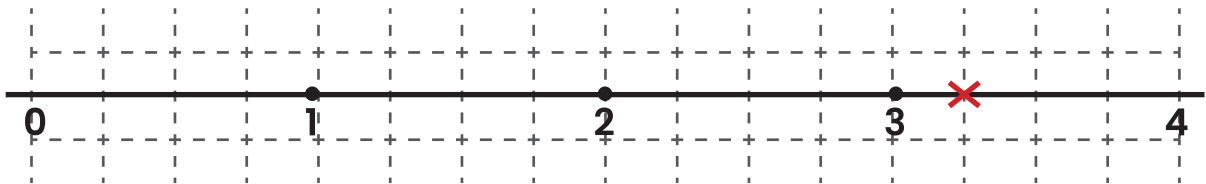
and



We can also write 3.25 as $3\frac{25}{100}$ or $\frac{325}{100}$. It is read as **three and twenty-five hundredths**.

Number Line

On a number line, decimal numbers are located on the space between whole numbers. 3.25 is between 3 and 4. It is closer to 3 than to 4.



Money

3.25 can be represented by three 1-peso coins and a 25-centavo coin.



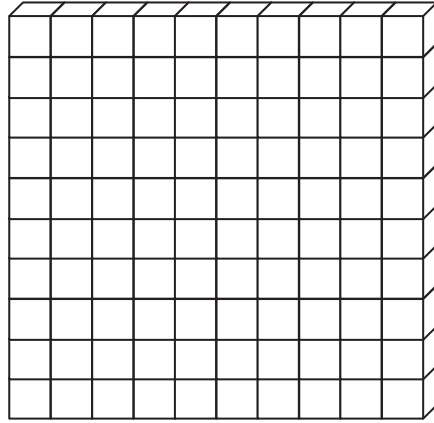
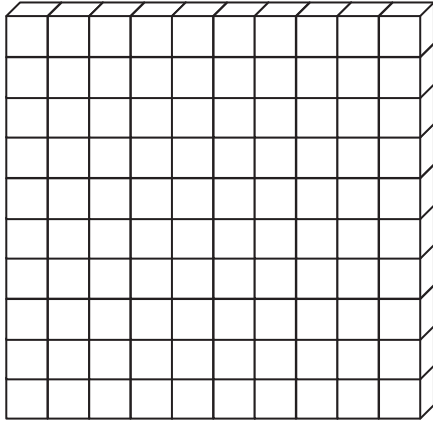
Interactives

To learn more about this lesson, you may visit TekTeach (Learning Management System).

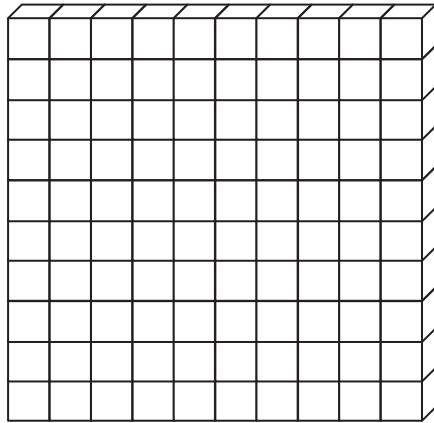
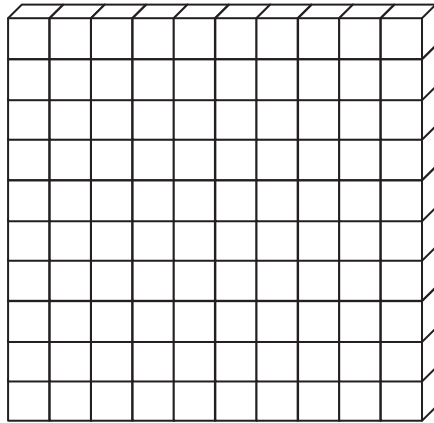
Now, represent 1.9 and 1.90 in four different ways.

Modeling Blocks

1. Shade the blocks to show 1.9.

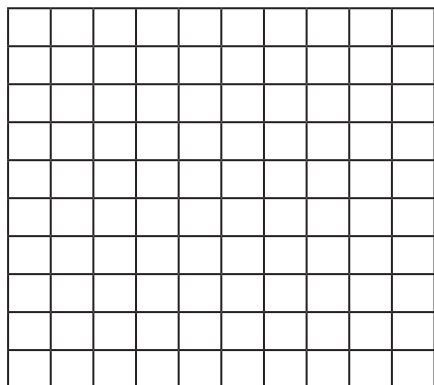
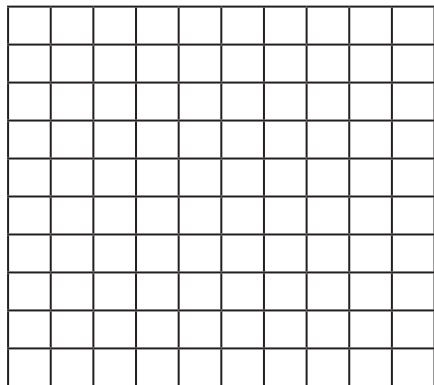


Shade the blocks to show 1.90.



Grid

2. Shade the grids to show 1.9.



Shade the grids to show 1.90.

Two identical blank 10x10 grids are provided for drawing. Each grid consists of 10 columns and 10 rows of squares, totaling 100 squares per grid.

Number Line

3. Mark the location of 1.9 on the number line.



Mark 1.90 on the number line.



Money

4. Draw a combination of coins that will represent PhP 1.9 and PhP 1.90.

The diagram consists of two adjacent rectangular boxes. The left box is labeled "PhP 1.9" and the right box is labeled "PhP 1.90". Both boxes are empty, representing the content of the respective files.

