Unit (7)	Date:
Concept (1)	Class:

Lesson : 1- **Finding Like Denominators Using the LCM**   Period:

Lesson Objectives:
By the end of this lesson, the student should be able to:
- • I can generate pairs of fractions with like denominators.
- • I can explain how to find like denominators.

Learning tools and resources:
Worksheets ◯   S.B◯   Cards ◯   Internet◯   QR code ◯
Chart ◯   Money◯   Small places ◯   Other things ◯

Learning strategies:
Sharing ◯   Thinking ◯   Grouping ◯   Role playing◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)
Equivalent Fractions on a Multiplication Chart On your multiplication chart,
highlight the row with the first 12 multiples of 2 and the row with the first 12
multiples of 3. Write the vertical pairs of numbers that are highlighted as fractions.

Lesson activities (Learn)
Multiples on the Multiplication Chart Use the multiplication chart to find like
denominators. Rewrite one or both fractions so they have the same denominator.

1. $\frac{1}{4}$ and $\frac{3}{12}$ **4.** $\frac{3}{7}$ and $\frac{3}{8}$

2. $\frac{2}{5}$ and $\frac{5}{8}$ **5.** $\frac{2}{6}$ and $\frac{4}{5}$

Think
Using the LCM Find the smallest like denominator for the fractions listed. Then,change each fraction so that
each fraction is rewritten with the smallest like denominator.

1. $\frac{4}{9}$ and $\frac{2}{3}$ **2.** $\frac{1}{3}$ and $\frac{2}{7}$ **3.** $\frac{1}{5}$ and $\frac{1}{4}$

Closing the idea(Summary)

Writing About Math Explain in your own words two ways to find equivalent
fractions.

Unit (7)	Date:
Concept (1)	Class:

Lesson : 2- **Estimating Sums and Differences of Fractions**   Period:

Lesson Objectives:
By the end of this lesson, the student should be able to:
• I can use benchmark fractions and number sense of fractions to estimate mentally.
• I can determine whether estimates are overestimates or underestimates.

Learning tools and resources:
Worksheets ◯   S.B◯   Cards ◯   Internet◯   QR code ◯
Chart ◯   Money◯   Small places ◯   Other things ◯

Learning strategies:
Sharing ◯   Thinking ◯   Grouping ◯   Role playing◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)

Estimating Fractions at the Palais d'Antoniadis There are many gardens at the Palais d'Antoniadis in Alexandria. The chart below lists the most prominent flower in each of the gardens.

Garden	Flower	Fractional Part of the Garden
Nouzaba Garden	Acacia	$\frac{13}{20}$
Antoniadis Garden	Red Poppy	$\frac{1}{5}$
Flower Garden	Chrysanthemum	$\frac{1}{10}$

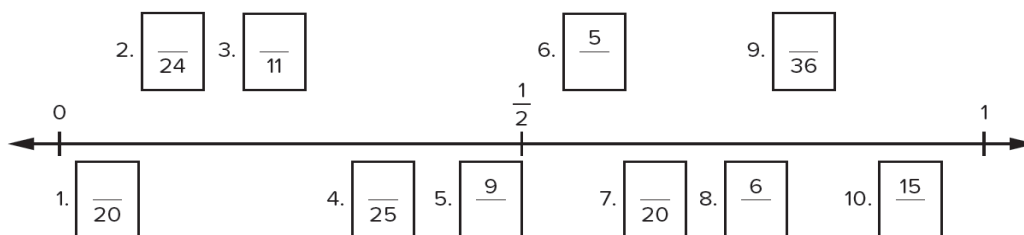## Lesson activities (Learn)

Estimating Sums and Differences Estimate the following fractions and then find the sum. Use the benchmarks 0, 12, and 1.

1. $\frac{3}{7} + \frac{3}{5}$ **2.** $\frac{5}{6} - \frac{7}{12}$ **3.** $\frac{4}{9} + \frac{7}{8}$ **4.** $\frac{8}{9} - \frac{6}{7}$

Think

Relationships between Part and Whole Use the benchmarks to complete each fraction along the number line.

2. $\frac{\quad}{24}$ 3. $\frac{\quad}{11}$ 6. $\frac{5}{\quad}$ 9. $\frac{\quad}{36}$

0          $\frac{1}{2}$ 1

1. $\frac{\quad}{20}$ 4. $\frac{\quad}{25}$ 5. $\frac{9}{\quad}$ 7. $\frac{\quad}{20}$ 8. $\frac{6}{\quad}$ 10. $\frac{15}{\quad}$

Closing the idea(Summary)

Writing About Math Kamel says that $\frac{11}{12} - \frac{7}{10}$ will be about $\frac{1}{2}$. Fady says that $\frac{11}{12} - \frac{7}{10}$ will be close to **0**.

Do you agree with Kamel or Fady? Explain your thinking.

Unit (7)	Date:
Concept (1)	Class:

Lesson :   3- **Using Models to Add and Subtract Fractions with Unlike Denominators**   Period:

Lesson Objectives:

By the end of this lesson, the student should be able to:

• I can use models to represent addition and subtraction of fractions with **unlike denominators**.

Learning tools and resources:

Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯
Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:

Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)

 Error Analysis Hend told Gehad about a garden she visited over the weekend.
She said that the garden was split into sections and that 4/5 of the sections were red poppies and 2/3
of the sections were cornflowers. Hend also mentioned that each section had only one type of flower. Gehad
told Hend that she must have made a mistake because 4/5
and 2/3 would be more than the whole garden. Is Gehad correct? Explain your reasoning.

Lesson activities (Learn)

Modeling with a Fraction Wall Use the fraction wall to evaluate each sum or difference.

1. $\dfrac{2}{3} + \dfrac{1}{4} =$ _____

2. $\dfrac{1}{3} + \dfrac{5}{6} =$ _____

3. $\dfrac{3}{10} - \dfrac{1}{5} =$ _____

4. $\dfrac{3}{4} + \dfrac{1}{3} =$ _____

Think

Modeling with a Fraction Wall Use the fraction wall to evaluate each sum or difference.

5. $\dfrac{4}{5} - \dfrac{1}{2} =$ _____

6. $\dfrac{1}{3} + \dfrac{1}{6} =$ _____

7. $\dfrac{2}{4} - \dfrac{2}{8} =$ _____

8. $\dfrac{5}{8} + \dfrac{1}{4} =$ _____

Closing the idea(Summary)

Writing About Math Hend and Gehad evaluate the given expression.

$$\dfrac{7}{8} - \dfrac{3}{4}$$

Gehad said that the difference is $\dfrac{4}{4}$, and Hend said that the difference is $\dfrac{1}{8}$.

Who is correct? Show your work and explain your thinking using numbers, words, and pictures.

Unit (7)	Date:
Concept (1)	Class:

Lesson : 4- **Adding and Subtracting Fractions with Unlike Denominators, Part 1**   Period:

Lesson Objectives:

By the end of this lesson, the student should be able to:

• I can add and subtract fractions with unlike denominators.

• I can use benchmark fractions and number sense of fractions to assess the reasonableness of answers.

Learning tools and resources:

Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯
Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:

Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)

Chamomile Crops Chamomile is one of the most important flowers that grow in Egypt. Its scent is often used in products like soaps and perfumes. It is also used in some foods and teas. At Shorouk's chamomile farm, 1/10 of the crop is used for food and another 2/5 is for making chamomile tea.
1. Use benchmark fractions to estimate what fraction of the farm crop is used for food and tea.
2. Draw a diagram or use the fraction wall to find the fraction of Shorouk's crop used for food and tea.

Lesson activities (Learn)

Unlike to Like Evaluate by rewriting the fractions with like denominators. Use estimation to check that your answer is reasonable.

1. $\frac{3}{4} + \frac{5}{12} = $ _____

6. $\frac{7}{9} - \frac{2}{3} = $ _____

2. $\frac{15}{15} - \frac{2}{3} = $ _____

7. $\frac{6}{7} - \frac{3}{14} = $ _____

Think

Unlike to Like Evaluate by rewriting the fractions with like denominators. Use estimation to check that your answer is reasonable.

3. $\frac{7}{9} - \frac{1}{3} = $ _____

8. $\frac{4}{5} - \frac{3}{10} = $ _____

4. $\frac{1}{2} + \frac{11}{12} = $ _____

9. $\frac{5}{12} - \frac{7}{36} = $ _____

Closing the idea (Summary)

Whiteboard: Flowering Quilt Project Abeer, Badr, Ehab, and Doha are making a quilt of 36 equal-sized fabric squares to represent flowering plants in Egypt. Abeer made squares for 11/36 of the quilt's area. Badr made squares for 1/6 of the quilt's area. What fraction of the quilt must Ehab make so that 1/6 of the quilt's area will remain for Doha?

Unit (7)	Date:
Concept (1)	Class:

Lesson : 5- **Adding and Subtracting Fractions with Unlike Denominators, Part 2**   Period:

Lesson Objectives:

By the end of this lesson, the student should be able to:
- I can add and subtract fractions with unlike denominators.
- I can use benchmark fractions and number sense of fractions to assess the reasonableness of answers.

Learning tools and resources:

Worksheets ◯   S.B◯   Cards ◯   Internet◯   QR code ◯
Chart ◯   Money◯   Small places ◯   Other things ◯

Learning strategies:

Sharing ◯   Thinking ◯   Grouping ◯   Role playing◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)

Create Your Own Write three different addition problems and three different subtraction problems using the given fractions. Then, estimate each sum or difference. You do not need to find exact answers.

$\frac{1}{2}$	$\frac{4}{9}$	$\frac{3}{8}$	$\frac{5}{6}$	$\frac{2}{5}$
$\frac{1}{21}$	$\frac{8}{11}$	$\frac{6}{7}$	$\frac{7}{12}$	$\frac{9}{10}$

Lesson activities (Learn)

Convert from unlike to like fractions Estimate each sum or difference. Then, evaluate each expression by rewriting the fractions with like denominators.

1. $\frac{1}{3} + \frac{1}{4} =$ _____

2. $\frac{1}{3} - \frac{1}{4} =$ _____

3. $\frac{1}{2} + \frac{2}{5} =$ _____

4. $\frac{1}{2} - \frac{2}{5} =$ _____

5. $\frac{5}{6} + \frac{3}{8} =$ _____

6. $\frac{5}{6} - \frac{3}{8} =$ _____

Think

Partner Practice Estimate each sum or difference. Then, evaluate each expression by rewriting the fractions with like denominators.

1. $\frac{3}{5} + \frac{1}{3} =$ 2. $\frac{11}{12} - \frac{7}{8} =$ 3. $\frac{1}{5} + \frac{1}{2} =$ 4. $\frac{5}{9} + \frac{1}{2} =$

Closing the idea(Summary)

Writing About Math Reflect on the Essential Question: *Why does the denominator sometimes change when adding and subtracting fractions?* Explain your thinking.

Unit (7)	Date:
Concept (1)	Class:
Lesson : 6- **Solving Story Problems with Fractions**	Period:

Lesson Objectives:

By the end of this lesson, the student should be able to:

• I can solve story problems involving addition and subtraction with fractions.

Learning tools and resources:

Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯

Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:

Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯

Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)

Omnia purchases 8/9 kilograms of fava beans. She uses 3/4 kg of the fava beans
to make falafel. How many kilograms of fava beans are left?

Lesson activities (Learn)

Color Tile Arrays Build arrays with color tiles to find the fractional parts of the model.

Use 9 tiles, $\frac{1}{3}$ of which are red, and the remaining tiles are yellow.

How many tiles are red? _____

Therefore, $\frac{1}{3}$ of 9 tiles equal _____ tiles.

How many tiles are yellow? _____

Therefore, $\frac{2}{3}$ of 9 tiles equal _____ tiles.

Think

1. In the pond, 1/3of the lilies are white and ¼ of the lilies are pink. The remaining

30 lilies are blue. How many lilies are in the pond all together?

2. Rania uses 3/4 of her monthly salary to pay for her food, rent, utilities, and transportation. After these

expenses, she is left with 1,250 LE. What is Rania's monthly salary?

Closing the idea(Summary)

Writing About Math Read the problem and answer the question.

In Wafaa's flower garden, 3/7 of the plants are cornflowers and 2/5 are poppies. The
rest of the garden is filled with 6 rose plants. How many flower plants could be in
Wafaa's garden?
Your classmate says the answer to the question is 6/35 .
Do you agree? Why or why not?

Unit (8)	Date:

Unit (8)　　　　　　　　　　　　　　　　Date:

Concept (1)　　　　　　　　　　　　　　Class:

Lesson : 1- **Adding and Subtracting Mixed Numbers with Like Denominators**　　Period:

Lesson Objectives:

By the end of this lesson, the student should be able to:

• I can add and subtract **mixed numbers** with **like denominators**.

Learning tools and resources:

Worksheets ◯　　　S.B ◯　　　Cards ◯　　Internet ◯　　QR code ◯

Chart ◯　　　Money ◯　　Small places ◯　　　Other things ◯

Learning strategies:

Sharing ◯　　Thinking ◯　　　Grouping ◯　　Role playing ◯

Brain storming ◯　　　Problem solving ◯　　　Explain discussion ◯

Discover (Opening the idea)

Rewriting Fractions Greater Than One Complete the chart by rewriting the given values in two other forms.

