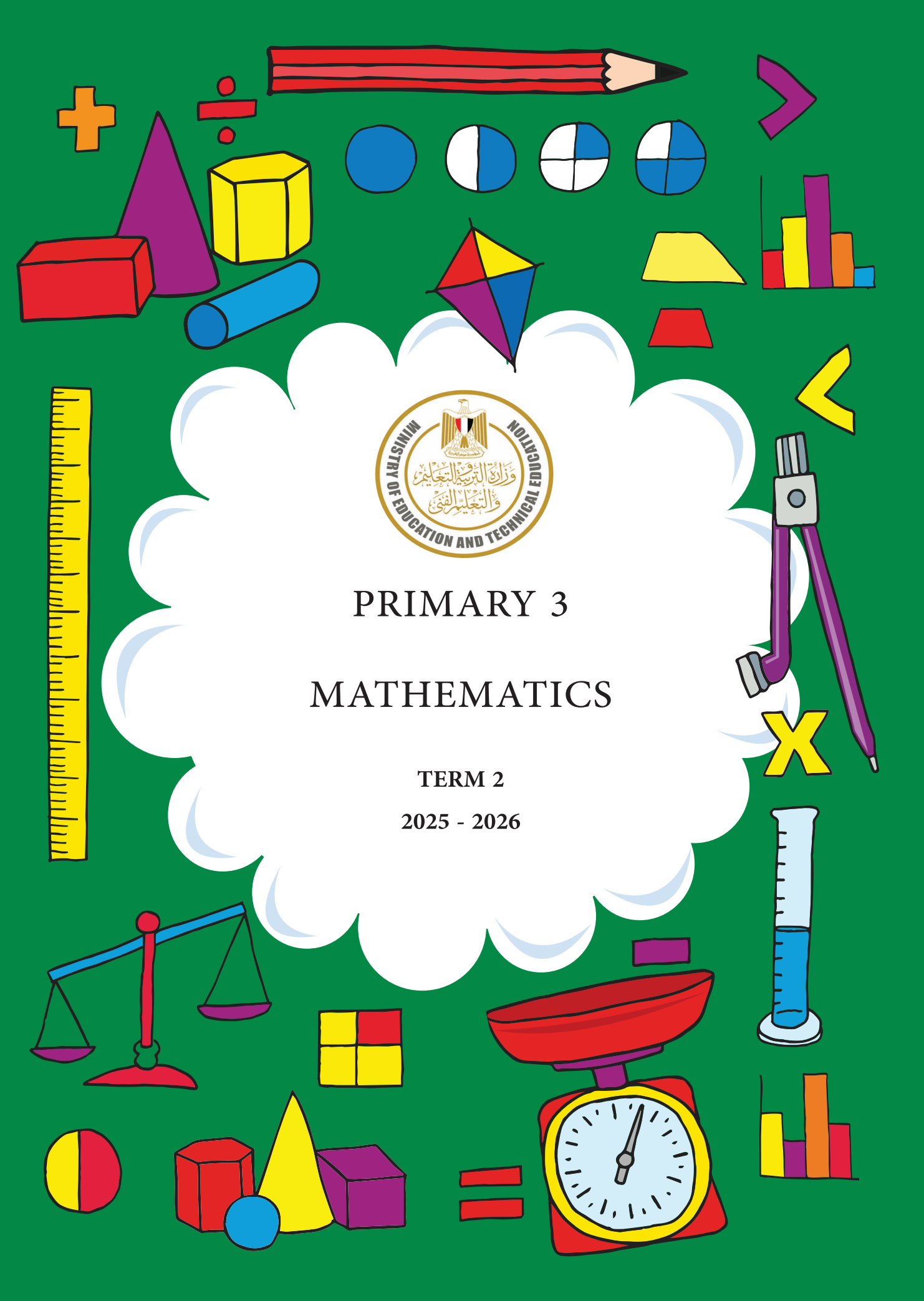

PRIMARY 3

MATHEMATICS

TERM 2

2025 - 2026

FOREWORD

This is a pivotal time in the history of the Ministry of Education and Technical Education (MOETE) in Egypt. We are embarking on the transformation of Egypt's K-12 education system starting in September 2018 with KG1, KG2 and Primary 1 continuing to be rolled out year after year until 2030. We are transforming the way in which students learn to prepare Egypt's youth to succeed in a future world that we cannot entirely imagine.

MOETE is very proud to present this new series of textbooks, Discover, with the accompanying digital learning materials that captures its vision of the transformation journey. This is the result of much consultation, much thought and a lot of work. We have drawn on the best expertise and experience from national and international organizations and education professionals to support us in translating our vision into an innovative national curriculum framework and exciting and inspiring print and digital learning materials.

The MOETE extends its deep appreciation to its own "Central Administration for Curriculum Development" (CACD) and "Discovery Education".

This transformation of Egypt's education system would not have been possible without the significant support of Egypt's current president, His Excellency President Abdel Fattah El-Sisi. Overhauling the education system is part of the president's vision of 'rebuilding the Egyptian citizen' and it is closely coordinated with the ministries of higher education & scientific research, Culture, and Youth & Sports. Education 2.0 is only a part in a bigger national effort to propel Egypt to the ranks of developed countries and to ensure a great future to all of its citizens.

NAME: _____

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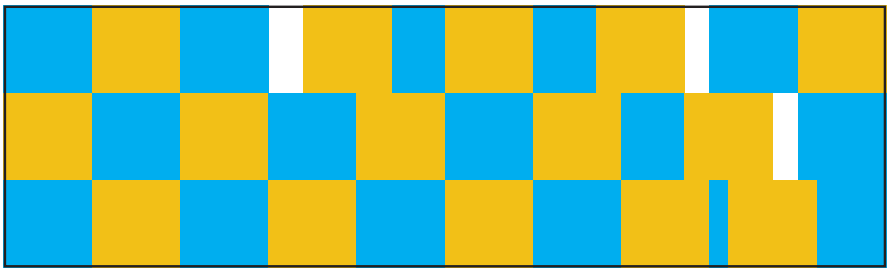
LESSON 1: ASSOCIATIVE PROPERTY OF MULTIPLICATION

CONNECT

Directions: Notice the following shape. Jana wanted to find the area of this rectangle. She looked at the dimensions and then filled the rectangle with yellow and blue tiles. Then, she counted the tiles and found the area to be 31 square units. Do you agree with Jana? Why or why not?



APPLY

Directions:

1. Pick three factor cards (or roll the die to find 3 factors).
2. Write two multiplication equations, using parentheses to show the order you will multiply in.
3. Solve to find the product for each equation. Use the work space to show how you solved.
4. What do you notice? Draw a star next to the order you prefer. Be prepared to explain why.

Example Cards Drawn: 3, 5, 2	**Equation**: (3 × 5) × 2 = 30 Work space: I skip counted by 3s five times: 3, 6, 9, 12, 15 15 × 2 = 30 because 15 + 15 = 30	**Equation**: 3 × (5 × 2) = 30 Work space: 5 × 2 = 10 Then 10 × 3 is the same as 10 + 10 + 10 = 30

Cards Drawn:	Equation: Work space:	Equation: Work space:
Cards Drawn:	Equation: Work space:	Equation: Work space:
Cards Drawn:	Equation: Work space:	Equation: Work space:
Cards Drawn:	Equation: Work space:	Equation: Work space:
Cards Drawn:	Equation: Work space:	Equation: Work space:

CHALLENGE:

1- a) Circle the equations below that have the same value as $(9 \times 2) \times 5$.

$9 \times (2 \times 5)$ 11×5 9×10

b) Circle the equations below that have the same value as $4 \times (10 \times 3)$.

4×13 4×30 14×3 $(4 \times 3) \times 10$

2. Kamal brought home 2 boxes filled with bags of apples. Each box had 3 bags with 5 apples in each. How many total apples did Kamal bring home?

LESSON 2: DISTRIBUTIVE PROPERTY OF MULTIPLICATION

CONNECT

Directions: Read the following problem. Then, discuss with your Shoulder Partner which equations match the story problem. Explain your thinking.

The school is getting new footballs. 2 trucks arrive at the school. Each truck carries 4 boxes of footballs. Each box contains 8 footballs. How many new footballs did the school get?

Equation 1: $(2 \times 4) \times 8$ Equation 2: $(2 + 4) \times 8$ Equation 3: $2 \times (4 \times 8)$

APPLY

Directions:

- Read each problem and then draw a bar model to represent the problem.
- Break the model into two smaller sections that make sense to you.
- Lightly color each section a different color.
- Use the Distributive Property of Multiplication to find the product of each part and then the final product.
- Record your steps.
- Repeat the process with the same problem, breaking apart the bar model a different way.

7× 8

First Way	second way
7 × 8 = 7 × (_____+ _____) = (7 x _____) + (7 x _____) = _____ + _____ = _____	7 × 8 = 7 × (_____+ _____) = (7 x _____) + (7 x _____) = _____ + _____ = _____

6 × 13

First Way	second way
6 × 13 = 6 × (_____ + _____) = (6 x _____) + (6 x _____) = _____ + _____ = _____	6 × 13 = 6 × (_____ + _____) = (6 x _____) + (6 x _____) = _____ + _____ = _____

9 × 15

First Way	second way
9 × 15 = = = =	9 × 15 = = = =

CHALLENGE:

Farouk had the following problem to solve:

Use what you know about the properties of multiplication to find the missing number.

$$3 \times 5 = (3 \times 2) + (3 \times \_\_\_\_)$$

Farouk said, "The missing number is 5 because the Associative Property tells me I can break the problem into smaller chunks, so I just changed the grouping."

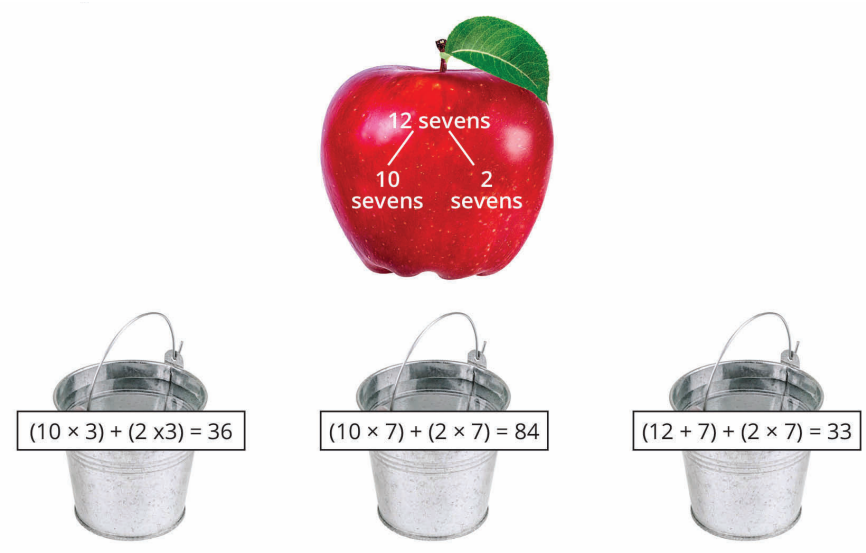
What mistakes did Farouk make? What would you tell him to help him correct his thinking and his work? Record your answer in the box below.