What can you conclude? Is 1.9 equal to 1.90?

Is $\frac{9}{10} = \frac{90}{100}$?

Does adding zero(s) on the right side of the decimal point change the value of the decimal?



Portfolio Prompts

Find a grocery receipt that shows a mixed number for the total amount. Paste it on a sheet of paper and represent the mixed number using a number line. List all the possible combinations of the Philippine money that will give the same amount.



Skills Builder

I. Encircle the letter of the correct answer.

1. Which is equivalent to 0.9?

a. $\frac{10}{9}$

b. $\frac{10}{9}$

c. $\frac{100}{9}$

d. $\frac{9}{100}$

2. Which is the decimal form of $5\frac{67}{100}$?

a. 0.567

b. 5.67

c. 56.7

d. 567.0

3. Which improper fraction is equal to 6.3?

a. $\frac{63}{10}$

b. $\frac{63}{100}$

c. $6\frac{3}{10}$

d. $6\frac{3}{100}$

4. Which decimal is nearest 5?

a. 5.98

b. 5.85

c. 5.17

d. 5.03

5. Which of the following is farthest from 5?

a. $\frac{58}{10}$

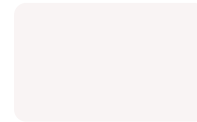
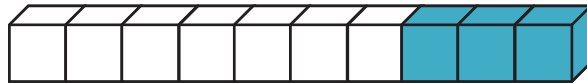
b. 5.9

c. $5\frac{7}{10}$

d. $5\frac{99}{100}$

II. Write the decimal represented by the shaded blocks.

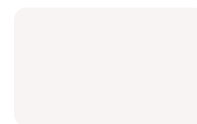
1.



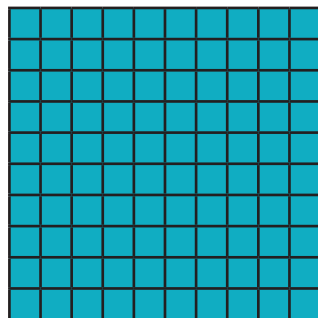
2.



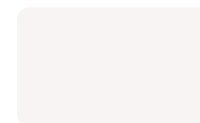
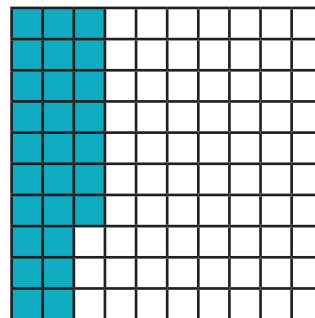
and



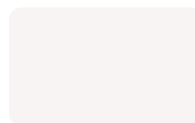
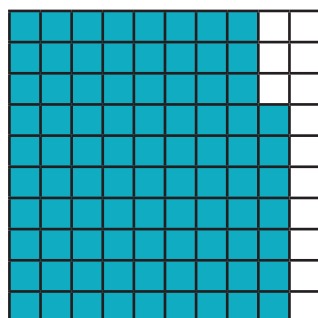
3.

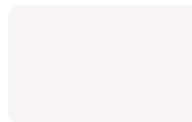
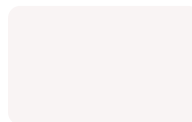
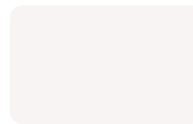
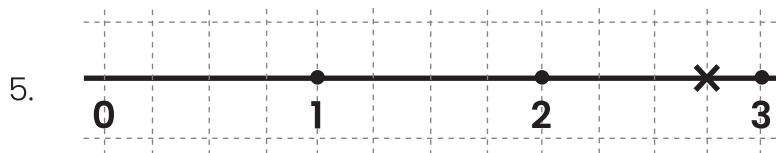


and



4.