	Mixed Number	Improper Fraction Equivalent	Mixed Number Equivalent
1.	$3\frac{1}{3}$	A. $\frac{?}{?}$	B. $2\frac{?}{?}$
2.	$2\frac{5}{8}$	A. $\frac{?}{?}$	B. $1\frac{?}{?}$
3.	A. $\underline{\ ?\ }\frac{?}{?}$	$\frac{28}{5}$	B. $3\frac{?}{?}$

Lesson activities (Learn)

Addition and Subtraction Strategies Evaluate each sum or difference. Simplify if possible.

1. $1\frac{3}{5} + 3\frac{1}{5} = $ _____

5. $8\frac{3}{7} - 8\frac{1}{7} = $ _____

2. $2\frac{5}{6} + 2\frac{3}{6} = $ _____

6. $1\frac{2}{3} + 3\frac{2}{3} = $ _____

3. $3\frac{2}{5} - 1\frac{4}{5} = $ _____

7. $5\frac{1}{4} - 2\frac{3}{4} = $ _____

Think

Addition and Subtraction Match

1. $3\frac{1}{5} + b = 5\frac{3}{5}$

3. $2\frac{4}{8} - d = 1\frac{1}{8}$

2. $c + 4\frac{2}{3} = 5\frac{1}{3}$

4. $f + 1\frac{3}{4} = 7\frac{1}{4}$

Closing the idea (Summary) This summer, Nagi and his brother helped harvest cotton. There were 10 square meters of cotton that needed to be harvested. Nagi and his brother each harvested 3 3/4 m2 of cotton. How many square meters of cotton were left?

Unit (8)	Date:
Concept (1)	Class:
Lesson : 2- **Finding Like Denominators**	Period:

Lesson Objectives:

By the end of this lesson, the student should be able to:

• I can generate pairs of mixed numbers with like denominators.

• I can explain how to find like denominators for mixed numbers.

Learning tools and resources:

Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯

Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:

Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯

Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)

Denominator Dilemma Fady is writing 16/24 and 3/5 with like denominators. He is concerned that the denominator of the new fractions will be very large and that he will make a mistake rewriting the fractions. Identify the missing values to rewrite each fraction with 120 as the denominator.

1. 16/24 = ?/120   **2.** 3/5= ?/120

Lesson activities (Learn)

Finding Like Denominators Rewrite the given mixed numbers with like denominators in two different ways.

1. $1\frac{3}{4}$ and $1\frac{6}{15}$ A. _____ and _____   B. _____ and _____

2. $3\frac{6}{8}$ and $2\frac{8}{12}$ A. _____ and _____   B. _____ and _____

Think Complete:

	Mixed Number	Like Denominator	Rewritten in Equivalent Form
Given	$2\frac{6}{36}$		_____
Given	$6\frac{7}{14}$		_____

Closing the idea(Summary)

Writing About Math Read the problem. Then, explain one way to rewrite the mixed numbers with like denominators using equivalent fractions. Egyptian cotton is popular because the fibers are long, making Egyptian cotton smoother and silkier than other cotton fabrics. Egyptian cotton fibers usually range in length from about 3 to 5 centimeters. These fibers are first spun into thread, and then the thread is woven into fabric.Warda measured 3 pieces of Egyptian cotton fabric in meters.5 16/20m 3 18/45m 3 5/25m How would you rewrite the mixed numbers with like denominators?

Unit (8)	Date:
Concept (1)	Class:
Lesson : 3- **Estimation with Mixed Numbers**	Period:

Lesson Objectives:

By the end of this lesson, the student should be able to:

• I can use **benchmark fractions** and number sense of mixed numbers to **estimate** mentally.

Learning tools and resources:

Worksheets ◯   S.B◯   Cards ◯   Internet◯   QR code ◯
Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:

Sharing ◯   Thinking ◯   Grouping ◯   Role playing◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)

Planting with Mixed Numbers Dalia has 21/2square meters of land on which she will plant cotton or sugarcane. She wants to plant on as much of the land as possible without wasting too much seed. Dalia has enough cotton seed to cover 23 /4 m2 of land. She has enough sugarcane seed to cover 23/8m2 of land. Which crop should she plant? Why?

Lesson activities (Learn)

Missing Numbers Use number sense and estimation to complete the mixed numbers.

1. $7\frac{a}{8}$ is a little greater than $7\frac{1}{2}$ Estimate for a: _____

2. $3\frac{b}{9}$ is almost 4   Estimate for b: _____

3. $10\frac{3}{c}$ is slightly less than $10\frac{1}{2}$ Estimate for c: _____

Think

Using Estimation to Add and Subtract Estimate each sum or difference.

1. $6\frac{3}{4} - 2\frac{1}{5}$ Estimate: _____   6. $3\frac{21}{24} - 2\frac{1}{3}$ Estimate: _____

2. $4\frac{2}{3} + 3\frac{5}{6}$ Estimate: _____   7. $9\frac{6}{11} + 2\frac{3}{100}$ Estimate: _____

Closing the idea(Summary)

Writing About Math Read the problem and then respond to the prompt. Sugarcane is sent to a mill to make raw sugar. The sugarcane is washed,cut, and pressed to extract sugarcane juice. Sugarcane juice is processed into raw sugar.One kilogram of sugarcane makes about 1/10 kg of granulated sugar. If Farida harvests 34 kg of sugarcane, about how much sugar will she have?

Unit (8)	Date:
Concept (2)	Class:

Lesson : 4- **Using Models to Add and Subtract Mixed Numbers**   Period:

Lesson Objectives:

By the end of this lesson, the student should be able to:

• I can use models to represent addition and subtraction of mixed numbers with **unlike denominators**.

Learning tools and resources:

Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯
Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:

Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)

Mental Math Use mental math to solve the problems your teacher displays.

Lesson activities (Learn)

✦ **Whiteboard: Using Area Models to Add Mixed Numbers** Use an area model to find each sum.

1. $2\frac{2}{5} + 1\frac{1}{2} =$ _____

4. $2\frac{3}{8} + 5\frac{3}{4} =$ _____

2. $3\frac{2}{3} + 2\frac{4}{5} =$ _____

5. $9\frac{5}{12} + 1\frac{1}{6} =$ _____

3. $4\frac{2}{3} + 2\frac{3}{4} =$ _____

6. $2\frac{3}{4} + 1\frac{4}{10} =$ _____

Think

✦ **Whiteboard: Using Number Lines to Subtract Mixed Numbers** Use a number line to find the difference.

1. $5\frac{1}{4} - 3\frac{1}{6} =$ _____

3. $2\frac{7}{8} - 1\frac{1}{2} =$ _____

2. $6\frac{1}{3} - 3\frac{4}{5} =$ _____

4. $9\frac{1}{4} - 8\frac{3}{5} =$ _____

Closing the idea(Summary)

Writing About Math Read the story problem and then answer the questions about one student's solution.

Heba and her neighbor, Ezz, enjoy having flowerpots in their yards. Heba's pot of cornflowers has a mass of 31/4 kilograms and her pot of poppies has a mass of 1 9/10 kg. Ezz's pot of cornflowers has a mass of31/2kg and her pot of poppies has amass of 1 3/4 kg. Whose pots have a greater mass? By how much?

Unit (8)	Date:
Concept (2)	Class:

Lesson : 5- **Adding and Subtracting Mixed Numbers, Part 1**   Period:

Lesson Objectives:

By the end of this lesson, the student should be able to:

• I can add and subtract fractions and mixed numbers with unlike denominators.

• I can use estimation to assess the reasonableness of my answers.

Learning tools and resources:

Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯

Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:

Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯

Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)

Rewriting Mixed Numbers Rewrite the mixed numbers in two different ways.

1. $4\dfrac{3}{5}$ **2.** $4\dfrac{1}{4}$ **3.** $3\dfrac{7}{9}$

Lesson activities (Learn)

Adding and Subtracting Mixed Numbers Estimate each sum or difference, and then evaluate. Simplify if possible.

1. $4\dfrac{3}{5} - 2\dfrac{1}{3}$ Estimate: _____   Evaluate: _____

2. $8\dfrac{1}{2} - 2\dfrac{3}{7}$ Estimate: _____   Evaluate: _____

Think

Adding and Subtracting Mixed Numbers Estimate each sum or difference, and then evaluate. Simplify if possible.

$1\dfrac{2}{3} - 1\dfrac{3}{5}$ Estimate: _____   Evaluate: _____

$4\dfrac{3}{4} + 9\dfrac{5}{12}$ Estimate: _____   Evaluate: _____

Closing the idea(Summary)

Writing About Math Read the problem and analyze the work submitted by one student. Wael collected 41/4

kilograms of dates. He gave 23/5 kg to a friend. He wants to know how many kilograms are left.

Wael's work:

$$4\dfrac{1}{4} \qquad 4\dfrac{5}{20}$$
$$-2\dfrac{3}{5} \qquad -2\dfrac{12}{20}$$
$$\overline{\qquad\qquad 2\dfrac{7}{20}}$$

Is Wael's response correct? Explain why or why not.

Unit (8)	Date:
Concept (2)	Class:
Lesson : 6-Adding and Subtracting Mixed Numbers, Part 2	Period:

Lesson Objectives:

By the end of this lesson, the student should be able to:

• I can add and subtract fractions and mixed numbers with unlike denominators.

Learning tools and resources:

Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯

Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:

Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯

Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)

Give and Take Solve each equation by adjusting the mixed numbers.

1. $3\frac{7}{8} + \frac{1}{4} = 4 + \underline{\quad\quad}$

2. $7\frac{5}{7} - 5\frac{6}{7} = \underline{\quad\quad} - 6$

3. $1\frac{5}{6} + 3\frac{1}{3} = 2 + \underline{\quad\quad}$

4. $6\frac{1}{8} - 3\frac{3}{4} = \underline{\quad\quad} - 4$

Lesson activities (Learn)

What's Missing? Find the missing number using any strategy. Simplify if possible.

1. $a + 5\frac{5}{6} = 9\frac{1}{12}$ $a = \underline{\quad\quad\quad\quad}$

2. $8\frac{7}{10} - b = 4\frac{9}{20}$ $b = \underline{\quad\quad\quad\quad}$

3. $9\frac{5}{20} - c = 4\frac{19}{20}$ $c = \underline{\quad\quad\quad\quad}$

Think

What's Missing? Find the missing number using any strategy. Simplify if possible.

4. $6\frac{7}{15} + d = 13\frac{3}{10}$ $d = \underline{\quad\quad\quad\quad}$

5. $f + 9\frac{1}{4} = 12\frac{15}{16}$ $f = \underline{\quad\quad\quad\quad}$

6. $g - 1\frac{3}{4} = 7\frac{3}{44}$ $g = \underline{\quad\quad\quad\quad}$

Closing the idea(Summary)

Writing About Math Explain which strategy for adding and subtracting mixed numbers you prefer. You may use words, numbers, and models to support your thinking.

Unit (8)	Date:
Concept (2)	Class:
Lesson : 7- **Story Problems with Mixed Numbers**	Period:

Lesson Objectives:

By the end of this lesson, the student should be able to:

• I can solve story problems involving addition and subtraction of fractions and mixed numbers.

Learning tools and resources:

Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯

Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:

Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯

Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)

Mixed Numbers in Time Convert the mixed numbers to units of time.

$7\frac{1}{10}$ minutes = __(A)__ minutes and __(B)__ seconds

$4\frac{3}{4}$ hours = __(A)__ hours and __(B)__ minutes

80 minutes = _____ hours

Lesson activities (Learn)

Up and Down the Nile Solve the problem with your group.

A ship traveling up the Nile takes 61/6 hours to reach its destination. On the way
back, the current helps push the ship along, so it takes 30 fewer minutes for the
return trip. How long is the ship's trip up and down the Nile? Give your answer both
as a mixed number and in hours and minutes.

Think

Plume Thistle Planting Solve the problem with your group. Habiba is planting three plume thistle

plants. It took her 5/6 minute to plant
the first one. The second plant took 1/12 min longer to plant than the first
one. The third plant took 1/10 less time
to plant than the second one. How long did it take to plant the third plume thistle?

Enough Juice? Solve the problem with your group.

Abeer is mixing juice for a celebration. She mixes 53/4 liters of fruit juice concentrate with 11/2
L more water than fruit juice concentrate. She needs 1/2 L of the mixture for
the celebration. Does she have enough? Why or why not? Explain.

Closing the idea(Summary)

Create a Mixed Number Story Problem Think about the whole numbers and the denominators in

the given expression.31/8+ 21/3
Write a story problem that is reasonable for this pair of mixed numbers. Solve your problem.

Unit (8)	Date:
Concept (2)	Class:
Lesson : 8- **More Story Problems with Mixed Numbers**	Period:

Lesson Objectives:
By the end of this lesson, the student should be able to:
• I can solve story problems involving addition and subtraction of fractions and mixed numbers.

Learning tools and resources:
Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯
Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:
Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)

✦ **Whiteboard: Model Drawing** Solve each problem. Draw a model that represents the solution for each sum or difference.