LESSON 3: ESTIMATING MULTIPLICATION

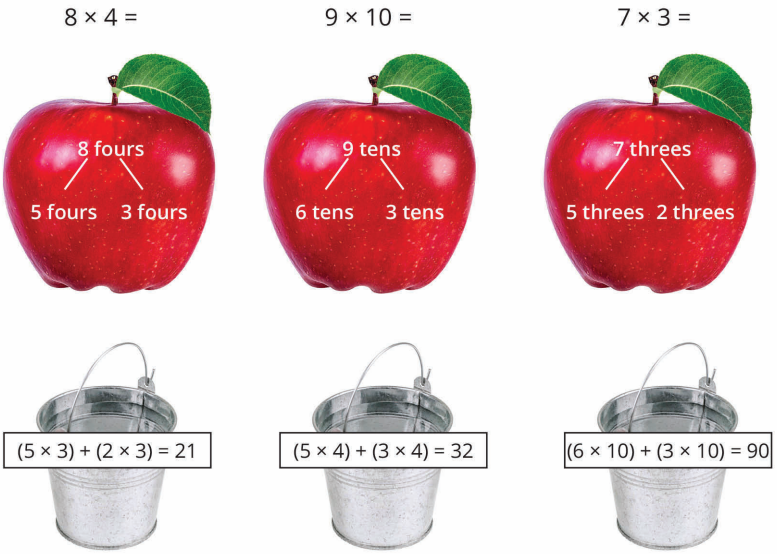
CONNECT

Hossam went to the apple orchard. There were 12 apple trees, and each tree had 7 apples. How many apples were there in all at the orchard?

Directions: Look at the picture below and circle the pail that correctly shows how to solve the problem.



Now look at each equation and the apple below it. Draw a line to match each apple with the pail that shows the equation that correctly uses the Distributive Property to solve the problem.



APPLY

Directions:

Step 1: For each problem, estimate the answer and show your thinking for how you found that estimate.

Step 2: Then, solve each problem using any strategy or property that helps you. Write or draw to show how you solved the problem.

6 × 7=

Estimate: _____ (Explain how you made your estimate)	Actual Solution: _____ (Show work in the space below)

4 × 7 × 5=

Estimate: _____ (Explain how you made your estimate)	Actual Solution: _____ (Show work in the space below)

8 × 12 =

Estimate: _____ (Explain how you made your estimate)	Actual Solution: _____ (Show work in the space below)

Dalia had 8 baskets. Each basket held 6 eggs. How many eggs did Dalia have in all?

Write the equation you are trying to solve in this story problem

Estimate: _____ (Explain how you made your estimate)	Actual Solution: _____ (Show work in the space below)

$2 \times 6 \times 10 =$

Estimate: _____ (Explain how you made your estimate)	Actual Solution: _____ (Show work in the space below)

$13 \times 9 =$

Estimate: _____ (Explain how you made your estimate)	Actual Solution: _____ (Show work in the space below)

CHALLENGE:

Amir had 4 boxes. In each box were 3 dolls, and each doll had 2 buttons on its shirt.

How many total buttons were there?

Write the equation you are trying to solve in this story problem. _____

Estimate: _____ (Explain how you made your estimate)	Actual Solution: _____ (Show work in the space below)

LESSON 4: APPLICATIONS ON MULTIPLICATION AND DIVISION

CONNECT

Agree or Disagree?

The time shown on the clock is 7:03.

APPLY

Directions: Solve as many of the following problems as you can with your partner. Be sure to show how you solved the problems in the work space.

Habiba baked 25 cookies. She wanted to share them with her 5 friends. How many cookies would each friend get?

Equation:

Work Space:

Answer:

Work Space: $7 \times \_\_\_\_\_ = 21$

Write a division equation using these same numbers:

Fill in the blanks:

36 ÷ 6 = _____ 6 × _____= 36

Work Space:

Complete this fact family for the numbers 4, 5, and 20.

4 × 5 = 20 5 × _____ = 20

20 ÷ 5 = _____ _____÷ 4 = 5

Fill in the missing numbers and then draw lines to connect the equations that are related.

2 × _____= 18 80 ÷ _____ = 8

7 × 4 = _____ 18 ÷ 2 = _____

_____ x 10 = 80 _____ ÷ 4 = 7

Farha had 8 bags of marbles. Each bag had 6 marbles inside. How many marbles did Farha have altogether?

Equation:

Work Space:

Answer:

CHALLENGE:

Adel picked 45 apples. He put them equally into buckets. When he was done, he had 9 buckets. How many apples were in each bucket?

Equation:

Work Space:

Answer:

36 ÷ 4 = _____

Work Space:

Write a division equation using these same numbers:

REFLECT:

Directions: Reflect on the Essential Questions. Write your answers to the questions in the box below. You can use words, pictures, or examples to share your thinking.

• What is the relationship between multiplication and division?

• How can we use this relationship to solve multiplication and division problems?

LESSON 5: STRATEGIES FOR MULTIPLICATION AND DIVISION

APPLY

Directions: Solve the following problems using an efficient strategy for you. When finished, pick two problems to double-check using a different strategy. Rewrite the problems in the rows at the bottom and show the work for the new strategy.

Problem	Work Space	Answer
24 ÷ 2 = _____		
4 × 5 × 2 = _____		
12 × _____ = 48		
63 ÷ _____ = 7		
_____ x 7 = 56		

Double Checking with New Strategy

Problem	Work Space	Answer

CHALLENGE:

1. Pick one of the problems from above and write a story problem using those numbers.
2. How could you use a Distributive Property strategy to solve 8 × 17 ?

REFLECT:

Directions: Reflect on the problems you solved today and the strategies you used. What is your favorite strategy to solve multiplication problems? What is your favorite strategy to solve division problems? Record your favorites in the boxes below and explain why you like each strategy best. You can use pictures, numbers, examples, and words to explain why.

My favorite multiplication strategy is _____

WHY:

My favorite division strategy is _____

WHY:

LESSON 6: PERIMETER OF A SQUARE AND A RECTANGLE

CONNECT

Directions: Record what you know about each of these words around the Word Splashes.

APPLY

Directions: With your partner, read and solve the two story problems below. Use any symbol or shape you like to represent the unknown numbers. Identify the unknown numbers, then solve the problems. Write an equation to show how you solved the problem. Finally, explain your thinking in the box below the problem.

1. You help build a fence for your neighbor's square vegetable garden. Using the image provided, how many meters of fencing will you need? Use what you already know about the sides of a square to help you solve the problem.

5 m

Equation for perimeter: _____

2. Your neighbor decides to show their appreciation by helping you plant and fence a rectangular garden. They give you 24 meters of fencing that they had left over. You want your garden to be 10 meters long. How wide can you make your garden?

10 m

? m

Equation for perimeter: _____

Directions: Work on your own to read and solve the problems below. Use any symbol or shape you like to represent the unknown numbers. Identify the unknown numbers, then solve the problems. Finally, explain your thinking in the box below the problem.

1- 8 m

4 m

Equation for perimeter: _____

2- Perimeter = 20 cm

Equation for perimeter: _____

3- Perimeter = 22 m

4 m

Equation for perimeter: _____

LESSON 7: TWO-STEP STORY PROBLEMS

APPLY

Directions: Solve the word problems below. Show your thinking in the box. You may use words, numbers, and pictures.

1. Ali earns 25 LE per week for doing all his chores. On the fourth week, he forgets to take out the trash, so he only earns 20 LE. Write and solve an equation to show how much Ali earns in 4 weeks.

2. Salma orders 3 packs of markers. Each pack contains 6 markers. After passing out 1 marker to each student in her class, she has 2 left. How many students are in Salma's class?

3. Basem buys a box containing 18 pieces of fruit. The box includes an equal number of figs, bananas, and oranges. He eats all of the figs. How many pieces of fruit does Basem have left?

4. Each day, Habiba eats 10 crackers for a snack at school. On Friday, she drops 3 crackers and only eats 7. What is the the total number of crackers that Habiba eats during the week?

5. Laila buys 24 seeds. She has 5 pots. She wants to plant 3 seeds in each pot. How many more pots does Laila need to plant all of her seeds?

CHALLENGE

1. Hoda had 3 bags of candy. Each bag contained 4 pieces of candy. She also had 8 pieces of candy that were not in a bag. How much candy did Hoda have in all?

Answer: Hoda had 4 pieces of candy in all. First, I figured out what she had in the bags, and then I took away what she had that was not in the bag.

What did the student do wrong? Why do you think the student made this error?	Correctly solve the problem and show your thinking

2. Mariam baked 24 chocolate chip cookies. She divided the cookies equally into 4 containers. Then, she baked more cookies so that she could put 4 more cookies in each container. How many cookies are in each container?

Answer: There are 7 cookies in each container— 6 cookies from the first batch she made and 1 cookie from the second batch she made.

What did the student do wrong? Why do you think the student made this error?	Correctly solve the problem and show your thinking.

3. Emad earned money for completing extra chores. He earned 8 LE per hour cleaning the bedrooms. He worked for 3 hours. He also earned an extra 16 LE for vacuuming the entire house. How much money did Emad earn?

Answer: Emad earned 24 LE by completing the chores. He earned 8 LE cleaning the bedrooms and then 16 LE for vacuuming.

What did the student do wrong? Why do you think the student made this error?	Correctly solve the problem and show your thinking.

REFLECT:

Directions: Reflect on your learning about error analysis. Why is error analysis an important part of mathematics? How can error analysis help you improve your own work?

LESSON 8: STRATEGIES FOR SOLVING TWO-STEP STORY PROBLEMS

CONNECT

Directions: Draw the time shown on the digital clock on the clock face above it.

4 : 27

5 : 07

2 : 49

3 : 15

6 : 35

12 : 58

9 : 16

7 : 31

1 : 11

10 : 02

APPLY

Directions: Read and solve each problem. Show your work in the First Strategy box. Then, use a different strategy to solve the problem and show your work in the Second Strategy box.

1. The park has 152 trees. There are 88 fig trees. The rest of the trees are palm trees. How many more fig trees are there than palm trees?

First Strategy	Second Strategy

2. There are 17 young crocodiles and 19 adult crocodiles. The crocodiles are placed equally into 4 areas. How many crocodiles are in each area?

First Strategy	Second Strategy

REFLECT:

Directions: Reflect on your learning about solving complex story problems. We have tried different strategies, applied different properties of each operation, shared our work with each other, and found and fixed errors. What have you learned? What has been successful for you? What do you still need to work on?

LESSON 9: WRITING STORY PROBLEMS

CONNECT

Directions: Solve for the unknown in the problems below. Complete as many problems as you can in the time allowed.

(3 × 2) × _____ = 36	(8 × 3) × _____ = 48
2 × (5 × _____) = 50	7 × (12 × _____) = 0
(8 × 3) × _____ = 48	10 × (6 × _____) = 600
(9 × 7) × _____ = 63	(4 × 2) × _____ = 88

APPLY

Directions: Write and solve a two-step story problem in the box below.

Write a two-step story problem for your partner to solve.

LESSON 1: MORE FRACTIONS

CONNECT

Directions: Read the questions below and circle the cookie that answers the question.

A. If 2 people want to share a cookie fairly, which image shows how they should cut the cookie?

1.

2.

B. If 4 people want to share a cookie fairly, which image shows how they should cut the cookie?

1.

2.

C. If 3 people want to share a cookie fairly, which image shows how they should cut the cookie?

1.

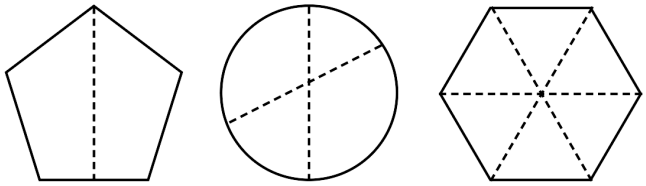
2.