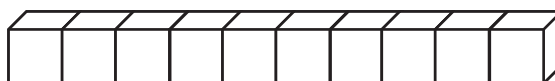




III. Represent the given decimal using the given methods.

Modeling Blocks

1. 0.8



2. 1.5

and



Grid

3. 2.8

--	--	--	--	--	--	--	--	--	--

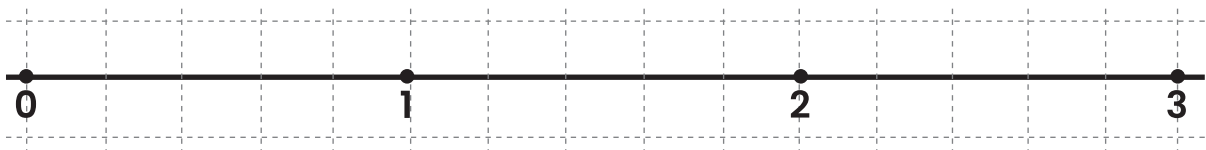
4. 1.19

Number Line

5. 0.9



6. 1.3

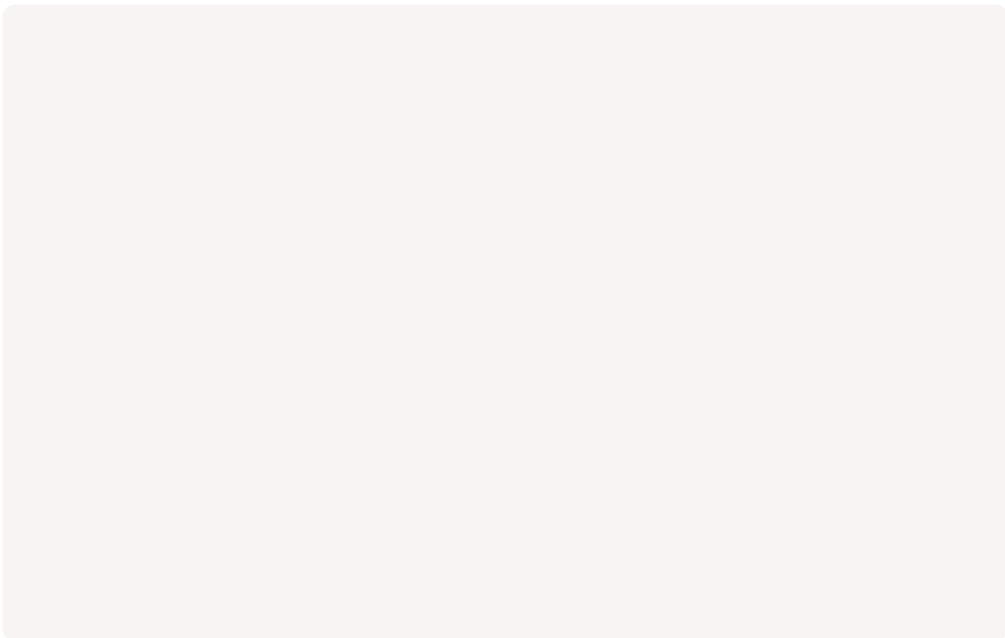


Money

7. 4.5



8. 11.75



LESSON 5

Place Values

Place Value	Tens	Ones		Tenths	Hundredths
Digits	7	8	.	4	6



Objectives

- ◇ Give the place value and the value of a digit.
- ◇ Read and write decimals.
- ◇ Round decimals.



Vocabulary Bank

- **retain** – to keep in the same position



Math Tale

Grocery Time

Heidi and her mom went to the grocery to buy the ingredients for a spaghetti recipe. They wanted to buy spaghetti pasta and were choosing between two brands. A kilogram of Party Pasta was priced at PhP 78.46, while a kilogram of Good Noodles was priced at PhP 73.64.

How do you read the decimals?





Let's Explore

To read decimals, it is helpful to write them in a Place Value Chart first. From left to right, the place values of the first three digits after the decimal point are **tenths**, **hundredths**, and **thousandths**.

Place Value	Tens	Ones		Tenths	Hundredths
Digits	7	8	.	4	6

The Place Value Chart will help you read decimals.



Place Value	Digits
Tens	7
Ones	8
	.
Tenths	4
Hundredths	6

You already know how to read the whole number part. Here, it is **seventy-eight**.

The decimal point is read as **and**.

To read the decimal part, read it as a whole number and then name the place value of the last digit. In this case, this decimal number is read as **forty-six hundredths**.

So, 78.46 is read as **seventy-eight and forty-six hundredths**.





Keep in Mind

When reading the decimal part, you only need the place value of the last digit.

How do you read 73.64?

Write the digits of the number in the Place Value Chart.

Place Value	Tens	Ones		Tenths	Hundredths
Digits			.		

Write 73.64 in words.



Fun Facts

Multiplying by 10 is the same as moving the decimal point one place value to the right. Dividing by 10 is the same as moving the decimal point one place value to the left.

Rounding Decimals



Let's Explore

Place Value	Tens	Ones		Tenths	Hundredths
Digits	7	8	.	4	6

When rounding decimals, the same steps are followed as with rounding whole numbers. Consider the digit to the right of the digit we want to round up or down. If it is less than 5, we round the number down. If it is five or higher, we round up.

Let us round 78.46 to the nearest whole number.

Place Value	Tens	Ones		Tenths	Hundredths
Digits	7	8	.	4	6

The ones digit is 8.

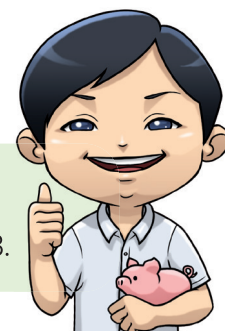


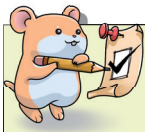
Place Value	Tens	Ones		Tenths	Hundredths
Digits	7	8	.	4	6

The digit to the right of 8 is 4. Therefore, we round down.

1. Retain the digit in the ones place.
2. Drop the digits to the right.

78.46 rounded to the nearest whole number is 78.





Keep in Mind

When rounding whole numbers, we replace the digits to the right of the rounded digit with zeros. When rounding decimals, we can drop the zeros to the right of the rounded digit without changing its value

Now, let's round 78.46 to the nearest tenth.

The tenths digit is 4.

Place Value	Tens	Ones		Tenths	Hundredths
Digits	7	8	.	4	6

The hundredths digit is 6. Therefore, we round up.

Place Value	Tens	Ones		Tenths	Hundredths
Digits	7	8	.	4	6

78.46 rounded to the nearest tenth is 78.5.

Round 73.64 to the nearest whole number.

Write the decimal number in a Place Value Chart.

Place Value	Tens	Ones		Tenths	Hundredths
Digits			.		

What is the digit in the ones place?

What is the digit in the tenths place?

73.64 rounded to the nearest whole number is

Now, round 73.64 to the nearest tenth.

What is the digit in the tenths place?

What is the digit in the hundredths place?

73.64 rounded to the nearest tenth is



Put to Practice

After paying at the counter, Heidi checked the total amount of the things that they bought.

Task 1

Write the total amount in words.