1. $\frac{15}{15} - \frac{11}{15} =$ _____

2. $1 - \frac{5}{6} =$ _____

3. $\frac{24}{12} - 1\frac{7}{12} =$ _____

4. $\frac{7}{7} - \frac{7}{10} =$ _____

Lesson activities (Learn)

The Basbousa Problem Ola baked 4 identical basbousa for a celebration. Knowing that some guests like basbousa more than others, she cut each basbousa differently. When the celebration was over, she noticed there was some basbousa left in each pan. There was 4/15 left in one pan, and 1/6 remained in another. Another pan had 5/12 remaining, and 3 /10 was uneaten in the last. Ola wondered how much basbousa in total was eaten at the celebration.

1. How much basbousa was eaten at the celebration?
2. Which of the four pans had the least basbousa left? How do you know?
3. Ola wants to put the remaining basbousa in one pan. Will it fit? Why or why not?
You Be the Teacher Read the story problem and analyze each student's work.
Explain whether each strategy was applied correctly or incorrectly. On Monday, Afaf spent 52/3 hours researching papyrus plants for her presentation. The next day, she spent 11/12 of an hour less putting her presentation together. Over both days, how many hours did Afaf spend on her presentation?

Think

1. Nagi

$$5\frac{2}{3} - \frac{11}{12} = 5\frac{8}{12} - \frac{11}{12}$$

$$= 5\frac{3}{12}$$

$$5\frac{8}{12} + 5\frac{3}{12} = \boxed{}$$

2. Radwa

$$5\frac{2}{3} - \frac{11}{12} = \frac{17}{3} - \frac{11}{12}$$

$$= \frac{68}{12} - \frac{11}{12} = \frac{57}{12}$$

$$\frac{68}{12} + \frac{57}{12} = \frac{125}{12} = \boxed{}$$

Closing the idea(Summary)

Writing Equations to Match an Answer Write an equation using at least three numbers that has 2 1/20 as a solution.
Use both addition and subtraction in your equation and include at least one mixed number.

Unit (9)	Date:
Concept (1)	Class:
Lesson : 1- **Multiplying a Fraction or Mixed Number by a Whole Number** Period:	

Lesson Objectives:

By the end of this lesson, the student should be able to:

• I can multiply a fraction or a mixed number by a whole number.

Learning tools and resources:

Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯

Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:

Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯

Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)

Factors and Products Write at least two different multiplication expressions that have the same product as $4 \times 6/10$.

Lesson activities (Learn)

Walking around the Garden As a caretaker, Ezz walks the perimeter of the garden 3 days per week. The perimeter of the garden is 21/5 kilometers. What is the total distance Ezz walks each week? Use the given strategies to create four different representations of the scenario.

1. Use repeated addition.   2. Draw a number line.

3. Draw a diagram.   4. Convert to meters to solve, then write the answer in kilometers.

Roses in Bloom Ezz notices that 23

of the 6 rose bushes are in bloom. How many rose bushes are in bloom? Follow your teacher's directions to solve the problem using different strategies.

1. Draw a diagram.   2. Use another strategy.

Think Complete:

RULE: $\times \frac{9}{10}$	
Input	Output
2	_____
4	_____
6	_____
8	_____

RULE: $\times 3\frac{5}{8}$	
Input	Output
2	_____
4	_____
6	_____
8	_____

Closing the idea(Summary)

Writing About Math Today, you used several different strategies to multiply fractions, mixed numbers, and whole numbers. Which strategy do you prefer? Why? You may use words, numbers, and drawings to support your thinking.

Unit (9)	Date:
Concept (1)	Class:
Lesson : 2- **Estimating Products of Fractions and Mixed Numbers**	Period:

Lesson Objectives:

By the end of this lesson, the student should be able to:

• I can explain how a product changes when a fraction or mixed number ismultiplied by a factor greater than1.

• I can explain how a product changes when a fraction or mixed number ismultiplied by a factor less than 1.

• I can estimate the product of fractions and mixed numbers.

Learning tools and resources:

Worksheets ◯　　　S.B ◯　　　Cards ◯　Internet ◯　　QR code ◯
Chart ◯　　　Money ◯　Small places ◯　　　Other things ◯

Learning strategies:

Sharing ◯　Thinking ◯　　Grouping ◯　　Role playing ◯
Brain storming ◯　　　　Problem solving ◯　　　Explain discussion ◯

Discover (Opening the idea)

Find the Products Evaluate the products. Be prepared to discuss the patterns and relationships you noticed.

4x7　　　　　　4x1　　　　　　4x0.7　　　　　4x0.1　　　　　0.4x0.7

Lesson activities (Learn)

The Halves Have It Use your reasoning to evaluate each product. If necessary, draw a diagram to help. Simplify your answers, if possible.

1. $\dfrac{2}{3} \times \dfrac{1}{2} =$ _____　　　$\dfrac{2}{3} \times 1\dfrac{1}{2} =$ _____

2. $\dfrac{4}{5} \times \dfrac{1}{2} =$ _____　　　$\dfrac{4}{5} \times 1\dfrac{1}{2} =$ _____

3. $\dfrac{8}{10} \times \dfrac{1}{2} =$ _____　　　$\dfrac{8}{10} \times 2\dfrac{1}{2} =$ _____

Think

Less Than, Equal to, Greater Than Indicate whether each product is less than, equal to, or greater than the first factor.

1. $\dfrac{3}{5} \times \dfrac{5}{3}$　　(less than/greater than/equal to)　　$\dfrac{3}{5}$

2. $\dfrac{3}{5} \times \dfrac{3}{5}$　　(less than/greater than/equal to)　　$\dfrac{3}{5}$

3. $\dfrac{3}{5} \times \dfrac{10}{5}$　　(less than/greater than/equal to)　　$\dfrac{3}{5}$

Closing the idea(Summary)

Writing About Math Consider the given statements. Explain why you can predict the size of the product based on the size of the factors. You may use words, numbers, and drawings to support your thinking.

$$4 \times \dfrac{7}{10} = 2\dfrac{4}{5} \qquad \dfrac{4}{10} \times \dfrac{7}{10} = \dfrac{7}{25} \qquad 2\dfrac{1}{2} \times \dfrac{3}{10} = \dfrac{3}{4}$$

Unit (9)	Date:
Concept (1)	Class:
Lesson : 3- **Understanding Multiplication with Fractions**	Period:

Lesson Objectives:
By the end of this lesson, the student should be able to:
• I can use models to represent multiplication of a fraction by a fraction.

Learning tools and resources:
Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯
Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:
Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)
Make It Equal Multiply to find equivalent fractions. Do not simplify the products.

1. $\dfrac{1}{4} \times \dfrac{3}{3}$ 2. $\dfrac{3}{5} \times \dfrac{4}{4}$ 3. $\dfrac{7}{12} \times \dfrac{6}{6}$ 4. $\dfrac{5}{8} \times \dfrac{2}{2}$

Lesson activities (Learn)
Whiteboard: Modeling Multiplication Use an area model to show fraction multiplication. Draw a model for each factor and then draw a model to represent the problem. Label each model. Use a different color for each factor. Simplify your answers, if possible.

1. $\dfrac{1}{2} \times \dfrac{1}{5} =$ _____   5. $\dfrac{3}{4} \times \dfrac{1}{2} =$ _____

2. $\dfrac{5}{6} \times \dfrac{2}{5} =$ _____   6. $\dfrac{3}{6} \times \dfrac{5}{6} =$ _____

3. $\dfrac{3}{5} \times \dfrac{1}{4} =$ _____   7. $\dfrac{3}{4} \times \dfrac{3}{8} =$ _____

4. $\dfrac{1}{3} \times \dfrac{3}{8} =$ _____   8. $\dfrac{5}{8} \times \dfrac{3}{3} =$ _____

Think
Missing Numbers Study the multiplication area models and fill in the missing fraction. Then, enter the product. Simplify your answers, if possible.

1.

2.
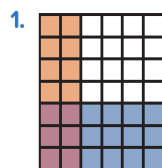
$\dfrac{2}{6} \times$ _____ = _____   _____ $\times \dfrac{3}{5} =$ _____
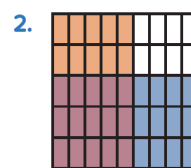
Closing the idea (Summary)

Writing About Math Maha made a model for 1/3 x3/5
but is having trouble finding the product.

Unit (9)	Date:
Concept (1)	Class:
Lesson : 4- **Multiplying Fractions by Fractions**	Period:

Lesson Objectives:

By the end of this lesson, the student should be able to:

• I can multiply a fraction by a fraction.

• I can **simplify** fractions.

Learning tools and resources:

Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯
Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:

Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)

Whiteboard: Garden Fractions Ashraf's rectangular garden is divided into thirds. He planted trees in one section, fruits and vegetables in another section, and flowers in the last section. Half of the trees in his garden are jacaranda trees and the other half are eucalyptus trees. His garden has three types of vegetables—radishes, cabbage, and cucumbers—each in one third. Ashraf loves fresh flowers, and he divided that section into fourths so he could plant poppies, irises, daisies, and jasmine. Use graph paper or the Whiteboard: Garden Fractions to create and label a sketch of Ashraf's garden.

Lesson activities (Learn)

Let's Multiply Find the product. Simply your answers, if possible.

1. $\frac{1}{2} \times \frac{2}{8} =$ _____

2. $\frac{1}{3} \times \frac{2}{7} =$ _____

3. $\frac{3}{9} \times \frac{3}{4} =$ _____

4. $\frac{1}{4} \times \frac{1}{4} =$ _____

5. $\frac{5}{10} \times \frac{8}{10} =$ _____

Think

Make It Simpler Write each product in its simplest form.

1. $\frac{3}{8} \times \frac{1}{6} =$ _____

2. $\frac{1}{4} \times \frac{8}{11} =$ _____

3. $\frac{4}{5} \times \frac{4}{9} =$ _____

4. $\frac{5}{12} \times \frac{3}{5} =$ _____

5. $\frac{5}{8} \times \frac{2}{15} =$ _____

Closing the idea(Summary)

Writing About Math Aya is planning a garden. She wants 23 of her garden tobe planted with vegetables. She also wants 1/4of the vegetables to be leeks and 3/4 of them to be peas.Explain whether she can use multiplication to describe the fraction of her garden that will contain leeks
and the fraction that will contain peas.

Unit (9)	Date:
Concept (1)	Class:

Lesson : 5- **Multiplying Fractions and Mixed Numbers**   Period:

Lesson Objectives:
By the end of this lesson, the student should be able to:
• I can multiply a fraction by a mixed number.
• I can simplify fractions and mixed numbers.

Learning tools and resources:
Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯
Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:
Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)
Planting Seeds Solve the given problem and show your work. Use a White board or graph paper to draw a model if needed. Simplify your answer, if possible.Ola and Omnia were planting flowers in their garden. Ola had 2 bags of flower seeds, but Omnia had only 3/4 of a bag of seeds. Each girl planted 1/2of the seeds she had. How many bags of seeds did they plant altogether?

Lesson activities (Learn)
Multiplying Fractions by Mixed Numbers Evaluate each product using the Distributive Property of Multiplication. Simplify your answers when possible.

1. $3\frac{4}{6} \times \frac{1}{4} =$ _____   2. $2\frac{2}{5} \times \frac{2}{3} =$ _____   3. $5\frac{1}{4} \times \frac{1}{2} =$ _____

4. $\frac{3}{4} \times 2\frac{1}{5} =$ _____   5. $\frac{1}{8} \times 3\frac{2}{5} =$ _____   6. $2\frac{4}{7} \times \frac{5}{8} =$ _____

Think
Put < , = , >

$2\frac{3}{4} \times \frac{5}{6} =$ _____ $2\frac{5}{6} \times \frac{3}{4} =$ _____

Closing the idea(Summary)

Two students tried multiplying a mixed number by a fraction using the Distributive Property of Multiplication. Look at their solutions. Find and correct the errors.

Given: $3\frac{5}{8} \times \frac{2}{3}$

Nabila's Solution	Basem's Solution
$3\frac{5}{8} \times \frac{2}{3}$	$3\frac{5}{8} \times \frac{2}{3}$
$\left(3 \times \frac{2}{3}\right) + \left(\frac{5}{8} \times \frac{2}{3}\right)$	$\left(3 \times \frac{2}{3}\right) \times \left(\frac{5}{8} \times \frac{2}{3}\right)$
$\frac{6}{3} + \frac{10}{24}$	$\frac{6}{3} \times \frac{10}{24}$
$\frac{16}{27}$	$\frac{60}{72} = \frac{5}{6}$

Unit (9)	Date:
Concept (1)	Class:
Lesson : 6- **Multiplying Mixed Numbers**	Period:

Lesson Objectives:

By the end of this lesson, the student should be able to:
• I can draw area models to multiply mixed numbers.
• I can use the Distributive Property of Multiplication to multiply mixed numbers.
• I can simplify fractions and mixed numbers.

Learning tools and resources:

Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯
Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:

Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)

Can You Draw It? Using graph paper or a Whiteboard, draw an area model to represent each fraction or mixed number.

1. $1\frac{1}{2}$ **2.** $2\frac{2}{3}$ **3.** $3\frac{1}{5}$

Lesson activities (Learn)

Whiteboard: Using Area Models to Multiply Mixed Numbers Use an area model to multiply two mixed numbers. Fill in the squares to create an area model to find each product. Simplify your answers, if possible.