D. Draw lines on the cookie below to show where you might cut and share it fairly with 8 friends.

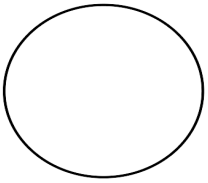
APPLY

Directions: Answer the following questions.

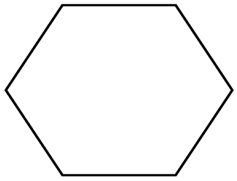
1. Circle the shapes that are divided into equal parts (fair shares).



2. Divide the following shapes into the fractional part listed below:

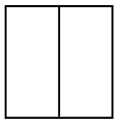


Four equal parts (Fourths)

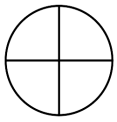


Six equal parts (Sixths)

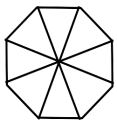
3. Match the picture of the fraction to its name:



Thirds



Fourths

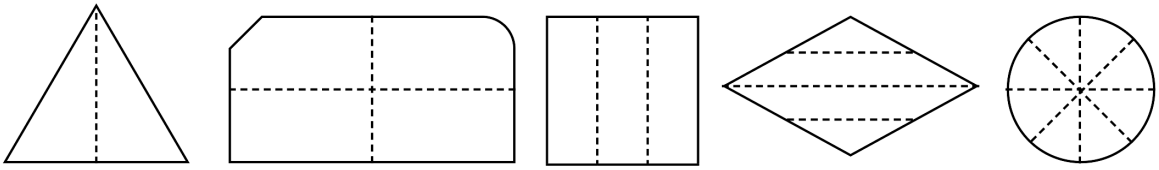


Sixths

Halves

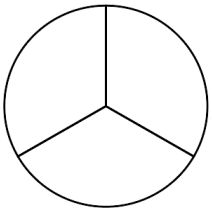
Eighths

4. Circle the shapes that are divided into equal parts. Write a sentence telling what equal parts means.



CHALLENGE:

Yaser wanted to share the cake below with three of his friends. Here is how he cut it:



His friends told him that would not work because there were four of them all together. So Yaser took one of the pieces and cut it in half. "Now we have fourths."

Was Yaser's thinking correct? Why or why not? Explain your thinking in the box below. Then, if you disagree with Yaser's solution, draw how he could have cut the cake to share it equally among the four people.

REFLECT:

Directions: Reflect on your learning about fractions today. Then, answer the question below and write your definition in the box. You can use words, numbers, pictures, and examples to explain your thinking.

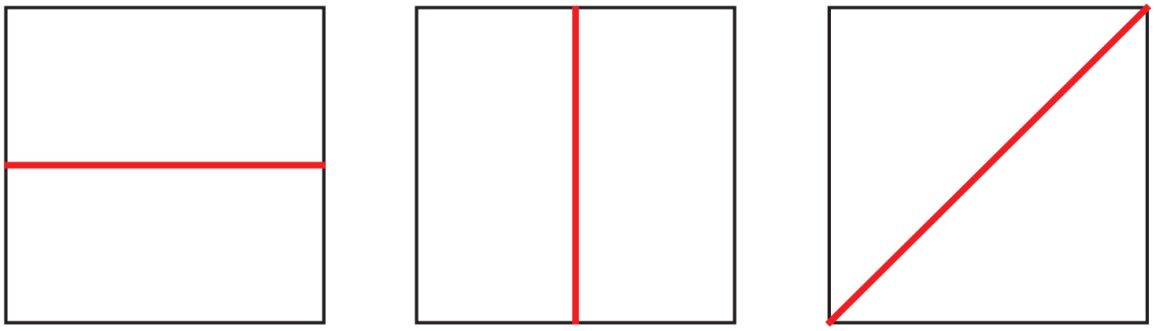
What is a fraction?

LESSON 2 : EXPLORING UNIT FRACTIONS

CONNECT

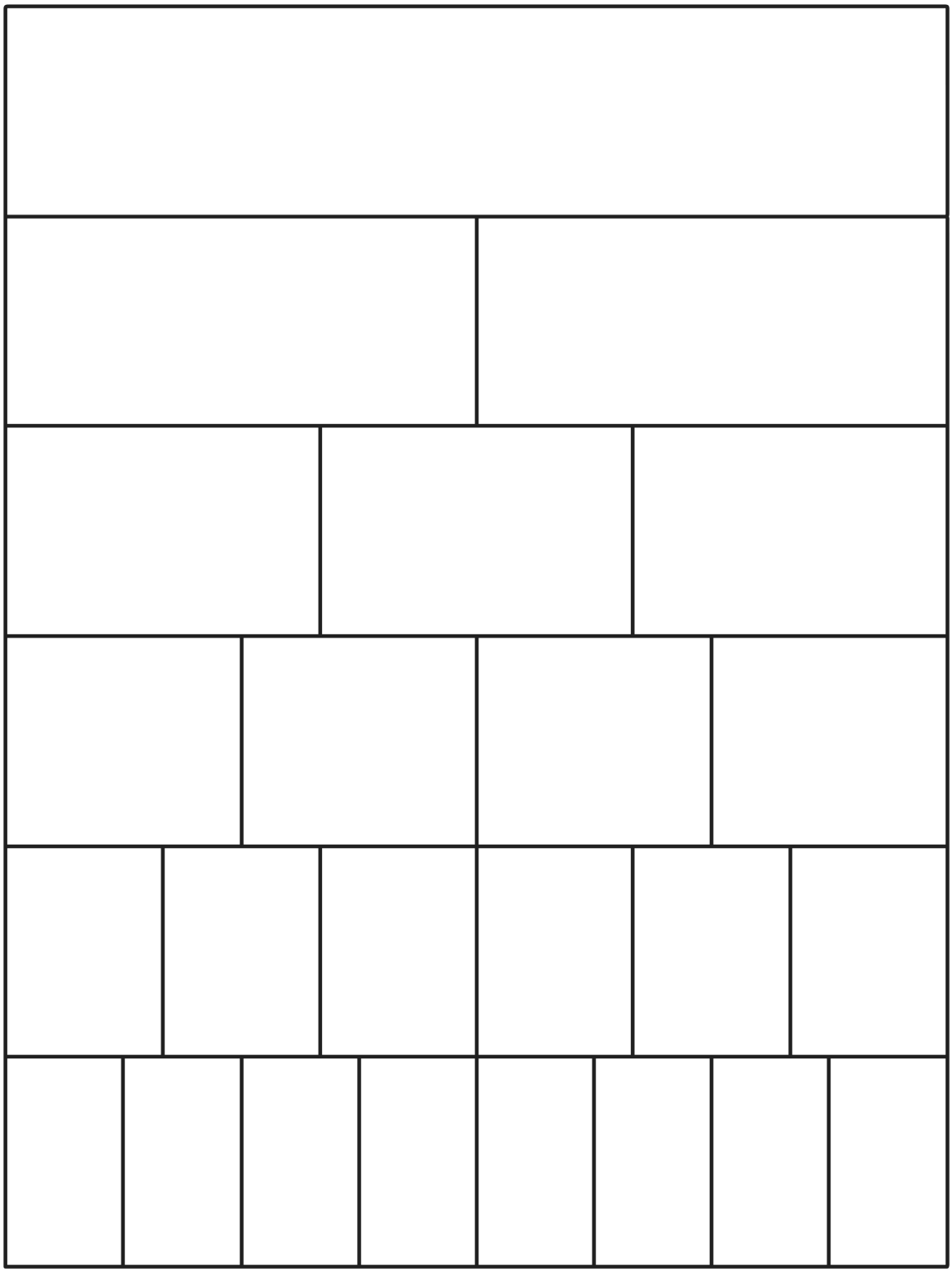
Directions: Read the questions below.

Amira folded three pieces of paper into halves. Here is what they looked like:



Her brother, Ehab, told her only the first one showed halves. Do you agree or disagree with Ehab? Explain below:

APPLY



LESSON 3 : APPLICATIONS ON UNIT FRACTIONS USING MODELS

CONNECT

Directions: Divide each clock face into the fractional parts that are listed below the clock.

Halves

Fourths

Thirds

APPLY

Example: Farouk, Hazem, and Dalia share a candy bar. Which of your fraction strips shows how they can each get an equal part?

Solve the rest of the problems below using your fraction models to help.

1. Noran has a long loaf of bread. She wants to share it with 2 of her friends. Which of your fraction strips best matches this story? Draw and label it below.

2. Rami has a long piece of wood. He needs to cut it into enough pieces to share with his 7 friends. Which of your fraction strips best matches this story? Draw and label it below.

3. Samir had a candy bar. He took 2 days to eat it and ate the same amount each day. On Monday, he ate 1 piece. On Tuesday, he ate 1 more piece. Which of your fraction pieces best matches the story? Draw and label it below.

4. To make a garage for his toy truck, Kamal bends a rectangular piece of cardboard in half. He then bends each half in half again. Which of your fraction strips best matches this story? Draw and label it below.

5. Hany bends a different piece of cardboard in thirds. He then bends each third in half again. Which strip best matches this story? Draw and label it below.

CHALLENGE:

1. If Samy had folded the piece of cardboard from problem 5 in half again, what would the strip look like? Draw and label below.

2. Heba had a long piece of string. She cut it into 8 equal parts. She gave 3 of the parts to her sister and 1 part to her brother. What fraction of the string does Heba have left? In the box below, draw a strip that matches this story and label each part. Color in the fraction that her sister gets red and the part her brother gets blue.

APPLY

Directions: Reflect on work you did to solve story problems today. Pick one of your fraction strips and write a story problem that would match the strip. Draw the strip below the story.

LESSON 4 : COMPARING UNIT FRACTIONS USING MODELS

CONNECT

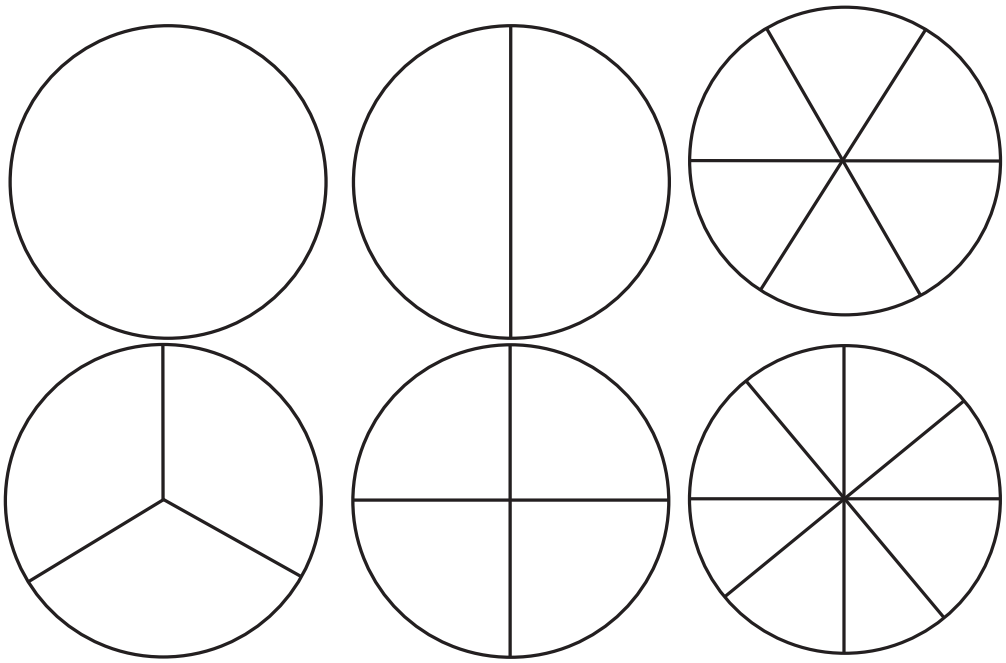
Directions: Look at the student's work below. Identify what they did correctly and what they did wrong. Then solve the problem on your own.