Task 2

Give the value of the total amount if rounded to the nearest

- a. whole number
- b. tenth



Skills Builder

I. Encircle the letter of the correct answer.

1. What is the tenths digit of 123.45?

- a. 2 b. 3 c. 4 d. 5

2. What is the place value of the underlined digit in 93.41?
 - a. Tens
 - b. Ones
 - c. Tenths
 - d. Hundredths
3. How do you write 41.03 in words?
 - a. Forty-one and three tenths.
 - b. Forty-one and three.
 - c. Forty-one and zero three hundredths
 - d. Forty-one and hundredths.
4. How do you write fourteen and twenty-eight hundredths in numbers?
 - a. 14.028
 - b. 14.208
 - c. 14.28
 - d. 14.20
5. What is the value of the underlined digit in 437.68?
 - a. 80
 - b. 8
 - c. 0.8
 - d. 0.08

VI. Draw a:

- >** if the value of the underlined digit in Column A is **greater than** the value of the underlined digit in Column B.
- <** if the value of the underlined digit in Column B is **less than** the value of the underlined digit in Column A.
- =** if the two values of the underlined digits in Columns A and B are **equal**.

	COLUMN A		COLUMN B
1.	3. <u>2</u> 7		6. <u>3</u> 8
2.	23.3 <u>5</u>		18.2 <u>7</u>
3.	47.6 <u>9</u>		9.0 <u>9</u>
4.	72. <u>0</u> 8		65. <u>1</u> 8
5.	98.7 <u>4</u>		47.6 <u>7</u>

VI. Read each problem carefully and write your answer in the box provided.

1. Sebastian is a track-and-field varsity player. After his training, his coach reminds him to drink plenty of water. Sebastian always carries his jug with 1.06 liters of water. How do you write 1.06 in words?

2. Ryan and Reynolds usually walk home from school. Yesterday, they walked for 10.38 minutes. How do you write 10.38 in words?

3. Annie went to the hospital for her monthly check-up. The nurse checked Annie's vital signs. She weighed 107.86 pounds. What is her weight rounded to the nearest whole number? To the nearest tenth?

4. Mr. Callaga bought a gift for his wife. He bought a dress worth PhP 782.95. What is the value of 9 in the given decimal number?

5. Mr. Cee wrote words on a strip of paper. He asked Tonie to write the words in number form. If Tonie got it right, what did she write?

Sixty-seven and seven hundredths



Challenge Yourself

Problem Solving Strategy: Guess and Check/Critical Thinking

What is the smallest decimal number with two decimal places that can be formed using the digits 0, 1, 2, 4, and 7? All the digits must be used only once.



Portfolio Prompts

Look for an electric bill and determine the total kilowatts consumed for that month. Write the number in words and round the number to the nearest whole number and tenth.

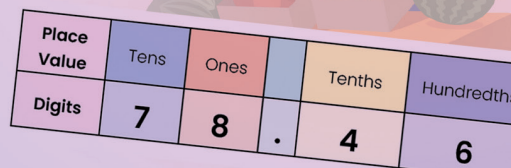


Interactives

To learn more about this lesson, you may visit TekTeach (Learning Management System).

LESSON 6

Converting Decimals



Place Value	Tens	Ones		Tenths	Hundredths
Digits	7	8	.	4	6



Objectives

- ◇ Convert decimal numbers to fractions, and fractions with denominators 10 or 100 to decimals.



Vocabulary Bank

- **Decimal** – A decimal is a special way we write numbers that shows parts smaller than a whole. It uses a dot (.) to separate the whole number from the parts. For example, in the number 3.25, the 3 is the whole number, and .25 shows a part of 3. It helps us talk about pieces of things.
- **Fraction** – A fraction helps us talk about parts of a whole or pieces of something. It has two parts: the top number (numerator) shows how many parts we have, and the bottom number (denominator) tells us how many parts make up the whole thing. For example, in $\frac{1}{4}$, 1 is the part we have, and 4 shows how many parts make a whole.
- **Denominator** – Denominator is a special word for the bottom number in a fraction. It tells us how many equal parts make up a whole. For example, in $\frac{3}{5}$, 5 is the denominator, meaning the whole thing is divided into 5 equal parts.



Math Tale

Grocery Time

At the bakery, Sarah and her friends measured 0.6 kilograms of sugar to make her famous cookies, but when she needed to share the recipe with her friend, she converted the amount to $\frac{3}{5}$ kilograms, ensuring they could recreate the delicious treats accurately.



Let's Explore

In our previous lessons, we were able to discuss the relationship between fractions and decimals using our base-ten blocks or grids. But what if we don't have our manipulatives with us? What shall we do?

Let us try to rename decimals to fractions and vice versa.

To rename decimals to fractions, for example, 0.4, write the decimal number in the numerator with a denominator of 1. That is,

$$\frac{4}{1}$$

Now, write in the denominator the same number of zeroes as digits in the numerator. Since the number 4 has only one digit, we will just add one zero. That is,

$$\frac{4}{10}$$

Now, the other way around, let us try to rename fractions to decimals. To rename fractions to decimals, for example $\frac{40}{100}$, take the given fraction's numerator, that is,

$$40$$

The zero in the denominator shows you how many places to the left to move the decimal. There are 2 zeros in 100, so move the decimal point 2 spaces to the left of the numerator, that is,

$$0.40$$

Let's have a more complicated example.

Let's try to convert 3.14 into fractions. 3.14 is a mixed number in which 3 is a whole and 14 is a decimal. For this case, we will just convert .14 as a fraction. That is,

$$\frac{14}{1}$$

Then write in the denominator the same number of zeroes as digits in the numerator,

$$\frac{14}{100}$$

Combine the three as a whole number, we will have,

$$3\frac{14}{100}$$



Put to Practice

Sarah is learning about decimals and fractions in her Grade 4 math class. She's excited to convert decimal numbers into fractions and fractions with denominators 10 or 100 into decimals. Can you help her solve some conversion problems?

1. What steps can you take to convert a decimal number into a fraction?
How do you identify the numerator and denominator when converting a decimal to a fraction?