1. $1\frac{1}{2} \times 2\frac{2}{3} =$ _____   **3.** $2\frac{3}{4} \times 1\frac{2}{3} =$ _____

2. $2\frac{2}{3} \times 3\frac{1}{5} =$ _____   **4.** $3\frac{1}{2} \times 1\frac{2}{5} =$ _____

Think

Multiplying Mixed Numbers Using the Distributive Property of Multiplication Use the Distributive Property of Multiplication to find each product. Simplify your answers, if possible.

1. $2\frac{2}{5} \times 1\frac{1}{2} =$ _____

$$\left(\underline{\quad\quad} + \underline{\quad\quad} \right) \times \left(\underline{\quad\quad} + \underline{\quad\quad} \right)$$

$$= \left(\underline{\quad\quad} \times \underline{\quad\quad} \right) + \left(\underline{\quad\quad} \times \underline{\quad\quad} \right)$$

$$+ \left(\underline{\quad\quad} \times \underline{\quad\quad} \right) + \left(\underline{\quad\quad} \times \underline{\quad\quad} \right)$$

Closing the idea(Summary)

Writing About Math Describe the relationships you notice between multiplying mixed numbers using an area model and using the Distributive Property of Multiplication to evaluate multiplication expressions. You may use words, numbers, and drawings to support your thinking.

Unit (9)	Date:
Concept (1)	Class:

Lesson : 7- **Multiplying Mixed Numbers Using Improper Fractions**   Period:

Lesson Objectives:

By the end of this lesson, the student should be able to:
- I can multiply mixed numbers using improper fractions.
- I can simplify fractions and mixed numbers.

Learning tools and resources:

Worksheets ○   S.B ○   Cards ○   Internet ○   QR code ○

Chart ○   Money ○   Small places ○   Other things ○

Learning strategies:

Sharing ○   Thinking ○   Grouping ○   Role playing ○

Brain storming ○   Problem solving ○   Explain discussion ○

Discover (Opening the idea)

Convert into mixed number: $\dfrac{31}{5}$ $\dfrac{7}{2}$

Lesson activities (Learn)

Multiplying Mixed Numbers Using Improper Fractions Rewrite the mixed numbers as improper fractions. Then, simplify before you multiply. Be sure to simplify your answers.

1. $2\dfrac{1}{4} \times 2\dfrac{2}{3} =$ 2. $1\dfrac{5}{6} \times 4\dfrac{2}{5} =$ 3. $3\dfrac{1}{2} \times 1\dfrac{3}{4} =$

Think

Multiplying Mixed Numbers Using Improper Fractions Rewrite the mixed numbers as improper fractions. Then, simplify before you multiply. Be sure to simplify your answers.

4. $4\dfrac{2}{7} \times 2\dfrac{1}{3} =$ 5. $1\dfrac{1}{3} \times 1\dfrac{3}{8} =$ 6. $3\dfrac{1}{3} \times 5\dfrac{2}{5} =$

Closing the idea(Summary)

Writing About Math Ayman is taking inventory of his landscaping supplies.

He has $3\dfrac{1}{2}$ bags of fertilizer.

Each bag weighs $7\dfrac{3}{4}$ kilograms.

He writes that there are $21\dfrac{3}{8}$ kg of fertilizer in all.

Is Ayman correct? Explain your thinking.

Unit (9)	Date:
Concept (1)	Class:

Lesson :   8- **Story Problems Involving Multiplication of Fractions and Mixed Numbers**   Period:

Lesson Objectives:

By the end of this lesson, the student should be able to:

• I can solve story problems involving multiplication of fractions and mixed numbers.

• I can simplify fractions and mixed numbers.

Learning tools and resources:

Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯

Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:

Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯

Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)

Mixed Numbers in My Life Think of situations in which mixed numbers could be
used to describe aspects of your own life. Share your ideas with the class.

Lesson activities (Learn)

1. Aya purchased a bag of tomatoes from the market that has a mass of 21/3 kilograms. Her brother,

Ameen, purchased a bag of potatoes that has a mass 11/2 times more than Aya's bag of tomatoes. What is
the mass of Ameen's bag of potatoes?

2- Moustafa is harvesting sugarcane. He can harvest 33/4 kilograms of sugarcane in 1 hour. If he plans to
work for 21/2 hours, how much sugarcane will he harvest?

Think

3. Farida is reading a chapter book. She can usually read 201/2 pages in 1 hour. If she
plans to read for 1 hour and 15 minutes, how many pages will she read?

4. Seif bought 4 bags of soil for his garden. Each bag has a mass of 31/3 kilograms. If he only used 33/4 bags
of soil, how many kilograms did he use?

Closing the idea(Summary)

Writing About Math Gamila is thinking about what it means to multiply by 1/2. She
says that multiplying by 1/2 is kind of like division.
Do you agree? Explain your thinking. You may use numbers, words, and pictures.

Unit (9)	Date:
Concept (2)	Class:
Lesson : 9- **Fractions as Division**	Period:

Lesson Objectives:
By the end of this lesson, the student should be able to:
• I can explain how fractions represent division of whole numbers.

Learning tools and resources:
Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯
Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:
Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)   Match:

1. 2 bales of cotton shared by 3 manufacturers   A. $4 \div 2$

2. 3 bales of cotton shared by 2 manufacturers   B. $2 \div 5$

3. 5 bales of cotton shared by 2 manufacturers   C. $2 \div 3$

4. 3 bales of cotton shared by 5 manufacturers   D. $3 \div 2$

5. 2 bales of cotton shared by 4 manufacturers   E. $5 \div 3$

6. 2 bales of cotton shared by 5 manufacturers   F. $2 \div 4$

G. $5 \div 2$

H. $3 \div 5$

Lesson activities (Learn)

Whiteboard: Divisors and Dividends Model division expressions based on the meaning of the values. Using graph paper or the Whiteboard, create a model that represents each scenario. Then find the quotient. Simplify your answer, if possible. 1. 2 bales of cotton shared by 3 manufacturers

2. 3 bales of cotton shared by 2 manufacturers

3. 5 bales of cotton shared by 2 manufacturers

Think

Remainders as Fractions Complete the chart. Write the quotient as an improper fraction and simplify, if possible. Then, use the division algorithm and write the remainder as a fraction. You may wish to use a Whiteboard to do the division.

Expression	Quotient	Division Algorithm
2. $4 \div 3$		
3. $6 \div 3$		
4. $5 \div 4$		

Closing the idea (Summary)
Writing About Math Explain in your own words how 3/4 can be interpreted as a division problem. You may also use numbers and pictures to support your thinking.

Unit (9)	Date:
Concept (2)	Class:
Lesson : 10- **Story Problems Involving Fractions as Division**	Period:

Lesson Objectives:

By the end of this lesson, the student should be able to:

• I can solve story problems involving division of whole numbers and quotients of fractions or mixed numbers.

• I can simplify fractions and.

Learning tools and resources:

Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯

Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:

Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯

Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)

Order Matters Read each problem carefully. For each problem, identify the values that represent the dividend and the divisor. Then, estimate whether the answer will be less than 1 or greater than 1. Explain your thinking. **1.** Sameh ran 10 kilometers in 70 minutes. How many kilometers per minute did he run?

2. Shehab has 6 houseplants. It took him 45 minutes to replant them. How long did it take him to replant each one?

Lesson activities (Learn)

Flower Shop Write an equation to solve each problem. If necessary, draw a model to help you. Simplify your answers, if possible.

1. The flower shop received 8 equal-sized bundles of chrysanthemums and 10 vases. If the bundles are divided equally among 10 vases, what part of a bundle will each vase get?

2. The flower shop has 12 meters of ribbon to make equal-sized bows for each of the 8 birthday bouquets they are making. How many meters of ribbon can be used for each bouquet?

Think

1. Write a story problem in which the quotient is a whole number.

2. Write a story problem in which the quotient is a fraction less than 1.

3. Write a story problem in which the quotient is a mixed number.

Closing the idea(Summary)

Writing About Math Nadia wants to make a dress for each of her 4 dolls. She has

6 meters of fabric. She is confused about whether she can use 2/3

m of fabric for

each dress or 11/2

m of fabric for each dress. Use numbers, words, or pictures to

help explain how much fabric Nadia can use for each dress.

Unit (9)	Date:
Concept (2)	Class:
Lesson : 11- **Dividing Unit Fractions by Whole Numbers**	Period:

Lesson Objectives:

By the end of this lesson, the student should be able to:

• I can use models to divide **unit fractions** by whole numbers.

• I can explain the relationship between division and multiplication of fractions.

Learning tools and resources:

Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯
Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:

Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)

Always, Sometimes, Never Read each statement and indicate whether it is always true, sometimes true, or never true. Think of an example to support your thinking.

1. Unit fractions are less than 12.
2. A unit fraction multiplied by the number in the denominator equals 1.
3. The larger the number in the denominator of a unit fraction, the larger the fraction.

Lesson activities (Learn)

1. $\frac{1}{3} \div 5 = $ _____

2. $\frac{1}{2} \div 3 = $ _____

3. $\frac{1}{3} \div 2 = $ _____

4. $\frac{1}{3} \div 4 = $ _____

5. $\frac{1}{2} \div 7 = $ _____

6. $\frac{1}{8} \div 2 = $ _____

7. $\frac{1}{6} \div 3 = $ _____

8. $\frac{1}{5} \div 5 = $ _____

Think Divide or Multiply? Write the missing number in each equation.

1. $\frac{1}{3} \div a = \frac{1}{12}$ $\frac{1}{3} \times b = \frac{1}{12}$ $a = $ _____ $b = $ _____

2. $\frac{1}{4} \div c = \frac{1}{20}$ $\frac{1}{4} \times d = \frac{1}{20}$ $c = $ _____ $d = $ _____

3. $\frac{1}{5} \div e = \frac{1}{30}$ $\frac{1}{5} \times f = \frac{1}{30}$ $e = $ _____ $f = $ _____

Closing the idea (Summary)

Writing About Math Explain the relationship between fraction division and multiplication. Use examples from BUILD to support your thinking.

Unit (9)	Date:
Concept (2)	Class:

Lesson : 12- **Dividing Whole Numbers by Unit Fractions**   Period:

Lesson Objectives:
By the end of this lesson, the student should be able to:
• I can use models to divide whole numbers by unit fractions.
• I can apply the relationship between division and multiplication of fractions to solve problems.

Learning tools and resources:
Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯
Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:
Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)
Find the missing value that makes each statement true.

1. $\dfrac{1}{3} \times$ _____ $= 1$ **4.** $\dfrac{1}{4} \times$ _____ $= 1$

2. $\dfrac{1}{3} \times$ _____ $= 2$ **5.** $\dfrac{1}{4} \times$ _____ $= 2$

Lesson activities (Learn)
Whiteboard: Using Area Models to Divide Whole Numbers by Unit Fractions
Use graph paper or the Whiteboard to draw an area model to find the quotient.

1. $4 \div \dfrac{1}{3}$ **5.** $3 \div \dfrac{1}{4}$

2. $3 \div \dfrac{1}{5}$ **6.** $4 \div \dfrac{1}{5}$

3. $5 \div \dfrac{1}{2}$ **7.** $8 \div \dfrac{1}{2}$

4. $2 \div \dfrac{1}{4}$ **8.** $6 \div \dfrac{1}{3}$

Think
Applying Mathematical Relationships to Simplify Expressions Write the missing number in each equation.

1. $5 \div a = 15$
$5 \times b = 15$ $a =$ _____ $b =$ _____

2. $8 \div c = 32$
$8 \times d = 32$ $c =$ _____ $d =$ _____

3. $3 \times f = 6$
$3 \div g = 6$ $f =$ _____ $g =$ _____

Closing the idea(Summary)

1. On Tuesday morning, Farha's Flower Shop made 7 bouquets of daffodils
which were 15
of the number of bouquets ordered for that day. How many total
bouquets were ordered from Farha's Flower Shop on Tuesday?

Unit (9)	Date:
Concept (2)	Class:

Lesson : 13. **Story Problems Involving Division of Whole Numbers and Unit Fractions**   Period:

Lesson Objectives:

By the end of this lesson, the student should be able to:
- I can solve story problems involving division of whole numbers and unit fractions.
- I can simplify fractions and mixed numbers.

Learning tools and resources:

Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯
Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:

Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)

Choose the Operation For each problem, identify which operation (addition, subtraction, multiplication, or division) should be used to model the situation described.

1. There are 4 kilograms of hummus. A worker separates the hummus into packages of 1/4 kg. How many packages will be made?

2. There are 4 bags of fava beans. Each bag has a mass of 3/4 of a kilogram. What is the total mass of the fava beans?

Lesson activities (Learn)

Divide the Fraction or Divide the Whole Number? Select the expression that represents the problem, and then evaluate it.

1. If a turtle can crawl ½ kilometers per hour, how many hours would it take for the turtle to travel 8 km?
   Choose: ½ ÷ 8 or 8 ÷ ½

2. A teacher wants to give 1/8 of a box of pencils to each student. She has 5 boxes of pencils. To how many students will she be able to give pencils?
   Choose: 1/8 ÷ 5 or 5 ÷ 1/8

Think

3. Abdallah has 3 identical gifts to wrap. He uses 1/2 of a roll of paper to wrap the gifts. If each gift uses the same amount of paper, how much paper did Abdallah use for each gift?