Sketch a rectangle. Divide the rectangle into 4 equal parts. Label each part.

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

What did the student do right? What did the student do wrong? Why do you think the student made this error?	Solve the problem on your own. Explain your thinking.

APPLY, PART 1



APPLY, PART 2

Directions: Solve the problems below. Use your fraction models to help you.

Compare each fraction. Write <, >, or = in the circle.

$\frac{1}{2}$ ◯ $\frac{1}{6}$ $\quad\quad$ $\frac{1}{6}$ ◯ $\frac{1}{3}$ $\quad\quad$ **1** WHOLE ◯ $\frac{1}{4}$

$\frac{1}{3}$ ◯ $\frac{1}{8}$ $\quad\quad$ $\frac{1}{3}$ ◯ $\frac{1}{3}$ $\quad\quad$ $\frac{1}{8}$ ◯ $\frac{1}{6}$

$\frac{1}{4}$ ◯ $\frac{1}{2}$ $\quad\quad$ $\frac{1}{2}$ ◯ $\frac{1}{3}$

Rania needs $\frac{1}{3}$ Litre (L) of oil and $\frac{1}{4}$ Litre (L) of water to make a large batch of muffins. Will Rania use more oil or more water? Explain your answer using pictures, numbers, and words in the box below. Use your fraction models to help you.

Ashraf needs to cut some wood for a project. He needs $\frac{1}{8}$ of a meter for the top and $\frac{1}{6}$ of a meter for the base. Which piece of wood will be larger? Explain your answer using pictures, numbers, and words in the box below.

CHALLENGE:

Your friend Walid says that $\frac{1}{6}$ is greater than $\frac{1}{5}$ because 6 is greater than 5. Is Walid correct? Use words and pictures to explain in the box below.

REFLECT:

Directions: Reflect on your learning about fractions today. Then, write your response to the journal prompt in the box below.

What is the relationship between the size of the denominator and the size of the fractional pieces as it relates to the whole? You can use words, numbers, pictures, and examples to explain your thinking.

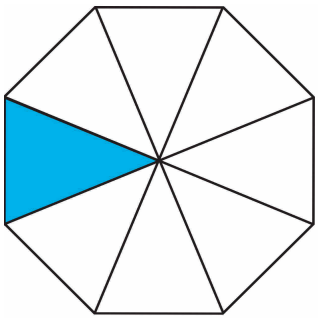
LESSON 5 : WHICH IS BIGGER ?

CONNECT

Directions: Analyze the student's answer below. Identify the error. Then, solve the problem on your own.

What fraction of the figure is shaded?

Student's Response: I think the fraction is $\frac{7}{8}$.



What did the student do right? What did they do wrong? Why do you think the student made this error?	Solve the problem on your own. Explain your thinking.

APPLY

Directions: Read each problem carefully. Write your answer and explain your thinking when asked.

1. Kamal likes to eat a lot of pie. His friend told him he could have $\frac{1}{2}$ of pie A or $\frac{1}{2}$ of pie B. Which pie should Kamal choose if he wants to eat a lot of pie? Explain your answer in the box below.

(A)

(B)

2. Moaaz picked 6 figs and put them in a basket. Adam picked 10 figs and put them in a basket. If you could have $\frac{1}{2}$ of either Moaaz's or Adam's basket, which would you choose if you wanted the greatest number of figs? Explain your answer in the box below.

3. Circle the correct answers:
   Which is longer, half of lunchtime or half of Saturday?
   Which is longer, half of a minute or half of an hour?
   Which is more, half of a cookie or half of a cake?
   Which holds more, half of a glass for water or half of a swimming pool?
   Which is more, half of a liter or half of a milliliter?
   Choose one of your answers above and explain your reasoning in the box below.

CHALLENGE:

Directions: Write your own "half" problem like the ones in question 3.

REFLECT:

Directions: Reflect on your learning about fractions today. Then, write your response to the journal prompt in the box below.

Two friends baked you a cake with two different size pans. One cake is chocolate and one cake is vanilla. If you eat $\frac{1}{3}$ of the chocolate cake and 3 of the vanilla cake, will you eat the same amount of each cake? Draw a picture and explain how $\frac{1}{3}$ of each cake could be a different amount.

LESSON 6 : EXPRESSING ONE USING THE UNIT FRACTIONS

CONNECT

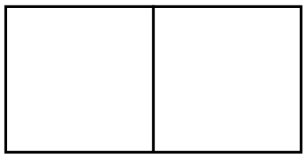
Directions: Read the question below. Then, record your answer in the box below. You can use words, numbers, pictures, and examples to explain your thinking.

A friend wants to share their candy bar with you. Would you rather have $\frac{1}{3}$ or $\frac{1}{4}$ of the candy bar?

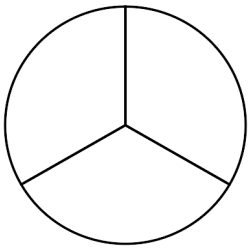
APPLY

Directions: Read the directions for each shape. Then, answer the question.

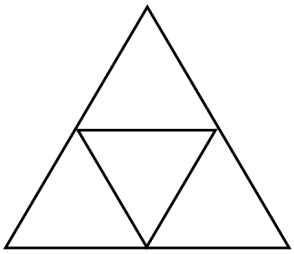
1. Label the unit fractions for this rectangle.
   How many halves make one whole?



2. Label the unit fractions in this circle.
   How many thirds make one whole?



3. Label the unit fractions for this triangle.
   How many fourths make one whole?



CHALLENGE:

1. How many people are in your family? Represent each family member as a unit fraction. Express the whole family as a fraction.

2. Wagdy has one whole carton of 12 eggs. What fraction is each egg in the carton? Express the whole egg carton as a fraction.

REFLECT:

Directions: Reflect on your learning about fractions today. Then, write your response to the journal prompt in the box below.

What does the term "one whole" mean in fractions? You can use words, numbers, pictures, and examples to explain your thinking.

LESSON 7 : THE RELATION BETWEEN FRACTIONS AND DIVISION

CONNECT

Directions: Choose five of the problems below to solve. Show your work in the box below the problem.

40 ÷ 5	81 ÷ 9	24 ÷ 4
36 ÷ 6	21 ÷ 3	18 ÷ 3
12 ÷ 6	25 ÷ 5	80 ÷ 8
49 ÷ 7	100 ÷ 10	56 ÷ 8
10 ÷ 2	60 ÷ 10	22 ÷ 2

APPLY

Directions: Read and solve the following problems using your counters and fraction strips or circles. Draw a picture in the box to show your work. Then, fill in the blank in the sentence at the bottom of the box.

A. Divide 8 counters into fourths.

If I divide 8 counters into fourths, each fourth has _____ counters.

1. What is $\frac{1}{2}$ of 16?

If I divide 16 counters into halves, each half has _____ counters.

2. Divide 24 counters into eighths. How many counters would be in each fractional unit?

If I divide 24 counters into eighths, each eighth has _____ counters.

3. What is a third of 21?

If I divide 21 counters into thirds, each third has _____ counters.

CHALLENGE:

Directions: Write your own problem below. You may use any of your fraction strips or circles to help you.

LESSON 8 : MORE OF THE RELATION BETWEEN FRACTIONS AND DIVISION

APPLY

Directions: Read the problems below. Show your work and your answers in the boxes.

Mohamed has 12 apples to give away.

1. If he splits the apples evenly between 2 friends, how many apples will each friend get? What fraction of the whole would they each receive?

2. What if he splits the apples evenly between 3 friends? How many apples will each friend get? What fraction of the whole would they each receive?

3. Imagine he splits the apples evenly between 4 friends. How many apples will each friend get? What fraction of the whole would they each receive?

4. Now, Mohamed wants to split the apples evenly between 6 friends. How many apples will each friend get? What fraction of the whole would they each receive?

5. Four friends bought a pizza to share equally. What fraction of the pizza will each friend get? Write your answer as a division problem and as a fraction.

6. Omar bought a 6-pack of soda to give equally to his 6 guests. How many cans of soda will each guest receive? Write your answer as a division problem and as a fraction of the 6-pack.

REFLECT:

Directions: Reflect on your learning about fractions today. Then, write your response to the journal prompt in the box below.

Explain the relationship between fractions and division. You can use words, numbers, pictures, and examples to explain your thinking.

LESSON 9 : APPLICATIONS ON FRACTIONS

CONNECT

Directions: Read the problem below. Show your work and write your answer in the box below.

Heba and Amira walk to school together. It takes Heba $\frac{1}{2}$ an hour to walk to Amira's house. It takes Heba and Amira $\frac{1}{4}$ of an hour to walk to school together. How many minutes in all does it take Heba to walk to school? You can use words, numbers, pictures, and examples to solve the problem and explain your thinking.

APPLY

Directions: Answer each of the questions below. Draw a model in the box to explain your thinking.

A. Would you rather have $\frac{1}{3}$ or $\frac{1}{4}$ of a chocolate bar? Models of chocolate bars are drawn for you below.

1. Would you rather have $\frac{1}{2}$ or $\frac{1}{4}$ of a pizza?

2. Would you rather have $\frac{1}{6}$ or $\frac{1}{8}$ of a bottle of juice?

3. Would you rather have $\frac{1}{4}$ of a bag of candy or $\frac{1}{6}$?

CHALLENGE:

1. Order the following fractions from smallest to largest. There are some that you do not have fraction models for, but use what you have discovered about unit fractions to help you.

$$\frac{1}{2}, \frac{1}{8}, \frac{1}{4}, \frac{1}{3}, \frac{1}{6}, \frac{1}{10}, \frac{1}{12}, \frac{1}{5}$$

_____ _____ _____ _____ _____ _____ _____ _____

2. Write a "Would You Rather" fraction problem for a friend to solve in the box below.

REFLECT:

Directions: Reflect on what you have learned about fractions over the past several lessons. Then, read the question below and record your thinking in the box.

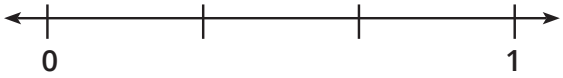
When do people use fractions in real life? Think and write about three different ways fractions are used.

LESSON 1 : REPRESENTING FRACTIONS ON A NUMBER LINE

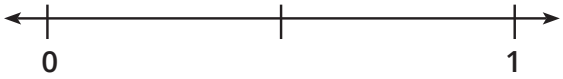
CONNECT

Directions: Read the stories below. Then, draw a line matching each story to the number line that you could use to solve the problem.

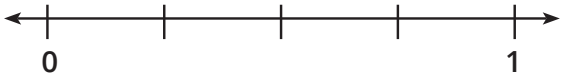
1. Aya had a rope. She needed $\frac{1}{2}$ of it for a project.



2. Omar had a meter of wood. He needed $\frac{1}{3}$ of the meter for a bird house.



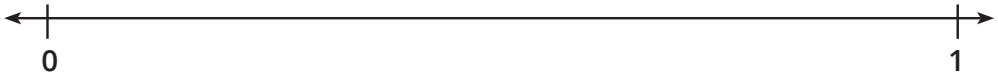
3. Sara was sewing beads onto a meter of ribbon. She wanted to sew a bead on each $\frac{1}{4}$ of the ribbon.