2. How can you tell if a fraction can be written with a denominator of 10 or 100? What steps do you follow to convert a fraction with a denominator of 10 or 100 into a decimal?

3. What strategies can you use to ensure accuracy when converting between decimals and fractions?

4. How do you know when you have completed the conversion process correctly?

5. Can you think of any shortcuts or tricks that might help you during the conversion process?



Skills Builder

I. Read each question below. Encircle the letter of the correct answer.

1. Which is the whole number in the decimal 5.37?
a. 5 **b.** 37 **c.** 10 **d.** 100
2. Where do we base the number of zeroes in the denominator when converting decimals to fractions?
a. The digit of the whole part
b. The number of digits of the decimal part.
c. The denominator should always be 1.
d. The denominator should always be 10.
3. Which should be the numerator in the decimal 0.14 if you convert it to fraction?
a. 0 **b.** 1 **c.** 10 **d.** 14
4. Which of the following decimal has 100 as a denominator?
a. 0.4 **b.** 0.8 **c.** 0.48 **d.** 0.5
5. If you convert $7\frac{8}{10}$, how many decimal places should the decimal point move to the left?
a. 1 **b.** 2 **c.** 7 **d.** 8
6. If you will convert 6.09 as a fraction, what should be the denominator?
a. 6 **b.** 9 **c.** 10 **d.** 100
7. What is 1.2 converted to fraction?
a. $\frac{12}{10}$ **b.** $\frac{0.12}{10}$ **c.** $1\frac{2}{10}$ **d.** $12\frac{1}{10}$
8. What is $7\frac{8}{100}$ converted to decimals?
a. 7.8 **b.** 0.78 **c.** 70.8 **d.** 7.08
9. If you have 1 whole pizza and 1 slice more, and the pizza is divided into 10 slices, what decimal does this represent?
a. 1 **b.** 1.1 **c.** 1.01 **d.** 1.11

10. If you have 3 pesos and 27 cents, how would you express it in a fraction as a peso?

a. PhP $3\frac{27}{10}$

b. PhP $32\frac{7}{10}$

c. PhP $3\frac{27}{10}$

d. PhP $\frac{327}{10}$

II. Write the letter of the fraction or decimal that is equivalent to the given fraction or decimal.

1. 0.4

a. $\frac{3}{10}$

2. 0.75

b. $\frac{5}{10}$

3. 0.2

c. $\frac{75}{100}$

4. $\frac{1}{10}$

d. 0.25

5. $\frac{3}{5}$

e. 0.40

6. $\frac{6}{10}$

f. 0.20

7. $\frac{75}{100}$

g. 0.60

8. 0.25

h. $\frac{2}{10}$

9. $\frac{4}{10}$

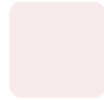
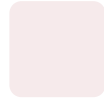
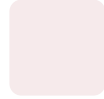
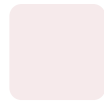
i. $\frac{3}{4}$

10. $\frac{2}{10}$

j. $\frac{3}{20}$

III. Solve the following problems.

1. Sarah baked a cake using $\frac{3}{5}$ cups of sugar. If she needs to convert the amount to a decimal, what is the equivalent decimal representation?
2. A soccer team won $\frac{7}{10}$ of their matches this season. What is the decimal equivalent of the team's winning percentage?
3. Jackson bought 0.6 kilograms of apples at the store. What fraction of a kilogram did he purchase?
4. If $\frac{4}{10}$ of a pizza is left after a party, what is the decimal representation of the fraction of the pizza remaining?
5. A farmer planted a field with $\frac{3}{4}$ hectare of corn. What is the decimal representation of the area planted with corn?



Challenge Yourself

Sarah has been learning about decimals and fractions in her Grade 4 math class. She wants to practice converting decimal numbers to fractions and fractions with denominators 10 or 100 to decimals. Here's a problem for her to solve:

Problem: Sarah has a piece of paper with the decimal number 0.75 written on it. She wants to convert this decimal to a fraction. Can you help her?

Once Sarah has converted the decimal to a fraction, she wants to convert another fraction, $\frac{3}{10}$, to a decimal. Can you help her with this too?

After solving these problems, Sarah realized that converting between decimals and fractions isn't as hard as she thought!

Challenge: Can you explain to Sarah how you converted the decimal to a fraction and the fraction to a decimal?



Portfolio Prompts

Imagine you have a treasure map filled with decimal numbers waiting to be transformed into fractions. Your task is to decode each decimal and unveil its hidden fraction! Here's what you need to do:

Write down the following decimal numbers: **0.5**, **0.75**, **0.25**, **0.4**, and **0.125**.

For each decimal, convert it into a fraction. Remember, a fraction has a numerator (top number) and a denominator (bottom number).

Simplify your fractions if possible. Can you make them simpler?

Remember, each decimal holds a secret fraction waiting to be discovered!



Fun Facts

Ancient civilizations like the Egyptians and Babylonians used decimal fractions thousands of years ago. However, they represented them differently than we do today. Instead of writing decimals like 0.5 or 0.75, they used symbols and fractions to denote parts of a whole.



Interactives

To learn more about this lesson, you may visit TekTeach (Learning Management System).

LESSON 7

Plotting Decimals



Objectives

- ◇ Plot decimal numbers with tenth decimal part on the number line.



Vocabulary Bank

- **decimal** - a numerical representation that includes a whole number and a fraction expressed with a decimal point
- **number line** - a visual representation of numbers placed in order on a straight line, facilitating understanding of their relative values and relationships
- **tenth** - one of the equal parts into which a whole is divided when considering the decimal system, typically representing one out of ten equal parts



Math Tale

In a bustling market, Mia learns a new way to represent decimals. She spots a fruit stand where oranges are priced at \$0.7 each. Remembering her math lesson, she visualizes the number line from 0 to 1, divided into tenths, and confidently places the orange price at 0.7, mastering the skill of plotting decimals with precision.