Choose: 1/2 ÷ 3 or 3 ÷ 1/2

4. Afaf and Adel pulled up weeds in 1/6 of the garden's area. If they divided the weeding equally, what total area of the garden did Afaf weed?

Choose: 1/6 ÷ 2 or 2 ÷ 1/6

Closing the idea (Summary)

Writing About Math Reflect on the Lesson Essential Question "What strategies can we use to divide whole numbers and unit fractions?" Answer the question in your own words and explain the difference between

6 ÷ 1/4 and 1/4 ÷ 6 in your reflection.

Unit (10)	Date:
Concept (1)	Class:
Lesson : 1- **Categories of Shapes**	Period:

Lesson Objectives:
By the end of this lesson, the student should be able to:

• I can classify two-dimensional figures into categories based on their **attributes**.

• I can classify two-dimensional figures into categories and subcategories based on their attributes.

• I can explain how two figures can belong to more than one subcategory.

Learning tools and resources:
Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯
Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:
Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)
Whiteboard: Vocabulary Sketch Work with a partner to sketch a quick image representing each of the given vocabulary terms. Use the Whiteboard or your Math Notebook.

parallel lines	right angle	quadrilateral
perpendicular lines	shape with a line of symmetry	parallelogram
acute angle	ray	polygon
obtuse angle	two congruent shapes	intersecting lines

Lesson activities (Learn)
Categorizing Shapes Follow your teacher's directions to describe the attributes of the shapes with a partner.

1.   2.   3.
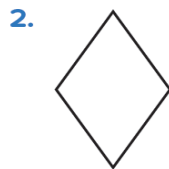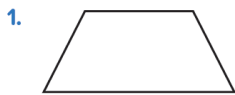
Think
Whiteboard: Quadrilaterals Use the list of quadrilaterals to fill in the chart.
Remember that the hierarchy goes from most general to more specific.

Rectangle- Parallelogram -Rhombus
-Square -Trapezium -Kite

Quadrilaterals
(4-sided polygons)

Types of sides
Exactly 1 pair of parallel sides
1. ☐

2 pairs of parallel sides opposite each other
2. ☐

2 pairs of adjacent sides that are congruent
3. ☐

Types of angles
4 right angles
4. ☐

2 acute angles and 2 obtuse with four congruent sides
5. ☐

4 right angles
4 congruent sides
6. ☐
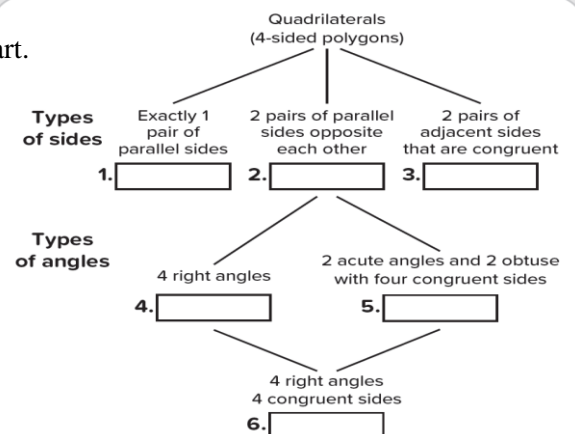
Closing the idea(Summary)
Whiteboard: Categorizing Shapes Classify shapes using a Venn diagram.
Use the Whiteboard:
Categorizing Shapes or your Math Notebook to place the polygons
into the Venn diagram. Some shapes may be placed outside the circles.

Shapes with Acute Angles   Shapes with Obtuse Angles
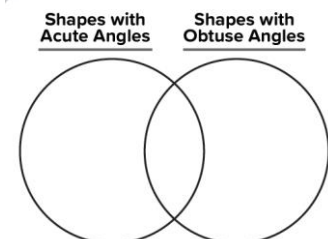
Unit (10)	Date:
Concept (1)	Class:
Lesson : 2- **Tricky Triangles**	Period:

Lesson Objectives:
By the end of this lesson, the student should be able to:
- I can measure the sides of triangles.
- I can categorize triangles based on their properties.

Learning tools and resources:
Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯
Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:
Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)
Error Analysis Read the problem and complete the error analysis. Is a square also a parallelogram?
Farha answered,

> No, a square is not a parallelogram because a square has
> four right angles, and a parallelogram does not.

1. What did the student do correctly?
2. What did the student do incorrectly? Why do you think she made this error?
3. Try to solve the problem. Explain your thinking.

Lesson activities (Learn)
Whiteboard: Dot Paper Using the dot paper, can you draw:
- A triangle with two right angles?
- A triangle with two obtuse angles?
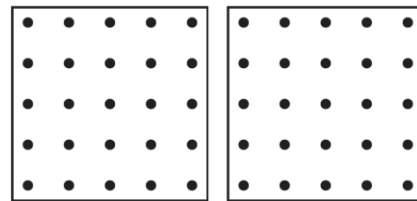
Think
Whiteboard: Measuring Sides
Use the Whiteboard or a ruler to measure the
length of each side of the triangles.
Measure to the nearest 12
cm. Then, record your
measurements in centimeters (cm).
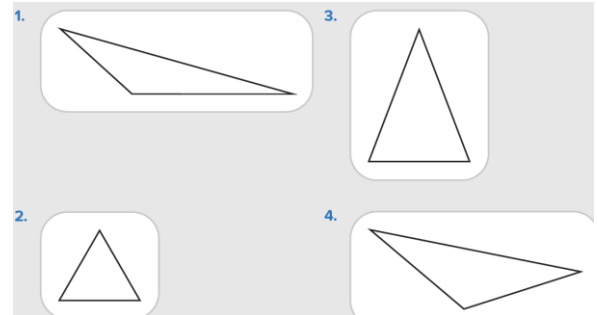
Closing the idea(Summary)

Identify Triangle Types Using Measurement Measure and label each triangle.

Then, select the best name for each triangle based on its properties. Some
triangles may be classified in more than one way.

1.

Which two types of triangles are shown?

  A. scalene triangle   D. right triangle

  B. isosceles triangle   E. acute triangle

  C. equilateral triangle   F. obtuse triangle

2.

Which two types of triangles are shown?

  A. scalene triangle   D. right triangle

  B. isosceles triangle   E. acute triangle

  C. equilateral triangle   F. obtuse triangle

Unit (10)	Date:
Concept (2)	Class:
Lesson : 3- **Using Tiling to Calculate Area**	Period:

Lesson Objectives:
By the end of this lesson, the student should be able to:
• I can use tiling to find the areas of rectangles with whole number and fractional dimensions.

Learning tools and resources:
Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯
Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:
Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)
What type of triangle is shown, based on its angles AND side lengths?
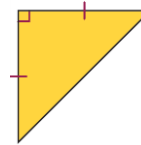
Lesson activities (Learn)
Whole Number Tiling You may choose to use a Whiteboard or your Math Notebook where indicated for the next tasks.
1. Count the unit tiles to determine the area of the rectangle.
2. Draw a rectangle with a length of 15 units and a width of 12 units.
3. Find the area of the rectangle you drew in Problem 2.
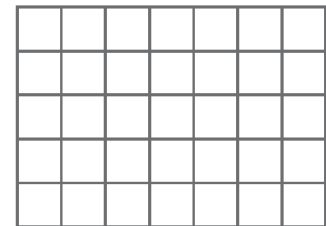
Think
1. Draw a rectangle with dimensions $4\frac{1}{2}$ units $\times 2\frac{1}{2}$ units. Then, calculate and record its area. Be sure to label your answer.

2. Draw a rectangle with dimensions of $6\frac{1}{2}$ units $\times 4\frac{1}{2}$ units. Then, calculate and record its area. Be sure to label your answer.

Closing the idea(Summary)
Writing About Math Reflect on the work you did today. How does tiling to find area connect to multiplying to find area? Use one of the BUILD problems to illustrate your thinking.

Unit (10)	Date:
Concept (1)	Class:
Lesson : 4- **Calculating Area with Fractional Dimensions**	Period:

Lesson Objectives:

By the end of this lesson, the student should be able to:

• I can draw models to find the area of rectangles with whole-number and fractional dimensions.

Learning tools and resources:

Worksheets ◯　　S.B ◯　　Cards ◯　Internet ◯　QR code ◯

Chart ◯　　　Money ◯　Small places ◯　　Other things ◯

Learning strategies:

Sharing ◯　Thinking ◯　　Grouping ◯　　Role playing ◯

Brain storming ◯　　　Problem solving ◯　　　Explain discussion ◯

Discover (Opening the idea)

Analyzing Misconceptions Students were directed to draw a rectangle that is 4 units long by 31/2 units wide and find its area.

Select the student who correctly
represented the tiling and found the area.
Analyze the solutions and
explain what each student did correctly and incorrectly.
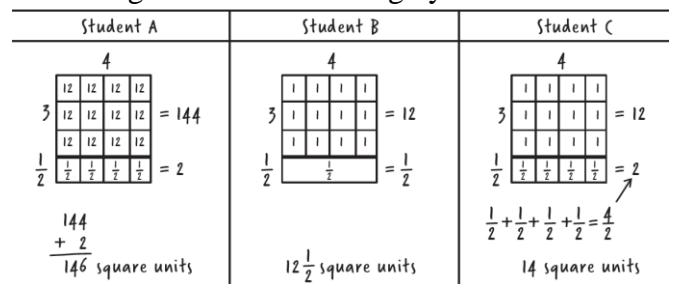
Lesson activities (Learn)

1. Doha is tiling her $4 \times 6\frac{1}{2}$-unit bathroom. The tiles come in 1-unit squares.

   How many tiles will she need to cover the floor? Model your thinking.

2. Amir measures a painting. It is $4\frac{1}{3}$ units long by $2\frac{1}{2}$ units wide. Draw a model of
   the painting. Be prepared to complete the problem with your class.

Think

3. Draw a model for a rectangle measuring $9\frac{1}{4}$ meters by $3\frac{1}{2}$ m. Then, find
   the area.

4. Draw a model for a rectangle measuring $2\frac{1}{2}$ meters by $10\frac{3}{4}$ m. Then, find
   the area.

Closing the idea (Summary)

Egyptian public parks and gardens, including ancient ones, have had to change as urban areas develop. The site of Azbakeya Garden dates back to the 15th century, when a lake with an area of 45 feddan was dug. (One feddan is about 4,200 square meters.) Later, the lake was filled in with earth and turned into an 18-feddan park which was opened to the public in 1872. As of 2014, the area of the park was only 4 feddans.

1. Select three different colors. Draw the original lake with an area of 45 feddan. Inside this rectangle, use another color to represent the area of the 18-feddan park in 1872. Inside this park, use another color to represent the current area of 4 feddans.

2. By how much did the area change from the lake to its current dimensions?

Unit (10)	Date:
Concept (2)	Class:
Lesson : 5- **Applying the Area Formula**	Period:

Lesson Objectives:

By the end of this lesson, the student should be able to:

• I can multiply to find the area of rectangles with whole-number and fractional dimensions.

Learning tools and resources:

Worksheets ◯　　　S.B ◯　　　Cards ◯　Internet ◯　　QR code ◯

Chart ◯　　　Money ◯　Small places ◯　　　Other things ◯

Learning strategies:

Sharing ◯　Thinking ◯　　　Grouping ◯　　Role playing ◯

Brain storming ◯　　　Problem solving ◯　　　Explain discussion ◯

Discover (Opening the idea)

Puzzling Rectangles The rectangle shown is composed of squares that measure 21/4 centimeters on each side. What is its area in square centimeters?
Explain your
thinking in models and numbers.
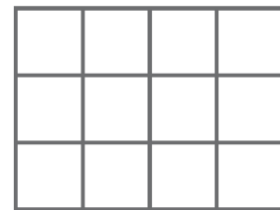
Lesson activities (Learn)

1. Akram's herb garden is 10 units long by $\frac{1}{3}$ unit wide. What is the area of Akram's herb garden?

   10 units ⎯⎯⎯⎯⎯ $\frac{1}{3}$ unit

2. A trench was dug in Doaa's backyard to fix her plumbing. The ditch was 8 meters long and $\frac{1}{10}$ m wide. What is the area of the ditch?

3. What is the area of the rectangle shown?

   $\frac{3}{4}$ m

   $\frac{4}{5}$ m
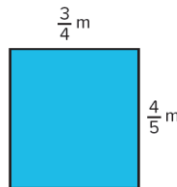
Think

4. Omar owns a parking lot. The lot is 3 kilometers long and 21/2km wide. What is the area of the parking lot?

5. A mosque has a window that is 3/10 meter wide and 2 m long. What is the area of the window in square meters?

Closing the idea (Summary)

The Egyptian Museum in Cairo is home to an impressive collection of Egyptian antiquities. Many of these pieces have formed traveling exhibits around the world. Visitors flock to see the ancient artifacts and learn about the pharaohs and their lives. The ground floor of the museum was thoughtfully laid out to house the treasures.
The floor plan of the various rooms is shown here.

Unit (10)	Date:
Concept (2)	Class:
Lesson : 6- **Introduction to Coordinate Planes**	Period:

Lesson Objectives:

By the end of this lesson, the student should be able to:

• I can describe a **coordinate plane**.

• I can define elements of a coordinate plane.