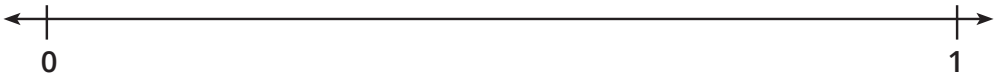
APPLY

GROUP PRACTICE:

1. Represent fourths.



2. At the park, there was a straight 1-kilometer path. Every $\frac{1}{6}$ of the path, there was a drinking fountain. Use the number line to identify where each drinking fountain was located.



Directions: Read each problem:

1. Ali needs to wrap presents. He lays the ribbon flat and says, "If I make 3 equally spaced cuts, I will have just enough pieces. I can use 1 piece for each present." Draw a number line to show Ali's ribbon and the cuts he will make:

How many presents can Ali wrap? _____

What fraction of the whole ribbon is used for each present? _____

2. Mariam is planting fl owers in her 1-meter-long rectangular plant box. She divides the plant box into sections $\frac{1}{8}$ of a meter in length. She then plants 1 seed in each section. Draw and label a number line representing the plant box from 0 meters to 1 meter.

How many seeds can Mariam plant? _____

3. Ziad wanted to cut a 1-meter piece of rope into equal pieces for his 4 friends. Draw a number line to show how he could cut the rope.

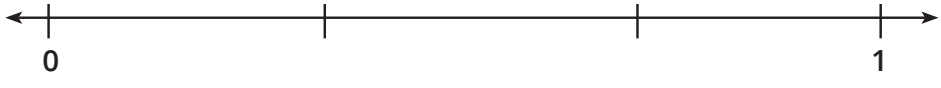
What fraction of the rope does each friend get? _____

4. Tamir and Rana went on a 1kilometer walk with their little sister. They stopped every $\frac{1}{8}$ of a kilometer to let the sister rest. Draw a number line to show the spots along the line where they stopped.

How many times did Tamir and Rana have to stop? _____

CHALLENGE:

Write a fraction story problem in the box below that you could use the following number line to help solve:

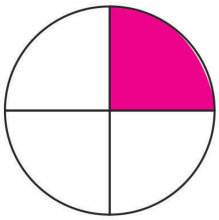


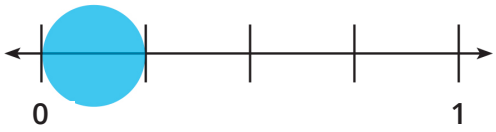
LESSON 2 : COMPARING UNIT FRACTIONS USING A NUMBER LINE

CONNECT

Directions: Read the problem below. Then, show your work in the box.

1. Ezz says that each of these models shows $\frac{1}{4}$. Do you agree or disagree? Explain your thinking in the box.





APPLY

Group Practice:

Use the number lines above to help you compare the fractions $\frac{1}{2}$ ◯ $\frac{1}{4}$

Independent Practice:

Directions: For each problem, divide the line into the proper number of fractional pieces. Label the unit fraction and then color to show the distance from 0, like in the group practice. Last, record your comparison using < or >.

Use the number lines above to help you compare the fractions. $\frac{1}{2}$ ◯ $\frac{1}{3}$

Use the number lines above to help you compare the fractions. $\frac{1}{6}$ ◯ $\frac{1}{3}$

Use the number lines above to help you compare the fractions. $\frac{1}{4}$ ◯ $\frac{1}{8}$

Use the number lines above to help you compare the fractions. $\frac{1}{8}$ ◯ $\frac{1}{6}$

Use the number lines above to help you compare the fractions. $\frac{1}{2}$ ◯ $\frac{1}{8}$

CHALLENGE:

1. Circle the unit fraction that you think is larger. Then, prove it using a number line.

$\frac{1}{12}$ ◯ $\frac{1}{10}$

2. Omar told his sister that $\frac{1}{9}$ is larger than $\frac{1}{8}$ because 9 is more than 8. Do you agree or disagree with Omar? Circle one: Agree Disagree

Prove your thinking by drawing number lines to compare.

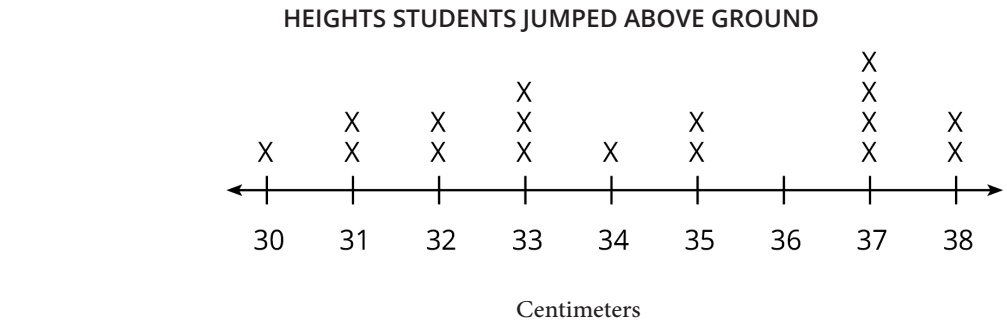
$\frac{1}{9}$ ◯ $\frac{1}{8}$

LESSON 3 : COMPARING FRACTIONS USING MODELS

CONNECT

Directions: Look at the student's work below. Identify what the student did correctly and what they did wrong. Then, solve the problem on your own.

Use the line plot to figure out how many students jumped higher than 34 centimeters.

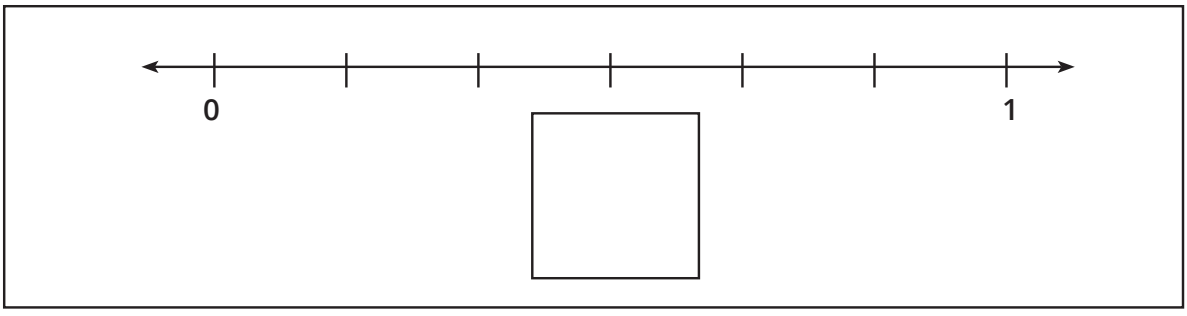


Student's response: According to the line plot, 9 students jumped higher than 34 centimeters.

What did the student do right? What did they do wrong? Why do you think the student made this error?	Solve the problem on your own. Explain your thinking.

APPLY

Group Practice:



Independent Practice:

Directions: Draw a model for each fraction and then compare using < or >. You may draw number lines or pictures. If you use your fraction kit models, draw a representation of that also.

1. Draw a model and compare: $\frac{2}{8}$ ◯ $\frac{4}{8}$

2. Draw a model and compare: $\frac{3}{6}$ ◯ $\frac{5}{6}$

3. Draw a model and compare: $\frac{3}{4}$ ◯ $\frac{2}{4}$

4. Draw a model and compare: $\frac{3}{3}$ ◯ $\frac{2}{3}$

5. Draw a model and compare: $\frac{3}{8}$ ◯ $\frac{7}{8}$

CHALLENGE:

Draw models of the following fractions using a circle, bar, square, or number line.

$\frac{5}{10}$

$\frac{8}{12}$

LESSON 4 : COMPARING FRACTIONS USING A NUMBER LINE

CONNECT

Directions: Look at the student's work below. Identify what the student did correctly and what they did wrong. Then, solve the problem on your own.

Write the following number in expanded form: 1,846

Student's response: 1,846 = 1 Thousand + 8 Hundreds + 40 Tens + 6 Ones.

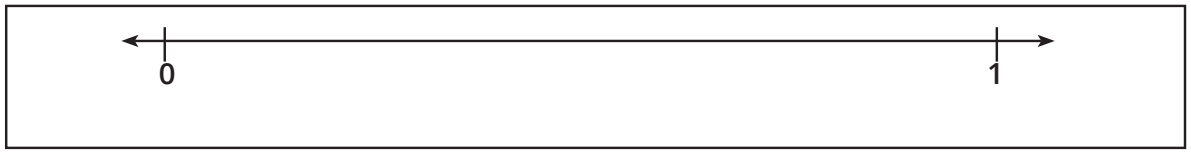
What did the student do right? What did they do wrong? Why do you think the student made this error?	Solve the problem on your own. Explain your thinking.

APPLY

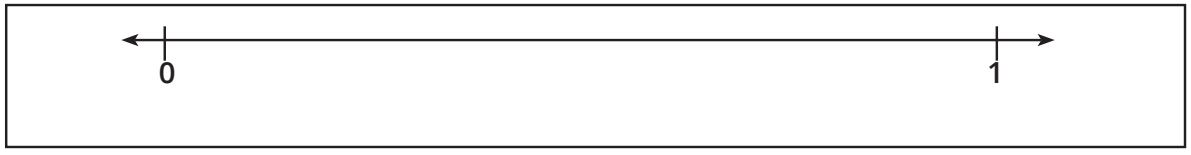
Directions: For each problem below, complete the following steps:

1. Divide the number lines into the given number of equal parts.
2. Label all of the fractions on the number line.
3. Circle the stated proper fraction on the number line.
4. Draw a model of the circled fraction using a shape or a set.

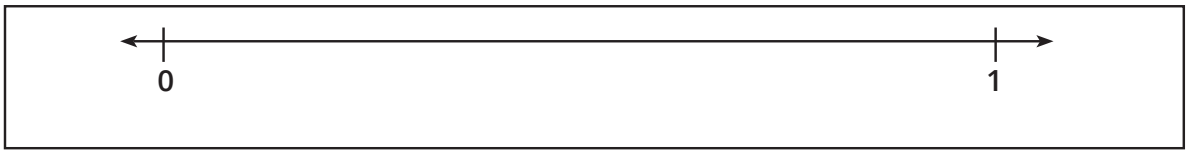
Divide the number line into fourths. Circle $\frac{3}{4}$



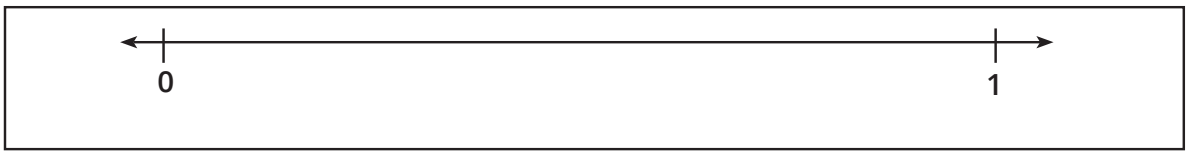
Divide the number line into halves. Circle $\frac{1}{2}$.