Let's Explore

Another way of representing a decimal is by plotting a point in a number line.

For example, let us plot the decimal 0.7 in a number line. The decimal 0.7 is bigger than 0 but smaller than 1. Using the number line, we can show the location of 0.7.

We can plot it in a number line that shows 0 to 1 with equal spaces divided into ten. This means per line; it increases by 0.1. That is, 0.1, 0.2, 0.3, 0.4, and so on.

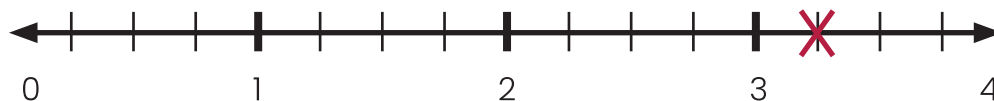


Using the number line, we can also see that 0.7 is closer to 1 than 0.

On a number line, decimal numbers are located in the space between whole numbers.

Let's have another decimal number, let's say 3.25.

This decimal is in between the two whole numbers 3 and 4.



We can plot it in a number line that shows 3 to 4 with equal spaces divided into 4. This means per line; it increases by 0.25. That is, 0.25, 0.50, 0.75, and so on.

Using the number line, we can see that 3.25 is closer to 3 than to 4.



Put to Practice

You are given instructions about the current location of Robby Rabbit in his quest in finding his magical carrot. Let's find at what point does Robby stop? Create your own number line.

Location 1: Robby starts at 1.6, then he starts to jump: (1 unit = 0.1)

5 units to the right

7 units to the left

10 units to the right

At what point did he stop?

Location 2: Robby starts at 3.8, then he starts to jump: (1 unit = 0.1)

8 units to the left

6 units to the left

12 units to the right

At what point did he stop?



Challenge Yourself

A. Locate the following letters on the number line below.



1. Point A _____

2. Point B _____

3. Point C _____

4. Point D _____

5. Point E _____



Skills Builder

A. Name the point being described in each number. Write your answer on the space provided.

- _____ 1. I am a point between 2.3 and 2.5. Who am I?
- _____ 2. I am a point between 1.7 and 1.9. Who am I?
- _____ 3. I am a point between 4.5 and 4.7. Who am I?
- _____ 4. I am a point between 6.0 and 6.2. Who am I?
- _____ 5. I am a point between 9.9 and 10.1. Who am I?

B. Identify the points that can be seen on the left and right side of the given decimal number. Write your answer on the space provided.

1. _____, 6.3, _____
2. _____, 2.7, _____
3. _____, 8.0, _____
4. _____, 5.5, _____
5. _____, 3.9, _____



Fun Facts

Did you know that the concept of decimals dates back to ancient Egypt? The Egyptians used a form of decimal notation as early as 1600 BCE, representing fractions based on powers of 10. So, when you're plotting decimals on a number line, you're actually using a mathematical idea that has been around for thousands of years!



Interactives

To learn more about this lesson, you may visit TekTeach (Learning Management System).

LESSON 8

Comparing and Ordering Decimals

Place Value	Tens	Ones		Tenths	Hundredths
Digits	7	8	.	4	6



Objectives

- ◇ Compare decimals.
- ◇ Arrange decimals in increasing or decreasing order.



Vocabulary Bank

- **median** – middle value



Math Tale

While lining up at the cashier, Heidi's mom remembered that they needed cheese for their spaghetti. So she sent Heidi to the cheese section. Heidi had to choose between two brands. Cheese Miss was priced at PhP 42.32, while Smiling Cow was priced at PhP 42.48. If the two brands tasted the same, which should Heidi buy?





Let's Explore

To compare decimals, it is helpful to write the numbers in a Place Value Chart. Remember to align the decimal points and compare each digit starting from left to right.

	Tens	Ones		Tenths	Hundredths
Cheese Miss	4	2	.	3	2
Smiling Cow	4	2	.	4	8

Let us compare the digits with the same place value from left to right.

	Tens	Ones		Tenths	Hundredths
Cheese Miss	4	2	.	3	2
Smiling Cow	4	2	.	4	8

Compare the digits in the tens place. Both have 4 in the tens place, so proceed to the ones place.

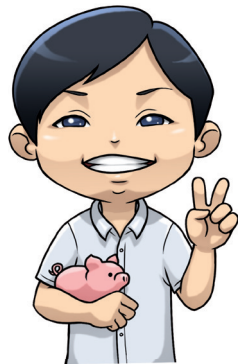
	Tens	Ones		Tenths	Hundredths
Cheese Miss	4	2	.	3	2
Smiling Cow	4	2	.	4	8

Compare the digits in the ones place. Both have 2 in the tens place, so proceed to the tenths place.

Compare the digits in the tenths place. One has 3 and the other has 4. 3 is less than 4.



	Tens	Ones		Tenths	Hundredths
Cheese Miss	4	2	.	3	2
Smiling Cow	4	2	.	4	8



Therefore, PhP 42.32 is less than PhP 42.48. Heidi should choose Cheese Miss because it is cheaper.



Keep in Mind

When comparing decimals, compare the digits with the same place value starting from the left. The number with the larger digit is the larger decimal.

Heidi's mom bought a bag of carrots weighing 1.38 kg and a bag of potatoes weighing 1.32 kg. Which of the two vegetable bags was heavier?

Answer the questions without using a Place Value Chart.

What are the digits in the ones place? Tenths place?