Learning tools and resources:

Worksheets ◯   S.B◯   Cards ◯   Internet◯   QR code ◯

Chart ◯   Money◯   Small places ◯   Other things ◯

Learning strategies:

Sharing ◯   Thinking ◯   Grouping ◯   Role playing◯

Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)

The Number Line Use the number line to answer the questions.

1. What is the value of B?

2. What is the value of A?

3. What is the value of C?

(Number line: 0 A B C 10)
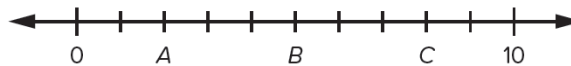
Lesson activities (Learn)

1. Use the vocabulary words to label the coordinate plane.

x-axis   *y*-axis   origin

2. Start at the origin. Move horizontally on the *x*-axis

4 units to the right and vertically

on the *y*-axis 5 units up. What structure is located here?

3. From the origin, move 13 units horizontally

on the *x*-axis and 17 units vertically on

the *y*-axis. What structure is located here?

Whiteboard: Visiting the Pyramids of Giza

Use this graph as you complete the related tasks.

Move the given vocabulary words to where they belong on the graph.

Then use what you know about plotting points to complete the remaining tasks.

x-axis   origin   y-axis

A. Pyramid of Khufu
B. Pyramid of Khafre
C. Sphinx
D. Sphinx Temple
E. Valley Temple
F. Pyramid of Menkaure
G. Pyramids of Queens B)

Think

4. From the last point, move left on the *x*-axis 5 units and then down the *y*-axis 5 units. What structure is located here?

5. If we move 6 units to the right on the *x*-axis and zero units on the *y*-axis from the last point, what structure is located here?

6. Describe how to move from the Sphinx to the Valley Temple.

Closing the idea(Summary)

Whiteboard: Directions to the Queens' Pyramids Use the map of the Pyramids of Giza coordinate plane and follow the steps to solve the problem

• Locate the Sphinx and the Pyramids of the Queens.

• Starting at the Sphinx, write directions to Pyramids of the Queens. Use directional words such as horizontally/left/right and vertically/up/down. Describe how to move using the vocabulary terms x-axis and y-axis.Remember to begin with directions along the x-axis.

• Exchange your work with a partner and see if, using your directions, your partner can move from the Sphinx to the Pyramids of the Queens.

Unit (10)	Date:
Concept (2)	Class:
Lesson :7　**Plotting Points on a Coordinate Plane**	Period:

Lesson Objectives:

By the end of this lesson, the student should be able to:

• I can identify points on a coordinate plane.

• I can name points on a coordinate plane.

Learning tools and resources:

Worksheets ◯　　　　S.B◯　　　　Cards ◯　　Internet◯　　　QR code ◯

Chart ◯　　　　Money◯　　Small places ◯　　　　Other things ◯

Learning strategies:

Sharing ◯　　Thinking ◯　　　Grouping ◯　　　Role playing◯

Brain storming ◯　　　　Problem solving ◯　　　　Explain discussion ◯

Discover (Opening the idea)

Word	Definition
origin	The point where the x-axis and the y-axis intersect at (0,0). It is labeled as O.
x-axis	The horizontal number line on a coordinate plane.
y-axis	The vertical number line on a coordinate plane.

Lesson activities (Learn)

Record three ordered pairs that could be plotted on the given coordinate plane. (,); (,); (,)

Then, plot your points on the coordinate plane.
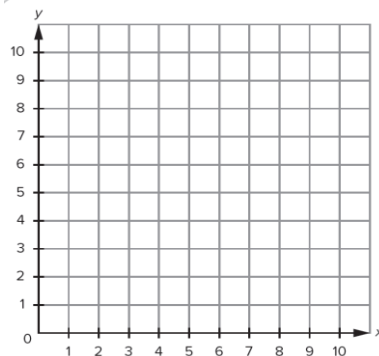
Think

Players take turns choosing coordinates, plotting points, and recording ordered pairs in one player's Student Materials. If time allows, play another game in the partner's Student Materials.

Player 1	Player 2
(___ , ___)	(___ , ___)
(___ , ___)	(___ , ___)
(___ , ___)	(___ , ___)
(___ , ___)	(___ , ___)
(___ , ___)	(___ , ___)
(___ , ___)	(___ , ___)

Closing the idea(Summary)

The Egyptian National Library and Archives Work with your teacher to read the passage. Then, answer the questions. Remember to write ordered pairs in parentheses. Libraries are important institutions of learning in cities, towns, and villages around the world. The Egyptian National Library and Archives was first established in 1870 on the ground floor of a palace. In 1971, the library was moved to the current building in Ramlet Bulaq. Today, it holds millions of volumes on a variety of topics. The ancient works housed in the library are among the greatest in the world. There are ancient manuscripts of the Qur'an, illuminated manuscripts, and Arabic papyri from across Egypt dating to the 7th century AD and earlier. The library also houses Ottoman and Persian documents as well as coins, the oldest of which dates to 693 AD.

| Unit (10) | Date: |
| Concept (2) | Class: |

Lesson :8-   **Coordinate Designs**   Period:

Lesson Objectives:
By the end of this lesson, the student should be able to:
• I can plot ordered pairs on a coordinate plane to create a picture.

Learning tools and resources:
Worksheets ◯   S.B◯   Cards ◯   Internet◯   QR code ◯
Chart ◯   Money◯   Small places ◯   Other things ◯

Learning strategies:
Sharing ◯   Thinking ◯   Grouping ◯   Role playing◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)
Grid Planning Work with your teacher to read the passage. Then, answer the questions.

Lesson activities (Learn)

Whiteboard: From Points to Pictures Use the Whiteboard to complete Problem 1 and Problem 2.

1. Plot the points on the coordinate grid.

A(3,2)
B(3,5)
C(6,5)
D(6,2)
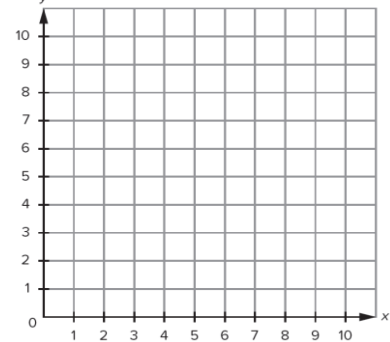
2. Connect the points in order. What polygon did you create?

Think

Whiteboard: 3 On the coordinate plane, plot and label the given ordered pairs
A through J.Then, connect the dots to create a picture.
Connect point J to point A to close the shape. Point A is done for you.

| A(1,5) | C(5,1) | E(4,2) | G(3,3) | I(2,4) |
| B(1,1) | D(5,2) | F(4,3) | H(3,4) | J(2,5) |
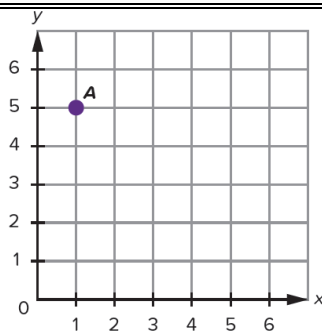
Closing the idea(Summary)

The Giza Zoo Work with your teacher to read the passage. Then, complete the task.

The Giza Zoo is located in Giza's largest park. It is one of the few green areas in the city and
is home to many endangered animals and a variety of plant species. The zoo opened in
1891 and was built by Khedive Ismail who imported many plants from India, Africa,
and South America. The original 180 birds and 78 other animals were from Khedive
Ismail's private collection. Today, the zoo houses mammals from around the world, birds such as flamingos
and falcons, and Egyptian reptiles like the Egyptian cobra and tortoise, as well as the Nile crocodile.
Look at the zoo map. The lion and the reptile houses have already been located.
Place the Zebra Enclosure and the Snack Shop on the map according to the rules
listed.

Unit (10)	Date:
Concept (2)	Class:
Lesson : 9- **From Patterns to Points**	Period:

Lesson Objectives:

By the end of this lesson, the student should be able to:

- I can identify and extend numerical **patterns**.
- I can graph points from a numerical pattern.

Learning tools and resources:

Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯
Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:

Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)

Error Analysis Read the problem and complete the error analysis.

Ehab was given these coordinate pairs to plot.

$(2,4)$; $(3,6)$; $(4,8)$; $(5,10)$; $(6,12)$; and $(7,14)$

Here is Ehab's graph.
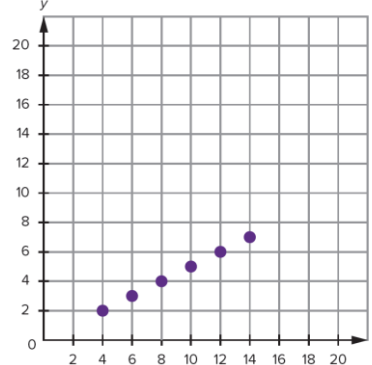
Lesson activities (Learn)

From Ordered Pairs to a Table Use the ordered pairs to fill in the table. The first ordered pair has been done for you.(2,4); (3,6); (4,8); (5,10); (6,12); and (7,14)

x values	2					
y values	4					

Build a Garden Haitham is a city planner. He is building a collection of square garden beds in a local park. In Haitham's design, the gardens increase in size as you move through the park. Shown are the sketches of his ideas. The yellow squares represent the square tile border around the outside of the garden. The white tiles represent square units of dirt.

Think

Look at the table and fill in the missing *y* values based on the pattern of plant height in Haitham's garden from one week to the next.

Weeks, x	1	2	3	4	5	6
Height of plants, y	$\frac{1}{2}$ cm	2 cm	$3\frac{1}{2}$ cm			

Closing the idea(Summary)

Work with your teacher to fill in the table for the yellow tiles in designs 1 to 4.Then, record your predictions for designs 5 and 6.

Garden Design, x	1	2	3	4	5	6
Number of Yellow Units, y						

2. Fill in the table below for the white tiles in designs 1 to 4. Then, record your predictions for designs 5 and 6.

Lesson Objectives:

By the end of this lesson, the student should be able to:
- I can interpret data on coordinate planes.
- I can solve real-world problems involving data on coordinate planes.

Learning tools and resources:

Worksheets ◯　　　S.B ◯　　　Cards ◯　Internet ◯　　　QR code ◯
Chart ◯　　　Money ◯　Small places ◯　　　Other things ◯

Learning strategies:

Sharing ◯　Thinking ◯　　Grouping ◯　　Role playing ◯
Brain storming ◯　　　Problem solving ◯　　　Explain discussion ◯

Discover (Opening the idea)

Use the pattern to complete the table.

Width, w (cm)	1	2	A	5	C	8
Length, $l = 2w$ (cm)	2	4	8	B	12	D

Lesson activities (Learn)

Ola is selling bags of cookies in her neighborhood to make extra money to buy a new bike. She earns 5 LE for each bag of cookies she sells. Complete the table and then graph the points on the coordinate grid.

Bags of Cookies	Money Earned LE
2	
4	
7	
8	
10	
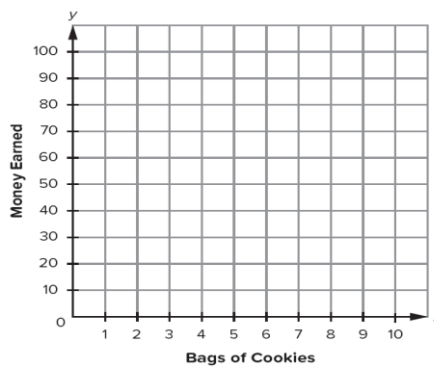
Think

Nabil and Osman are in a 5-hour bike race.
Nabil is traveling at a rate of
30 kilometers per hour.
Osman is traveling at a rate of 60 km/hr.
Use that information to complete the tables.

Nabil (30 km/hr)		Osman (60 km/hr)	
Number of Hours	Total Distance (km)	Number of Hours	Total Distance (km)
1		1	
2		2	
3		3	
4		4	
5		5	

Closing the idea(Summary)

Developers in cities need permits to construct buildings. A developer in downtown Cairo is trying to decide whether he should build an office building with 8 offices per floor or 12 offices per floor. How could the developer use the table and a coordinate plane to help him analyze data and make decisions about the height of the building he will construct? Use words and numbers to support your thinking.

Unit (10)	Date:
Concept (2)	Class:
Lesson : 11- **Interpreting Real-World Graphs.**	Period:

Lesson Objectives:
By the end of this lesson, the student should be able to:
• I can interpret data on coordinate planes.
• I can solve real-world problems involving data on coordinate planes.

Learning tools and resources:
Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯
Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:
Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)

Running Log Yasmeen and Sherif record
the kilometers they run. The graph shows
the total distance that each person has run.

1. What rule describes Yasmeen's total
kilometers compared to the total days
she has run? You may create a data
table to help you, if needed.