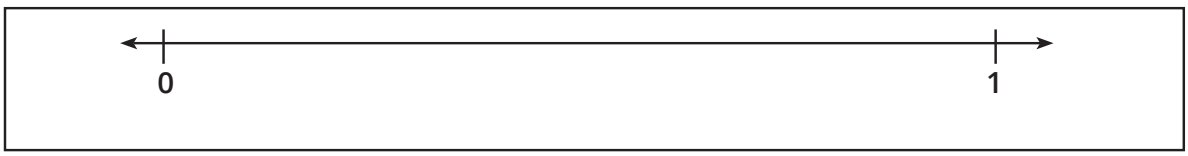
Divide the number line into sixths. Circle $\frac{4}{6}$



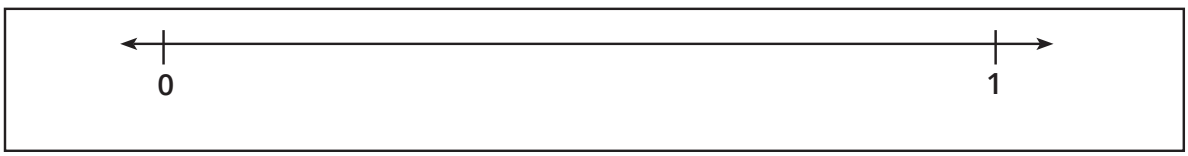
Divide the number line into thirds. Circle $\frac{2}{3}$.



Divide the number line into fifths. Circle $\frac{2}{5}$.

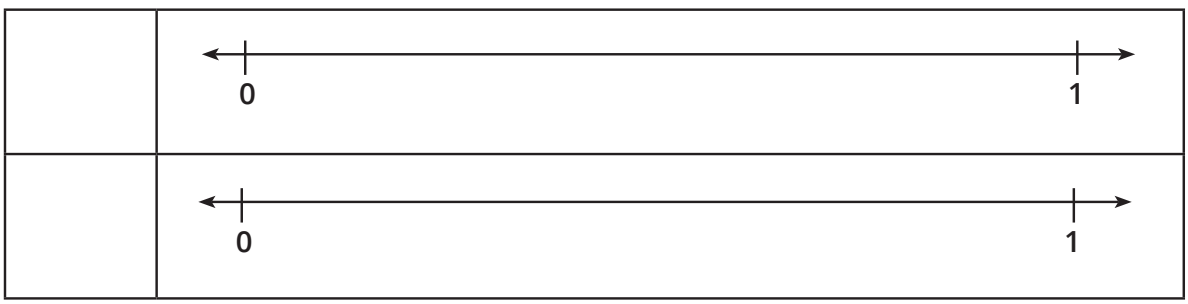


Divide the number line into fourths. Circle $\frac{1}{4}$.



CHALLENGE:

Directions: Choose two fractions and write them in the boxes to the left. Divide the number line for your fraction, label the fraction on the number line, and circle the fraction you chose. Finally, draw a model for your fraction using a shape or a set.



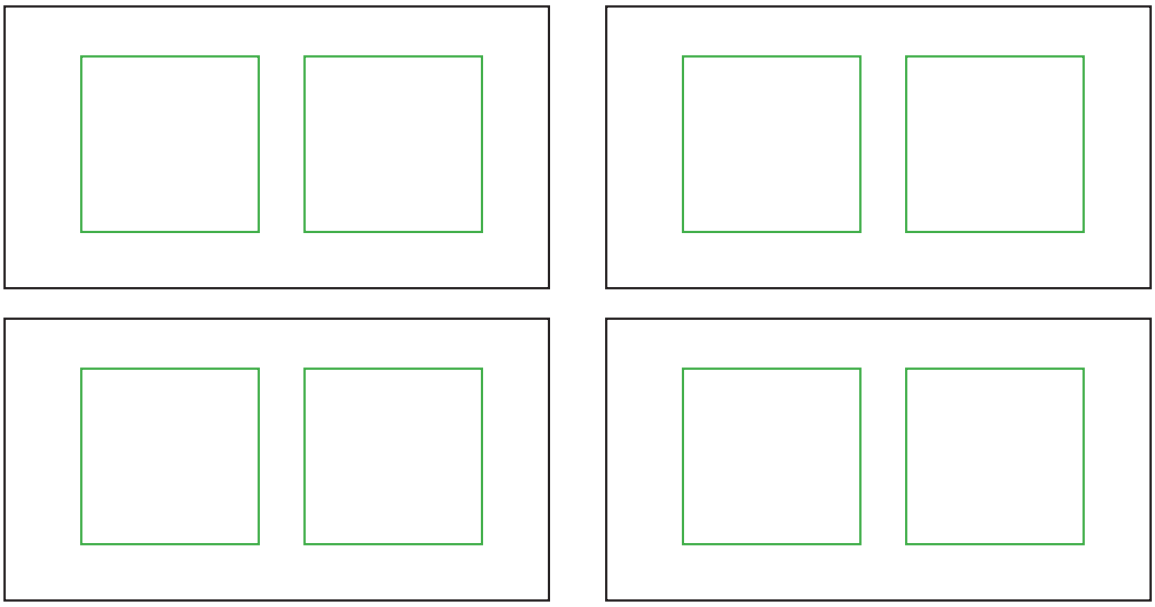
LESSON 5 : COMPARING TWO FRACTIONS WITH THE SAME NUMERATOR OR DENOMINATOR

CONNECT

Directions: Use the squares to solve the problem below.

Four children want to share 2 square cakes so that each child gets the same amount.

See how many different ways you can divide the cakes equally among the four children.



APPLY

Directions: Answer the following questions in the boxes below.

Comparing Fractions with the Same Denominator

1. Which fraction is greater, $\frac{1}{4}$ or $\frac{3}{4}$? Show or explain your work in the box below, and then use < or > to record your answer.

2. What is your hypothesis for comparing any fractions with the same denominator?

3. Test your hypothesis: Which fraction is greater, $\frac{5}{8}$ or $\frac{2}{8}$? Use a model to prove your answer and then write a comparison statement with < or >.

4. What other fractions could you use to test your hypothesis? Use models to prove your answer and then write a comparison statement with < or >.

Comparing Fractions with the Same Numerator

5. Which fraction is greater, $\frac{2}{3}$ or $\frac{2}{4}$? Show or explain your work in the box below, and then use < or > to record your answer.

6. What is your hypothesis for comparing any fractions with the same numerator?

7. Test your hypothesis: Which fraction is greater, $\frac{3}{8}$ or $\frac{3}{4}$? Use a model to prove your answer and then write a comparison statement with < or >.

8. What other fractions could you use to test your hypothesis? Use models to prove your answer and then write a comparison statement with < or >.

REFLECT:

Directions: Reflect on your learning about comparing fractions by answering the question below. You may use numbers, words, and pictures to show your thinking.

How do we compare fractions?

LESSON 6: ADDING TWO FRACTIONS WITH THE SAME DENOMINATOR

CONNECT

Directions: Order the number sets below as directed.

From least to greatest:

432	342	443	324

_____ ; _____ ; _____ ; _____

10245	11123	2451	10001

_____ ; _____ ; _____ ; _____

From greatest to least:

999	90	199	991

_____ ; _____ ; _____ ; _____

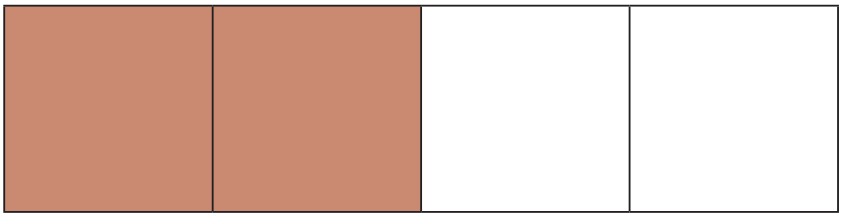
89001	90002	90020	8999

_____ ; _____ ; _____ ; _____

APPLY

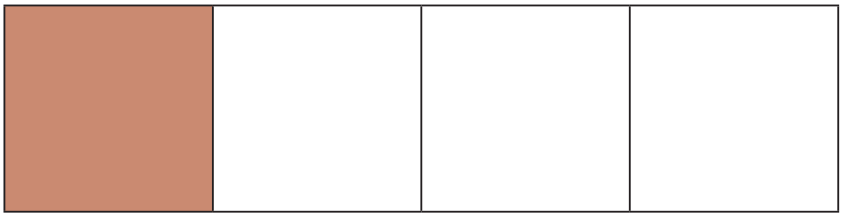
Directions: Answer the following questions. Be sure to show your work.

Candy bar 1



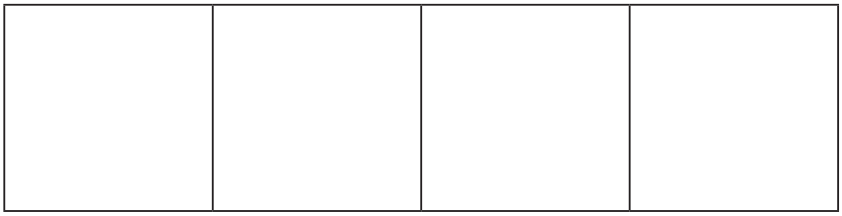
Write this model as a fraction: _____

Candy bar 2



Write this model as a fraction: _____

Add the two fractions together and draw the sum in the model below.



Write the equation:

Directions: Solve the addition problems below. Draw models to show your work.

1) $\frac{3}{8} + \frac{2}{8} =$ _____

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

3) $\frac{1}{2} + \frac{1}{2} =$ _____

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

5) $\frac{1}{4} + \frac{2}{4} =$ _____

CHALLENGE:

In the box below, write and solve your own problem adding two fractions with the same denominator.

REFLECT:

Directions: Reflect on your learning about adding fractions. Answer the question below. You may use words, numbers, and pictures to show your thinking.

Why can we only add fractions that have the same denominator?

LESSON 7 : SUBTRACTING TWO FRACTIONS WITH THE SAME DENOMINATOR

CONNECT

Directions: Analyze the student's work and answer below. Identify the error. What did the student do right? What did they do wrong? Then solve the problem on your own.

$$\frac{3}{6} + \frac{1}{6} = \frac{4}{12}$$

What did the student do right?	What did the student do wrong? Why do you think the student made this error?	Solve the problem on your own. Explain your thinking

APPLY

Directions: Solve the problems below. Draw a model to show your work.

1) $\frac{2}{4} - \frac{1}{4} =$ _____

2) $\frac{4}{8} - \frac{2}{8} =$ _____

3) $\frac{3}{3} - \frac{1}{3} =$ _____

4) $\frac{7}{8} - \frac{3}{8} =$ _____

5) $\frac{3}{12} - \frac{1}{12} =$ _____

6) $\frac{2}{2} - \frac{1}{2} =$ _____

CHALLENGE:

In the box below, write your own fraction subtraction problem. Draw a model to show your solution.