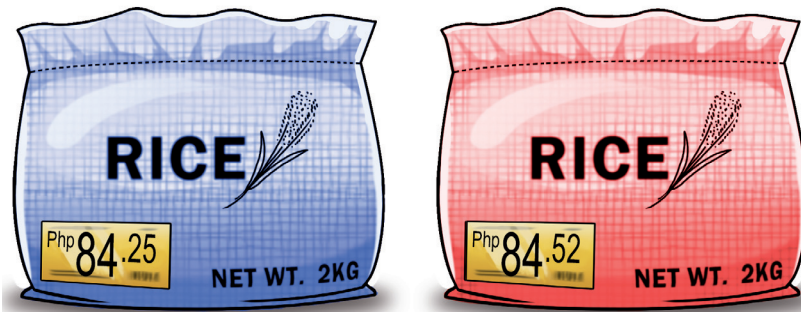
What are the digits in the hundredths place? Are they equal?

Which of the two bags was heavier?



Put to Practice

Heidi wanted to buy a 2-kg-pack of rice. One pack costs PhP 84.25 while the other pack costs PhP 84.52. Which pack was cheaper?



Task 1

Use the Place Value Chart to compare the prices of the packs of rice.

Task 2

Identify the cheaper pack.



Let's Explore

At the sugar and milk aisle, Heidi saw four brands of sugar. They all weighed 1 kg but had different prices.

Casablanca Sugar	PhP 47.28
Negros Sugars	PhP 45.32
Brown Sugar Plus	PhP 47.18
White Sugar Plus	PhP 46.08



Which brand was the most expensive?

You can also use the Place Value Chart in ordering of decimals. Write the decimals in the chart and compare the digits from left to right.

Compare the digits in the tens place. All have four, so proceed to the ones place.



	Tens	Ones	.	Tenths	Hundredths
Casablanca Sugar	4	7	.	2	8
Negros Sugars	4	5	.	3	2
Brown Sugar Plus	4	7	.	1	8
White Sugar Plus	4	6	.	0	8

Compare the digits in the ones place. The digit of Negros Sugars is 5 while that of White Sugar Plus is 6.



5 is less than 6.

	Tens	Ones		Tenths	Hundredths
Casablanca Sugar	4	7	.	2	8
Negros Sugars	4	5	.	3	2
Brown Sugar Plus	4	7	.	1	8
White Sugar Plus	4	6	.	0	8

Negros Sugars is cheaper than White Sugar Plus. Both of these brands are cheaper than Casablanca Sugar and Brown Sugar Plus.

Compare the digits in the tenths place. The digit of Casablanca Sugar is 2 while that of Brown Sugar Plus is 1.

2 is greater than 1.

	Tens	Ones		Tenths	Hundredths
Casablanca Sugar	4	7	.	2	8
Negros Sugars	4	5	.	3	2
Brown Sugar Plus	4	7	.	1	8
White Sugar Plus	4	6	.	0	8

Brown Sugar Plus is cheaper than Casablanca Sugar.

Write the decimal numbers in increasing value.

	Tens	Ones	.	Tenths	Hundredths
Negros Sugars	4	5	.	3	2
White Sugar Plus	4	6	.	0	8
Brown Sugar Plus	4	7	.	1	8
Casablanca Sugar	4	7	.	2	8

Therefore, Casablanca Sugar was the most expensive.



Heidi also compared four brands of milk in the aisle. The prices are listed below.

Cow Delight	PhP 72.45
Happy Dairy	PhP 71.32
Milky Day	PhP 77.28
LB Dairy	PhP 69.57

Which brand was the cheapest?

Which brand was the most expensive?

Write the prices of the four brands of milk in descending order.



Challenge Yourself

Problem Solving Strategy: Make a Table

Using the digits 1, 2, 3, and 4, form as many decimal numbers with two decimal places. Each number must be used only once. How many decimal numbers did you form? Which among the numbers has the least value? How about the greatest?



Portfolio Prompts

Collect four old electric bills from your household and arrange the bills in increasing order based on your household's consumption.



Put to Practice

While waiting for her mom to pay at the cashier, Heidi looked at the dollar exchange rates for the last four days on a monitor. She observed the following rates.

MONDAY 1 dollar = PhP 44.17	TUESDAY 1 dollar = PhP 43.57
WEDNESDAY 1 dollar = PhP 43.29	THURSDAY 1 dollar = PhP 43.35

Task 1

Write the exchange rates in ascending order.

Task 2

Encircle the number with the highest value.



Skills Builder

I. Encircle the letter of the correct answer.

1. Which of the following decimals is less than 30.57?

- a. 31.12 b. 30.58 c. 31.02 d. 30.49

2. Which of the following decimals is greater than 16.98?

- a. 16.89 b. 16.95 c. 17.01 d. 16.97

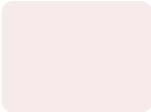
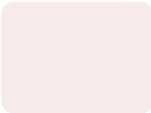
3. Which decimal has the least value?

- a. 0.02 b. 0.1 c. 0.01 d. 0.12

4. Which decimal has the greatest value?
a. 1.04 **b.** 1.39 **c.** 1.29 **d.** 1.4
5. What is the value of the underlined digit in 437.68?
a. 0.008 **b.** 0.08 **c.** 0.8 **d.** 8.0
6. Which of the following is false?
a. $12.7 < 12.71$ **b.** $9.08 > 9.12$ **c.** $61.73 < 61.74$ **d.** $81.2 > 81.1$
7. Which of the following is true?
a. $7.65 > 7.75$ **b.** $5.55 < 5.5$ **c.** $11.98 > 12.01$ **d.** $10.09 > 10.01$
8. Which of the following decimals are arranged in ascending order?
a. 0.67, 0.48, 2.65 **b.** 0.87, 1.03, 2.01 **c.** 1.4, 1.3, 7.9 **d.** 8.17, 6.14, 0.99
9. Which decimal is between 3.07 and 3.21?
a. 3.27 **b.** 2.06 **c.** 3.12 **d.** 3.3
10. Which of the following is NOT between 9.65 and 9.81?
a. 9.7 **b.** 9.79 **c.** 9.97 **d.** 9.67

II. Draw a:

- >** if the value in Column A is greater than the value in Column B.
< if the value in Column B is greater than the value in Column A.
= if the two values are equal.