2. What rule describes Sherif's total
kilometers compared to the total days
he has run? You may create a data table
to help you, if needed.
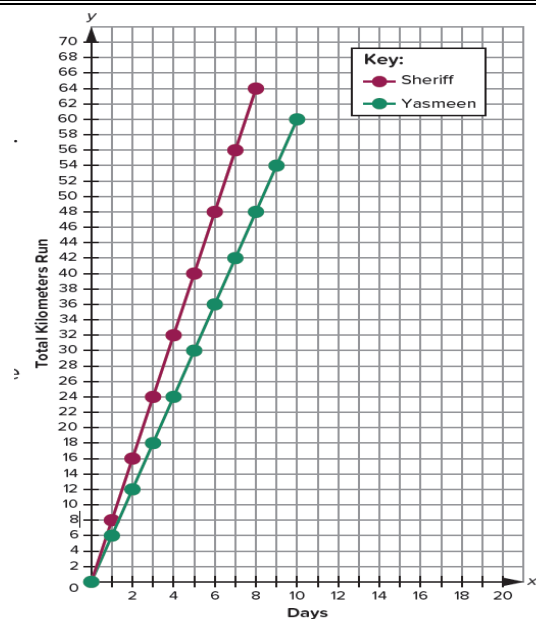
Lesson activities (Learn)

Ehab's Bike Trip Ehab left his home at 6 a.m. to go on a bike ride.
He kept track of the number of kilometers he biked at the end of each
hour and recorded it on the grid. Use the coordinate grid to solve
the problems.

1. What does the ordered pair $(9,14)$ tell us?
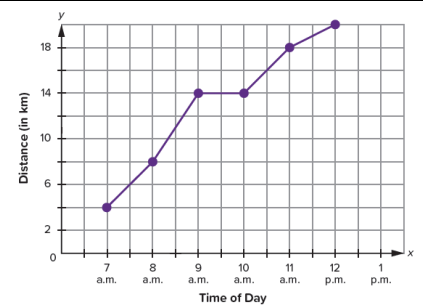
Think
Mounir sells dates at a local market. Each case contains
one dozen dates. On Day 1 he had 30 cases to sell.
This graph shows how many
cases he had at the beginning of each day.
Use the coordinate grid to answer the
questions.

Closing the idea(Summary)
Growing Population and City Planning This coordinate grid shows the approximate population of Cairo
between 1950 and 2020 and the city's predicted population in 2030. Reflect on the data on the grid. Then,
answer the question.

Unit (11)	Date:
Concept (1)	Class:
Lesson : 1- **Multiple Dimensions**	Period:

Lesson Objectives:
By the end of this lesson, the student should be able to:
• I can name three-dimensional figures.
• I can identify attributes of three-dimensional figures.
• I can define volume and capacity.

Learning tools and resources:
Worksheets ◯   S.B◯   Cards ◯   Internet◯   QR code ◯
Chart ◯   Money◯   Small places ◯   Other things ◯

Learning strategies:
Sharing ◯   Thinking ◯   Grouping ◯   Role playing◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)
Look at the images of buildings around the world.
Match the name of each building's shape to the building.
Dashur Pyramids—Egypt

A. Cube

B. Cone

C. Cylinder

D. Sphere

E. Rectangular prism

F. Square pyramid

Lesson activities (Learn)
Look at the shapes and discuss with a partner how they are similar and different. Be prepared to share your thinking with the class.

 Volume:

Capacity:
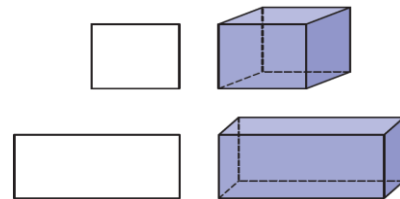
Think
Work with your teacher to fill in the first row.
Then, complete the rest of the table.

Attributes of Three-Dimensional Shapes

	Name	Picture	Face/ Base Shape(s)	Number of Faces/ Bases	Number of Edges	Number of Vertices
1	Cube					
2	Cone					
3	Cylinder					
4	Rectangular Prism					
5	Sphere					
6	Square Pyramid					

Closing the idea(Summary)

Pyramids were built in many countries around the world, from South America to
Sudan. Egypt, however, contains the most famous of the ancient pyramids. Why
did the ancient Egyptians use the pyramid shape and not a rectangular prism or a cube?

Unit (11)	Date:
Concept (1)	Class:
Lesson : 2- **Measuring a New Dimension**	Period:

Lesson Objectives:
By the end of this lesson, the student should be able to:
• I can explain why volume and capacity are attributes of three-dimensional figures.

• I can relate the **dimensions** of solid figures to measuring volume.

• I can use **cubic units** to describe the volume of models and drawings.

Learning tools and resources:
Worksheets ◯   S.B ◯   Cards ◯ Internet ◯   QR code ◯
Chart ◯   Money ◯ Small places ◯   Other things ◯

Learning strategies:
Sharing ◯ Thinking ◯   Grouping ◯   Role playing ◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)
The Nile was the river of life for ancient Egyptians. They created nilometers to measure the volume of water in the river. A nilometer dating to 715 AD is located on Rhoda Island in the Nile River in Cairo.

Lesson activities (Learn)

Discuss:

• How could you measure the capacity of a rectangular prism like the box shown?
• If you wanted to fill up the most space possible and get the best measurement, would you use marbles or cubes? Why?

Think
Use isometric dot paper or the Whiteboard:
Isometric Dots to follow along
with your teacher as you practice drawing cubes.
How to draw a cube:
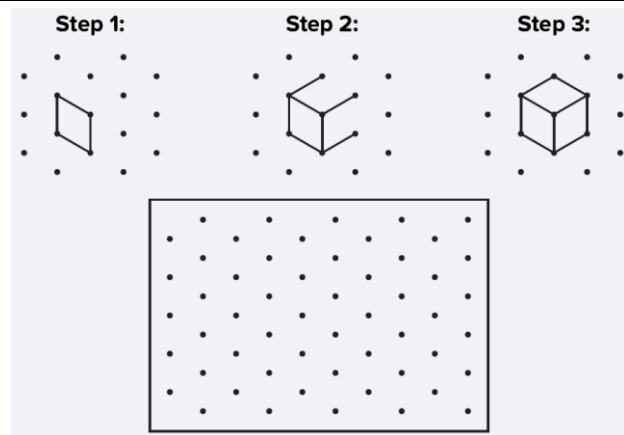
Closing the idea (Summary)

Aya and Omar are sharing centimeter cubes.
Aya builds a structure 7 cubes high, 2 cubes long, and 1 cube wide.
Omar builds a structure 1 cube high, 7 cubes long, and 2 cubes wide.
Aya says her structure has a greater volume because it is taller.
Omar thinks the
structures have the same volume. Who is correct?

Aya's tower   Omar's tower
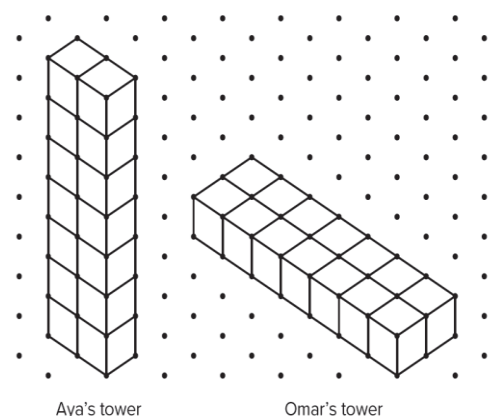
Unit (11)	Date:
Concept (1)	Class:
Lesson : 3- **Estimating and Measuring Volume**	Period:

Lesson Objectives:

By the end of this lesson, the student should be able to:

- I can estimate the volume of **rectangular prisms** in unit **cubes**.
- I can use unit cubes to measure the volume of rectangular prisms.

Learning tools and resources:

Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯
Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:

Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)

Estimate the number of cubes in the rectangular prism.
Use the centimeter cubes to create the prism in Problem 1. Then, record its volume in cubic centimeters.

Lesson activities (Learn)

1.
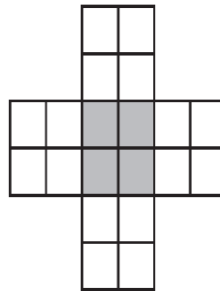
Estimated volume: _____ cubic centimeters

Actual volume: _____ cubic centimeters

Think
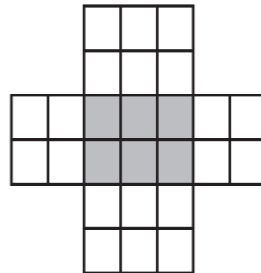
Estimated volume:
_____ cubic centimeters

Actual volume:
_____ cubic centimeters

Closing the idea (Summary)

Egypt's first step pyramid was constructed at Saqqara about 4,700 years ago. The Step Pyramid was built in the third dynasty to house the burial chambers of King Djoser and his family.
The pyramid began as a *mastaba* (meaning "bench" in Arabic) tomb.
A mastaba tomb is a flat-roofed
structure with sloping sides. As construction continued, it grew to a 60-meter-high
pyramid composed of 6 layers built one on top of the other.

Unit (11)	Date:
Concept (1)	Class:
Lesson : 4- **Same Volume, Different Shape**	Period:

Lesson Objectives:

By the end of this lesson, the student should be able to:
- I can use unit cubes and models to create right rectangular prisms with a given volume.

Learning tools and resources:

Worksheets ◯　　S.B ◯　　Cards ◯　Internet ◯　QR code ◯

Chart ◯　　Money ◯　Small places ◯　　Other things ◯

Learning strategies:

Sharing ◯　Thinking ◯　　Grouping ◯　　Role playing ◯

Brain storming ◯　　　Problem solving ◯　　Explain discussion ◯

Discover (Opening the idea)

Imagine you put blue paint on every side of the cube shown, including the base. Answer the questions. You can use your cubes and the dot paper to help you if you get stuck.

1. How many of the small cubes have 3 blue faces?

2. How many have 2 blue faces?

3. How many have 1 blue face?

Lesson activities (Learn)

1. Use isometric dot paper or the Whiteboard: Isometric Dots to sketch a rectangular prism with a width of 4 cubes and a height of 7 cubes. Draw lines to decompose the figure into 7 layers. Record how many cubes are in each layer.

2. Complete the table with your class.

Number of Layers	Cubes in Each Layer	Volume of the Prism

Think

Use unit cubes to build the figure shown, if needed, and then fill in the missing information.

Number of horizontal layers:

Number of cubes in each horizontal layer:

Volume:　　　cm3
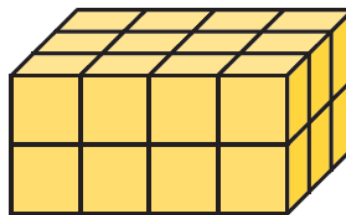
Closing the idea(Summary)

One of the oldest mathematical documents is the Rhind Papyrus, named after the Scottish archaeologist Henry Rhind. The Rhind Papyrus is thought to date from 1550 BC. It is 200 centimeters long and 32 cm wide. It is also known as the Ahmos Papyrus after the scribe who copied it. It is thought this papyrus was a mathematics textbook containing problems to help others learn math. The papyrus has 84 problems written on it. The problems involve multiplication, division, fractions, geometry, and other topics. There are even problems on the papyrus to figure out the capacity of ancient granaries.

Unit (11)	Date:
Concept (2)	Class:
Lesson : 5- **Finding a Formula**	Period:

Lesson Objectives:

By the end of this lesson, the student should be able to:

• I can identify a **formula** for calculating the volume of right rectangular prisms.

• I can use a formula to calculate the volume of right rectangular prisms.
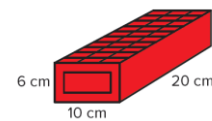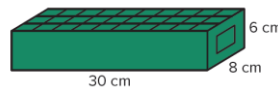
Learning tools and resources:

Worksheets ◯   S.B◯   Cards ◯   Internet◯   QR code ◯

Chart ◯   Money◯   Small places ◯   Other things ◯

Learning strategies:

Sharing ◯   Thinking ◯   Grouping ◯   Role playing◯

Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)

Find the volume of each of the following solids:

Lesson activities (Learn)

Record the dimensions of the given rectangular prism and then find the volume.
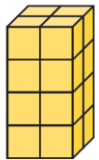
Length: _____ cm

Width: _____ cm

Height: _____ cm

Volume: _____ cm³

Using the dimensions of the rectangular prism in the previous task, write a multiplication expression that generates the given volume. Then, find the product. Be sure to include units.

Think

Record the dimensions of the rectangular prism and then find the volume.
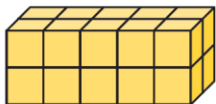
Length: _____ cm

Width: _____ cm

Height: _____ cm

Volume: _____ cm³

Using the dimensions of the rectangular prism in the previous task, write a multiplication expression that generates the given volume. Then, find the product. Be sure to include units.

Closing the idea(Summary)

Look again at Abdallah's Senet board from ACCESS.
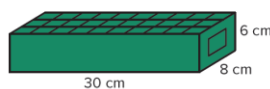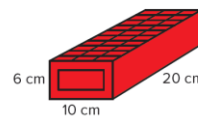
Abdallah's game   Doha's game

Which equation could be used to find the volume, V ?

A. $(30 + 8) \times 6 = V$

B. $(6 + 8) + 30 = V$

C. $(30 \times 8) \times 6 = V$

D. $(6 \times 8) + 30 = V$

Unit (11)	Date:
Concept (2)	Class:
Lesson : 6- **Using a Formula to Find Volume**	Period:

Lesson Objectives:

By the end of this lesson, the student should be able to:

• I can apply a formula to calculate the volume of right rectangular prisms.