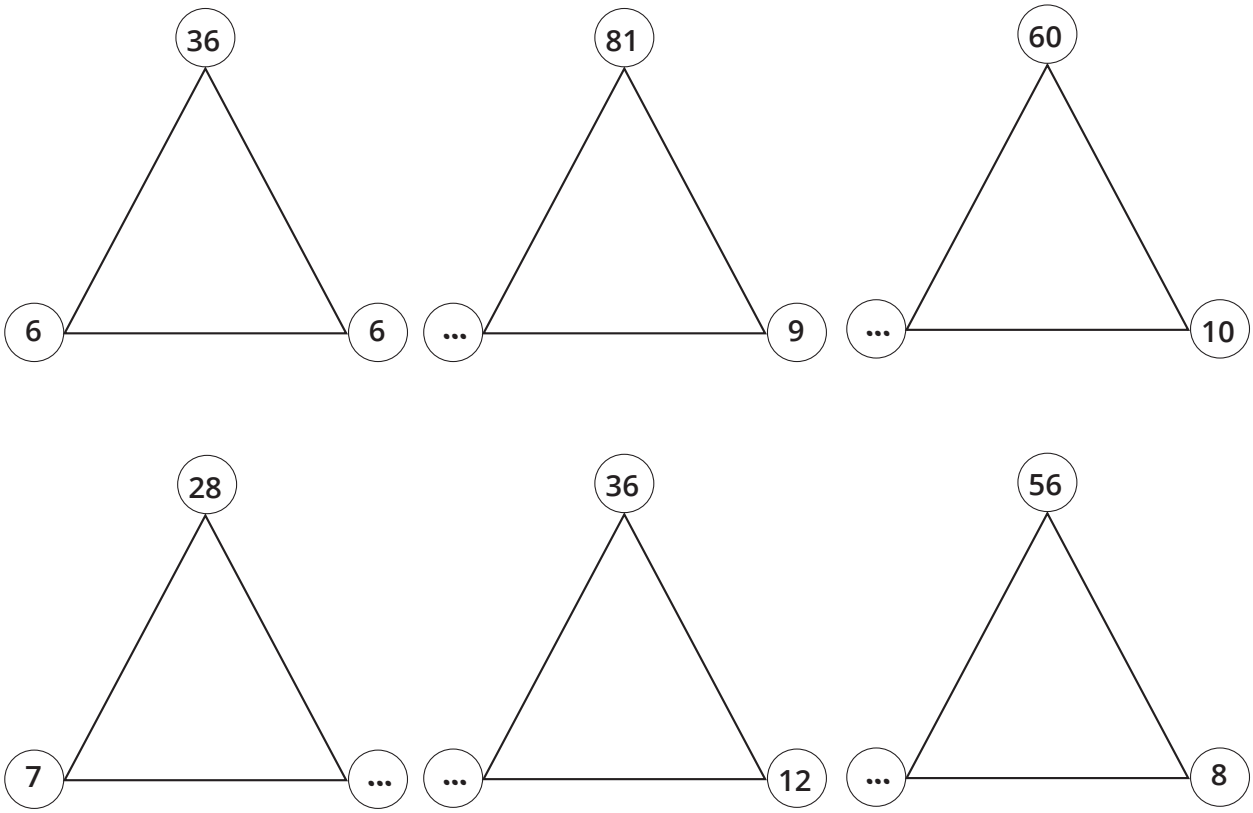
REFLECT:

Directions: Reflect on what you have learned about adding and subtracting fractions. Then, explain the rules for adding and subtracting fractions with the same denominator.

LESSON 8 : STORY PROBLEMS ON ADDING AND SUBTRACTING FRACTIONS

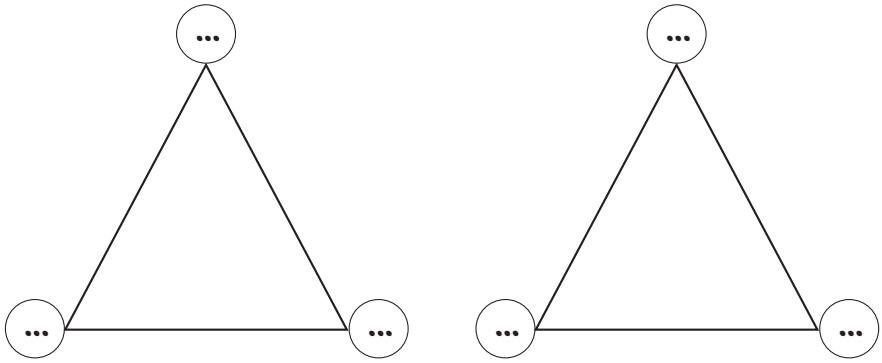
CONNECT

Directions: Multiply or divide to find the missing number in each triangle. The first one is done for you.



CHALLENGE:

Create two complete fact families in the triangles below:



APPLY

Directions: Solve the story problems below. You may show your thinking in words, numbers, and pictures.

1. Mohamed ate $\frac{1}{6}$ of his sandwich at snack time and $\frac{2}{6}$ of his sandwich at lunch. How much of his sandwich did he eat in all?

2. Omar brought $\frac{2}{4}$ of a candy bar to the playground. He gave $\frac{1}{4}$ of it to a friend. How much does he have left?

3. Maha and Nagi baked cakes that were the same size. Maha gave $\frac{3}{4}$ of her cake to her class. Nagi gave $\frac{1}{2}$ of his cake to his class. Which class received more cake, Maha's class or Nagi's class?

4. The juice container at Farida's house was $\frac{5}{6}$ full. Farida drank $\frac{3}{6}$ of the juice. How much juice was left in the container?

5. Yesterday, Marwan ran $\frac{2}{8}$ of a kilometer and then stopped to drink some water. After his water break, he ran another $\frac{2}{8}$ of a kilometer. What fraction of a kilometer did Marwan run yesterday?

6. Wagdy's house is $\frac{2}{3}$ of a kilometer from school. Taha's house is $\frac{1}{3}$ of a kilometer from school. Who lives closest to school?

REFLECT:

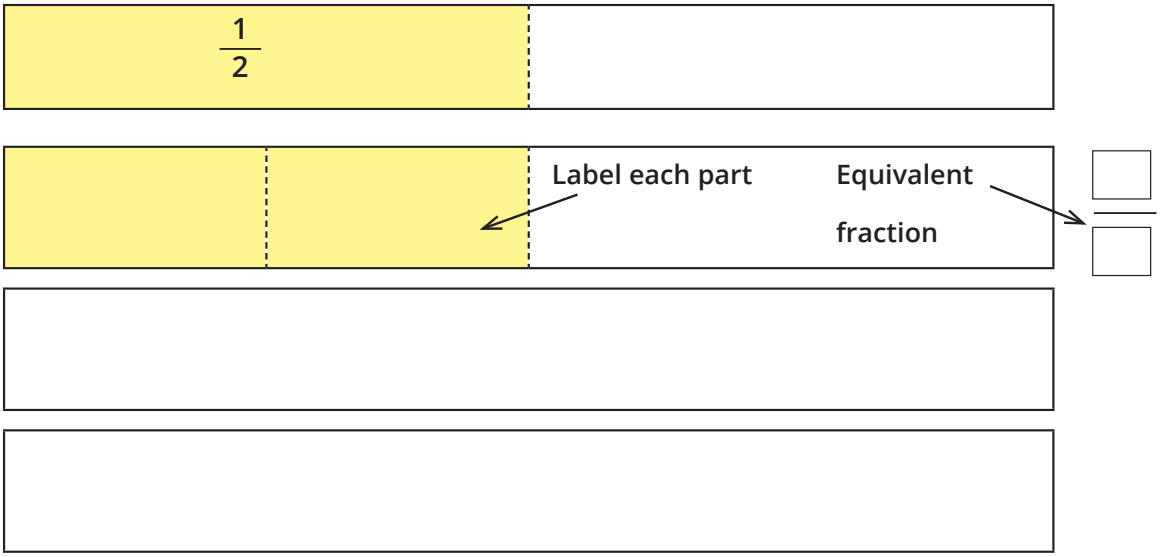
Directions: Write your own fraction addition or subtraction story problem in the first box. Do not solve the problem.

For your partner: Solve your partner's problem. Show your work in the box below.

LESSON 1 : EQUIVALENT FRACTIONS OF A HALF

APPLY

Directions: Draw the fractions you found that are equivalent to $\frac{1}{2}$ Label each part, shade each fraction, and name the equivalent fraction. The first one has been started for you.



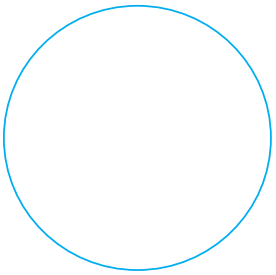
Directions: Think about the fractions that you found that were equivalent to $\frac{1}{2}$ Solve the story problems below.

1. Doha folded her paper into two equal pieces.
   What fraction is each part of the paper? _____

She colored $\frac{1}{2}$ red. Then, she folded the paper again, and when she opened it up, there were four equal parts. What fraction of the paper was colored red and equivalent to $\frac{1}{2}$? _____

Draw what Doha's paper looked like after the second fold.

2. Basem had a pizza that was cut into six equal pieces. He ate $\frac{1}{2}$ of the pizza for dinner. Draw his pizza below (do not forget to cut it into 6 pieces) and color in green the pieces he ate.



How many pieces did he eat? _____

What fraction of the pizza is left? _____

GROUP PRACTICE

First Group Task Directions:

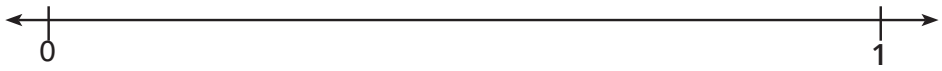
1. Divide the first rectangle in half with a vertical line and lightly color $\frac{1}{2}$.

2. Then, divide the second rectangle into sixths and shade in $\frac{1}{2}$.

What do you notice?

Second Group Task Directions:

1. Divide the number line (from 0 to 1) into two equal parts and label all the fractions on the number line ($\frac{0}{2}$, $\frac{1}{2}$, $\frac{2}{2}$) .



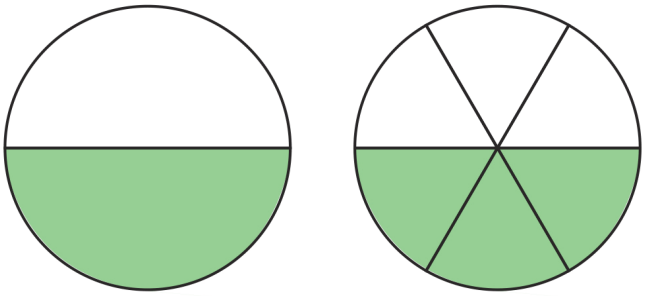
2. Use a color on the same number line and divide the whole number line into four equal parts.

Label all the fractions on the number line ($\frac{0}{4}$, $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$, and $\frac{4}{4}$) .

Independent Practice

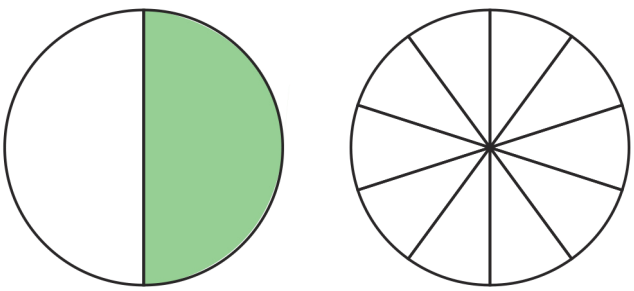
Directions: Use the models to solve the problems below.

1. Record what fraction each model shows.



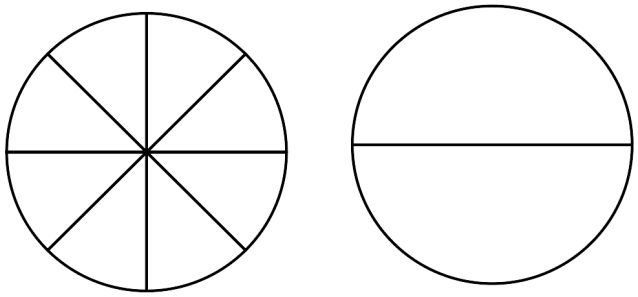
_____ = _____

2. Color in the second circle to show $\frac{1}{2}$ and then record the fraction below each circle.



_____ = _____

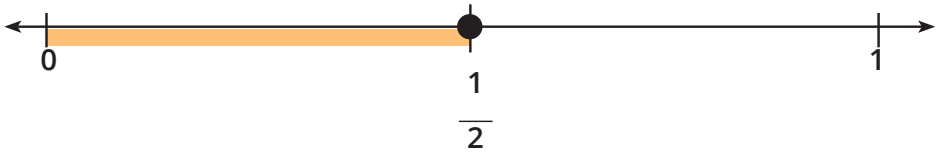
3. Color in each fraction to show $\frac{1}{2}$. Record the proper fraction below each circle.