COLUMN A		COLUMN B
1. 0.87		0.78
2. 7.94		7.91

3. 23.25

24.04

4. 41.08

41.8

5. 93.59

93.61

III. Read and solve each problem carefully.

1. Mr. Fagar was teaching comparing and ordering decimals to a group of students. He asked the students to write a number greater than 12.07 but less than 14.01. The students wrote the following numbers.

Who among the students wrote the correct numbers?

Student	Number
Jay	13.99
Alicia	14.03
Bridget	12.09
Linda	12.71
Jerwin	14.17

2. Patrick's group competed during P.E. class to determine who among them ran the fastest in the 100-meter dash. The time of each is listed below. Who ran the fastest?

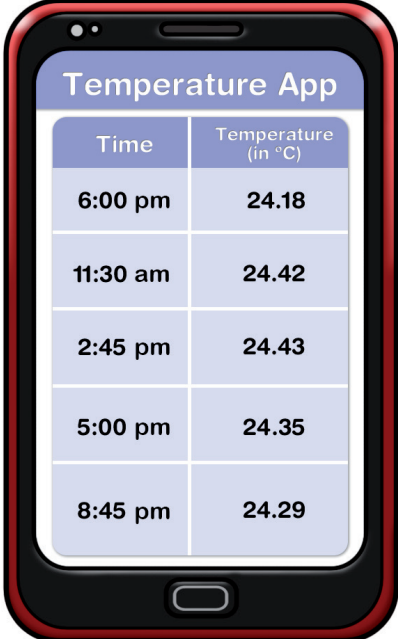
Student	Time (in seconds)
Patrick	13.08
Dave	14.46
Joseph	13.38
Meliton	13.76
Jayson	14.42

3. Patrick, Jerwin, Jayson, and Sebastian live along the same path to school. Patrick lives the nearest to school followed by Jerwin, then Jason. Sebastian lives the farthest. Patrick's house is 17.54 m away from Jerwin's.

Jayson's house is 17.97 m away from Jerwin's and 17.64 m away from Sebastian's. Which two boys live nearest to one another?

4. Heidi has five ball pens of various lengths. The pens are 6.48 in, 7.45 in, 5.98 in, 7.33 in, and 7.12 in long. Help Heidi arrange her ball pens from longest to shortest.

5. Harry likes to record temperatures at different times of the day. Using a special app in his phone, he recorded five temperatures. At what time of the day did Harry measure the median temperature?



Time	Temperature (in °C)
6:00 pm	24.18
11:30 am	24.42
2:45 pm	24.43
5:00 pm	24.35
8:45 pm	24.29



Interactives

To learn more about this lesson, you may visit TekTeach (Learning Management System).

Unit Performance Task

House Budget

Goal: The students will analyze and present information about house cost within one year using decimals and present them using appropriate graphs.

Role: You are a breadwinner who wants to analyze their budget monthly.

Audience: Financial Analyst (teacher) and other spectators (classmates).

Situation: Suppose that you are to track down the house budget for you to able to create a savings for future use. With that, you are to track down your monthly bills (water, electricity, internet, etc.), food, education (for children), and other bills.

Product: The students will produce the following outputs.

1. **List of Monthly Budget** – To list all the following cost of each monthly bill corresponding to your budget (water bill, electricity bill, internet bill, etc.), food, education (for children), and other bills.
2. **Graphs** – Must show the trend of cost, and the quantity of cost in a monthly basis using graphs.
3. **Insights** – To give interpretation of the results for the family to adjust the budget.

Standards: The students will be graded according to the criteria.

Criteria	Advanced (4 points)	Proficient (3 points)	Basic (2 points)	Limited (1 point)
Understanding of Content	Demonstrates a deep and comprehensive understanding of the content with no errors or misconceptions.	Demonstrates a good understanding of the content, with few errors or misconceptions.	Demonstrates a basic understanding of the content with some errors or misconceptions.	Demonstrates minimal understanding of the task and content. Many significant errors or misconceptions are present.

Application of Knowledge	Applies knowledge consistently and effectively to the task, resulting in a highly successful completion.	Applies knowledge effectively to the task with minor errors or inconsistencies. Task completion is satisfactory.	Applies some knowledge to the task but with significant errors or inconsistencies. Task completion is limited.	Does not apply the knowledge effectively to the task. Task completion is minimal or absent.
Task Completion	Completes all essential elements of the task thoroughly and accurately.	Completes most essential elements of the task with only minor gaps or deficiencies.	Completes some essential elements of the task but with notable gaps or deficiencies.	Fails to complete essential elements of the task, resulting in a significantly incomplete or irrelevant product.
Organization and Clarity	The work is highly organized, clear, and effectively communicates the ideas and information.	The work is organized and mostly clear, but there may be occasional issues with communication.	The work is somewhat organized, but clarity and communication are compromised.	The work is disorganized, unclear, and difficult to follow. Communication is limited or absent.
Creativity and Effort	Demonstrates exceptional creativity and effort, exceeding expectations.	Demonstrates creativity and effort in completing the task, but there is room for improvement.	Shows limited creativity and effort in completing the task.	Shows little to no creativity and minimal effort in completing the task.