Learning tools and resources:

Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯
Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:

Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)

Hanaa wants to send a jewelry box to her sister. The jewelry box has a volume of 16,000 cm$_3$. Which box can Hanaa use to send the jewelry box? Explain how you know.
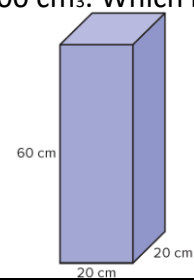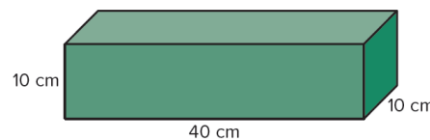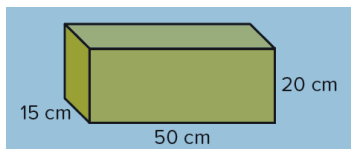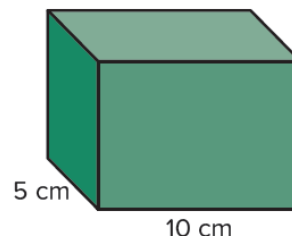
Lesson activities (Learn)

Compare the dimensions of the rectangular prisms. Which two prisms have the same volume? Explain how you know.

A.   4 m   6 m   3 m

B.   8 m   6 m   2 m

C.   2 m   12 m   3 m
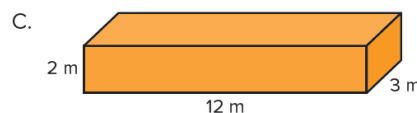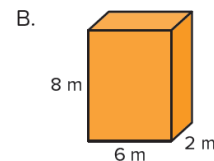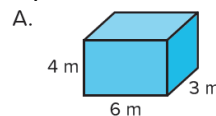
Think

The volume of the rectangular prism shown is 400 cubic centimeters. Adham says the missing dimension is 350 cm. Amira says the missing dimension is 8 cm. Which student is correct and why?

5 cm   10 cm

Closing the idea(Summary)

The Great Pyramid has little open space inside. To reach and enter the King's Chamber, you must travel through a very tight ascending passageway, climb a steep walkway inside the Grand Gallery (a tall but narrow open space), and crawl through a tunnel. The King's Chamber measures about 10.5 meters by 5 m, and it is about 6 m high. This room is made entirely of pink granite with hieroglyphic text carved into the walls and a giant sarcophagus that once held the king's mummy. The chamber is a great feat of architecture with only a small crack in the ceiling after 4,000 years. What is the approximate volume of the King's Chamber?

Unit (11)	Date:
Concept (2)	Class:
Lesson : 7- **Finding the Volume of Compound Shapes**	Period:

Lesson Objectives:
By the end of this lesson, the student should be able to:
• I can find the total volume of two or more right rectangular prisms.
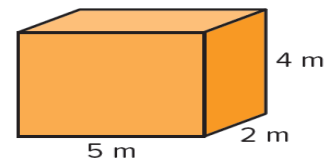
Learning tools and resources:
Worksheets ◯   S.B◯   Cards ◯   Internet◯   QR code ◯
Chart ◯   Money◯   Small places ◯   Other things ◯

Learning strategies:
Sharing ◯   Thinking ◯   Grouping ◯   Role playing◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯
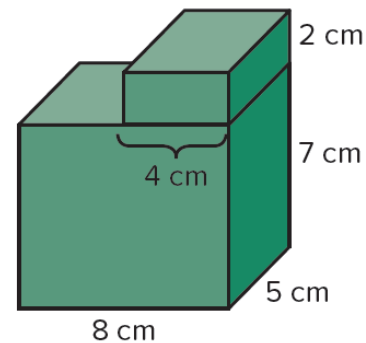
Discover (Opening the idea)

What is the volume of the rectangular prism shown?
Be sure to use units in your answer.
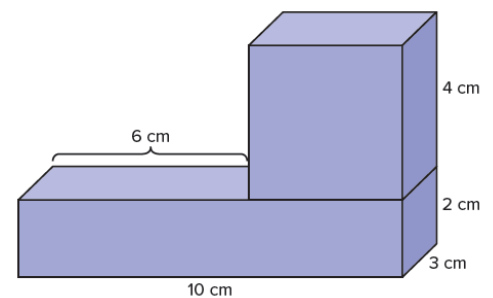

Lesson activities (Learn)

What would be the total volume of the prism in the
previous question if you stacked two of these cubes one
on top of the other?
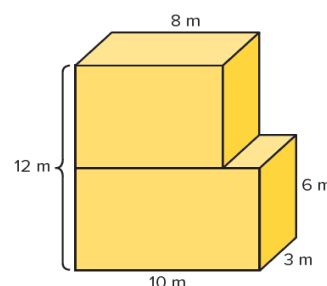Refer to the solid figure to answer
questions 3 to 5.

Think

Determine the volume of the given compound shape.

Closing the idea(Summary)

Determine the volume of the given compound shape.

Unit (11)	Date:
Concept (2)	Class:
Lesson : 8- **Solving Real-World Volume Story Problems**	Period:

Lesson Objectives:
By the end of this lesson, the student should be able to:
• I can solve real-world story problems involving volume.

Learning tools and resources:
Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯
Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:
Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)

Osman built a planter box for his backyard. The length of the planter box was 150 centimeters. The width was 90 cm, and the height of the box was 120 cm. Osman poured soil into the box up to the 100 cm height line. What is the volume of the planter box? What is the volume of the soil?

Lesson activities (Learn)

Fares built a small planter box for his window. He planned to fill it to the top with 12,000 cubic centimeters of soil. The base of the planter box measured 40 cm long and 15 cm wide. What should the height of the box be to hold all the soil?

Think
Nahla also decided to build planter boxes. She wanted two boxes with different dimensions, but the same volume of 20,000 cubic centimeters.
a. Show two ways she could build these planters.
b. Record equations to match each prism.

Closing the idea(Summary)

Mouataz built a model of a sarcophagus from cardboard. The model was
30 centimeters long, 10 cm wide, and 8 cm tall. Is it possible for Mouataz to fit a
rectangular canopic chest with an interior volume of 3,000 cm$_3$ inside? Support
your thinking with a drawing and an equation.

Unit (11)	Date:
Concept (2)	Class:
Lesson : 9- **Building Three-Dimensional Cities**	Period:

Lesson Objectives:
By the end of this lesson, the student should be able to:
• I can design a city using three-dimensional shapes and
a set of criteria.

Learning tools and resources:
Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯
Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:
Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)

Work with your small group to color and cut out the nets your teacher has provided.

Lesson activities (Learn)

Follow your teacher's directions and work with your group to build your city
of three-dimensional shapes.

City-Planning Criteria: Follow the criteria listed to create your city.

On your large sheet of paper, draw a map of your city first. Your map should include:
• At least 2 parallel roads.
• At least 1 road that is perpendicular to another.
Then, add your buildings to the map:
• Label all three-dimensional figures on your map that are not rectangular prisms.
• Label the buildings on your map. Think about the types of things you
would like to see in a city, such as schools, apartment buildings, homes,
markets, hospitals, post offices, police stations, public art, memorials, fire
departments, and so on.

Think

Finding the Volume of Our City Use the rectangular prisms to
complete the table. Record what each building could represent in your city.

Closing the idea (Summary)

Gallery Walk Participate in a Gallery Walk to share your creation and see the cities built by other groups.

Lesson Objectives:

By the end of this lesson, the student should be able to:

- I can define the elements of a **pie chart**.

- I can identify connections between pie charts, **fractions**, and degrees of a circle.

Learning tools and resources:

Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯
Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:

Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)

What Sport Do Primary 5 Students Most Prefer?
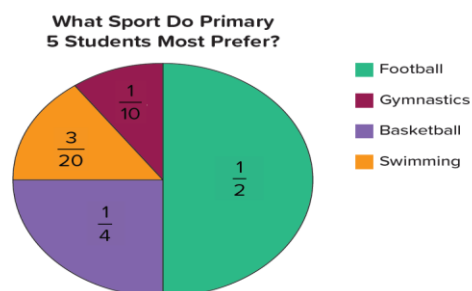
Lesson activities (Learn)

This version of the pie chart includes fractions that represent each section of the pie chart. Look at the pie chart and answer your teacher's questions.

What Sport Do Primary 5 Students Most Prefer?
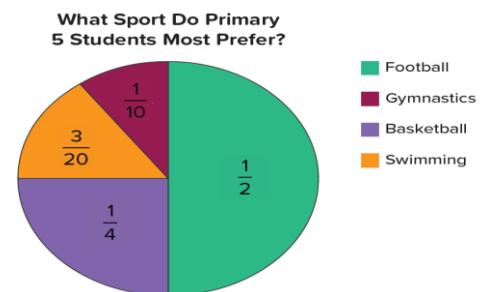
Think Analyze the pie chart and answer the questions.

1. What fraction of the people surveyed like melon?

2. What fraction of the people surveyed like figs?

3. How many people were surveyed?

Favorite Types of Fruit

Pomegranates: 13
Bananas: 12
Figs: 25
Melon: 50
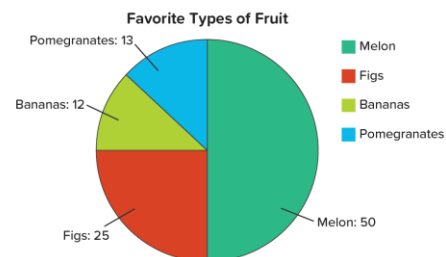
Closing the idea (Summary)

select the circular
degrees that match the fraction of the circle that is shaded.

A circle has 360 degrees.

1.

A. 180°   C. 60°
B. 45°   D. 90°

4.

A. 60°   C. 150°
B. 270°   D. 120°

Unit (12)	Date:
Concept (1)	Class:
Lesson : 2- **Understanding Pie Charts**	Period:

Lesson Objectives:

By the end of this lesson, the student should be able to:

• I can interpret data in a pie chart.

Learning tools and resources:

Worksheets ◯ S.B ◯ Cards ◯ Internet ◯ QR code ◯
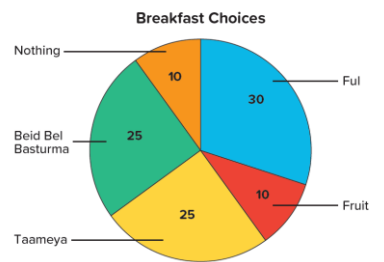Chart ◯ Money ◯ Small places ◯ Other things ◯

Learning strategies:

Sharing ◯ Thinking ◯ Grouping ◯ Role playing ◯
Brain storming ◯ Problem solving ◯ Explain discussion ◯

Discover (Opening the idea)

Use the pie chart to answer your teacher's questions.

1. Use the data from the pie chart to complete the frequency table.

Food	Ful	Fruit	Taameya	Beid Bel Basturma	Nothing
Frequency	A. _____	B. _____	C. _____	D. _____	E. _____

Breakfast Choices

Lesson activities (Learn)

2. Use the frequency to find the decimal for each breakfast option.

Food	Ful	Fruit	Taameya	Beid Bel Basturma	Nothing
decimal	A. _____	B. _____	C. _____	D. _____	E. _____

Think

4. What was the most frequent breakfast choice?

5. What two breakfast choices were chosen the least often?

6. How many more students chose Beid Bel Basturma over fruit?

7. Which two breakfast choices were chosen by half of the class?

Closing the idea(Summary)

Writing About Math When looking at a pie chart in the real world, what questions would you ask to determine whether the data is reliable?

| Unit (12) | Date: |
| Concept (1) | Class: |

Lesson : 3- **Making Pie Charts**   Period:

Lesson Objectives:
By the end of this lesson, the student should be able to:
• I can shade a pie chart to display a set of data.
• I can ask and answer questions about data in a pie chart.

Learning tools and resources:
Worksheets ◯   S.B ◯   Cards ◯   Internet ◯   QR code ◯
Chart ◯   Money ◯   Small places ◯   Other things ◯

Learning strategies:
Sharing ◯   Thinking ◯   Grouping ◯   Role playing ◯
Brain storming ◯   Problem solving ◯   Explain discussion ◯

Discover (Opening the idea)

This frequency table shows the favorite ice cream flavors of a group of 50 children.

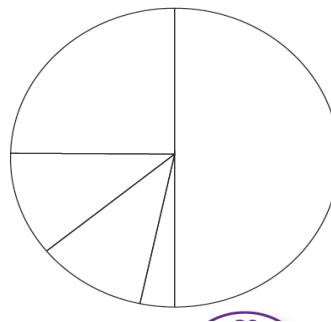**1.** Fill in the fractions in the simplest form for each flavor.

Flavor	Mango	Vanilla	Mastic	Chocolate	Hazelnut
Frequency	5	25	6	12	2
fractions	A. _____	B. _____	C. _____	D. _____	E. _____

Lesson activities (Learn)

Work with your teacher and classmates to shade and label the pie chart using the data from the table. Include a title and a key.
What is one question that could be answered by this pie chart?

Title: _____

Key:

Flavor	Frequency	fractions
Mango	5	A. _____
Vanilla	25	B. _____
Mastic	6	C. _____
Chocolate	12	D. _____
Hazelnut	2	E. _____

Think
Your teacher will give your group a data set. Work with your group to create a pie chart using the data. Include a title and a key. Then, work together to write three questions that can be answered by your pie chart.

Closing the idea(Summary)

Gallery Walk Walk around the class to see other groups' pie charts. Be prepared to share your observations about how the pie charts are similar and different as well as the questions and answers you read about each pie chart.