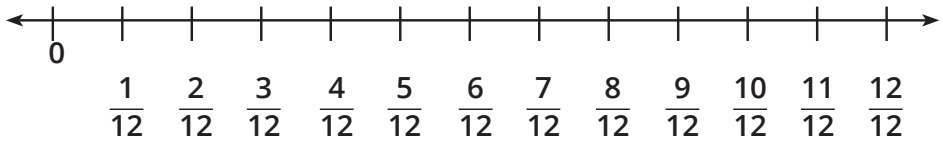


_____ = _____

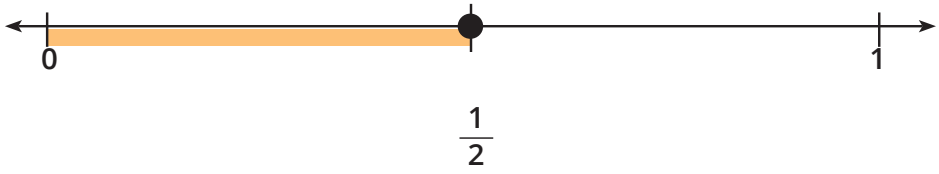
4. Find the equivalent fraction of $\frac{1}{2}$. Show the equivalent fraction on the second number line.

$\frac{1}{2}$ = _____





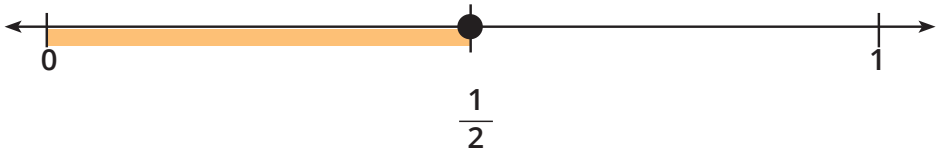
5. The number line below shows halves. Divide the same number line into eight equal parts (eighths) using a color.



How many eighths are equivalent to $\frac{1}{2}$? _____

CHALLENGE:

1. The number line below shows halves. Divide the same line into sixteen equal parts (sixteenths) using a color.



How many sixteenths are equivalent to $\frac{1}{2}$? _____

2. Ahmed said that he knew that $\frac{5}{10}$ was equal to $\frac{1}{2}$ because 5 is a half of 10. If Ahmed is right, would $\frac{8}{16}$ be equivalent to $\frac{1}{2}$? What other fractions might be equivalent to $\frac{1}{2}$? Record your answers in the box below.

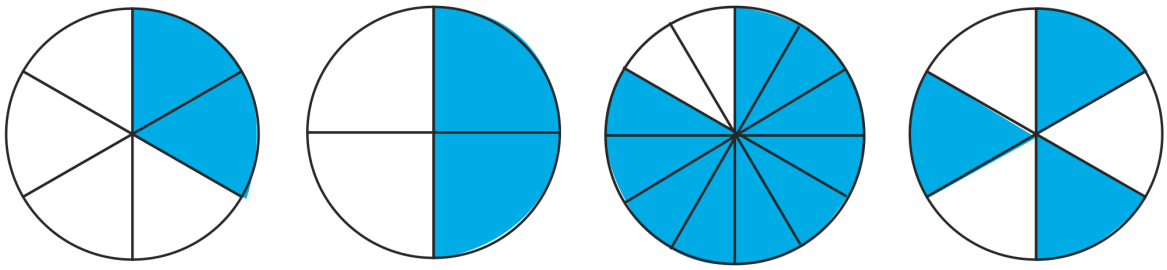
REFLECT:

Directions: Reflect on the work you did in the last two lessons to find fractions equivalent to $\frac{1}{2}$. Which model did you prefer? Do you like to use fraction strips, picture models, or number lines? Record your preference and explain why in the box below. You may use words, numbers, and pictures to show your thinking.

LESSON 2: MORE OF EQUIVALENT FRACTIONS

CONNECT

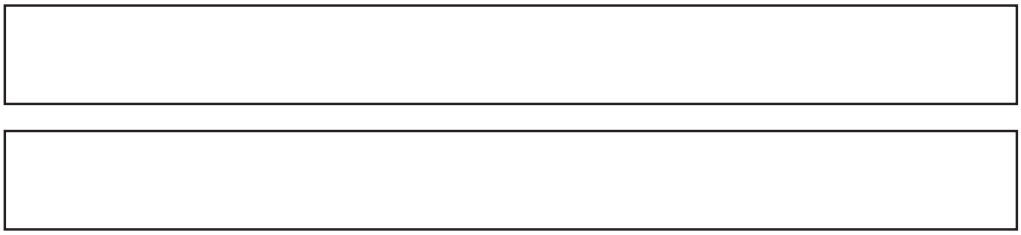
Directions: Cross out the fraction models that are NOT equivalent to $\frac{1}{2}$.



In the box below, explain why the fractions you crossed out were not equivalent to $\frac{1}{2}$

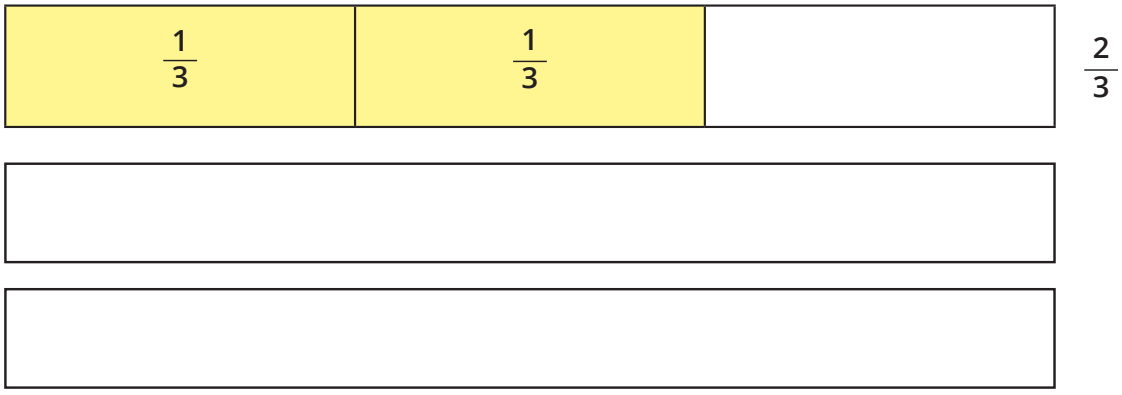
APPLY

GROUP PRACTICE

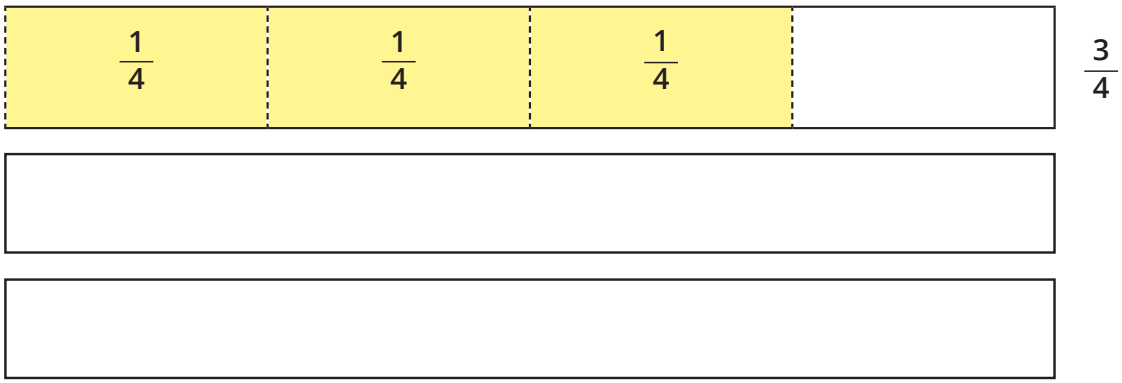


INDEPENDENT PRACTICE

1. Use your fraction models to find two fractions that are equal to $\frac{2}{3}$. Draw your work, shade each fraction, and name each fraction.



2. Use your fraction models to find two fractions that are equal to $\frac{3}{4}$. Draw your work, shade each fraction, and name each fraction.



3. Use your fraction models to find three other sets of equivalent fractions. Record each fraction using the bars below. Draw each fraction, shade, and name like you did for problems 1 and 2.

Directions: Use the Fraction Matching Cards set to find two equivalent fractions for each fraction on the mat below. Record your matches.

Equivalent Fraction MATCH	
$\frac{2}{3}$	$\frac{2}{4}$
$\frac{6}{8}$	$\frac{2}{6}$

$\frac{2}{3}$ =

$\frac{2}{4}$ =

$\frac{6}{8}$ =

$\frac{2}{6}$ =

CHALLENGE:

1. Laila was making a quilt. The pattern called for $\frac{2}{3}$ of a meter of fabric. She wanted to use many different pieces that were each $\frac{1}{6}$ meter long. How many pieces of fabric would she need? Show your thinking in the box below. You can use your fraction models, draw bars, or any other examples or models that help you.

LESSON 3: PATTERNS OF EQUIVALENT FRACTIONS

CONNECT

Directions: Look at the question below and the student's response. Identify what the student did correctly and what the student did wrong. Then, answer the question on your own.

Ezz collected caterpillars. He found 18 on Monday, 26 on Tuesday, 15 on Wednesday, and 38 on Thursday. Estimate about how many caterpillars Ezz found in all.

Student response:

Ezz found about 70 caterpillars because 10 + 20 + 10 + 30 = 70.

What did the student do correctly?	What did the student do wrong? Why do you think the student made this error?	What might be a better estimate of the total number of caterpillars

APPLY

Directions: Copy below the equivalent fractions you and your friends identifi ed. There is extra space in case your class identifi ed more than four equivalent fractions.

$\frac{1}{2}$ =

$\frac{1}{2}$ =

$\frac{1}{2}$ =

$\frac{1}{2}$ =

Describe the patterns or relationships you observed between fractions that are equivalent to $\frac{1}{2}$. You may use words, numbers, and pictures in your explanation.

Directions: Work with your partner to choose another unit fraction. You may use your fraction models or draw pictures. Find at least three equivalent fractions and record them below. Then, describe the numeric patterns and relationships you notice.

$\frac{1}{\square} =$

$\frac{1}{\square} =$

$\frac{1}{\square} =$

$\frac{1}{\square} =$

Describe the patterns or relationships you observed between fractions that are equivalent to the unit fraction you selected. You may use words, numbers, and pictures in your explanation.

REFLECT:

Directions: Reflect on what you learned today about patterns and relationships between equivalent fractions. Then, answer the question below.

Do you think those patterns and relationships always exist between equivalent fractions? Why or why not? Record your thinking in the box below. Be sure to use the terms numerator and denominator. You may use words, numbers, and pictures to share your thinking.

LESSON 4: EQUIVALENT FRACTIONS WITH THE NUMBER LINE

CONNECT

Directions: Answer the following questions in the box below.

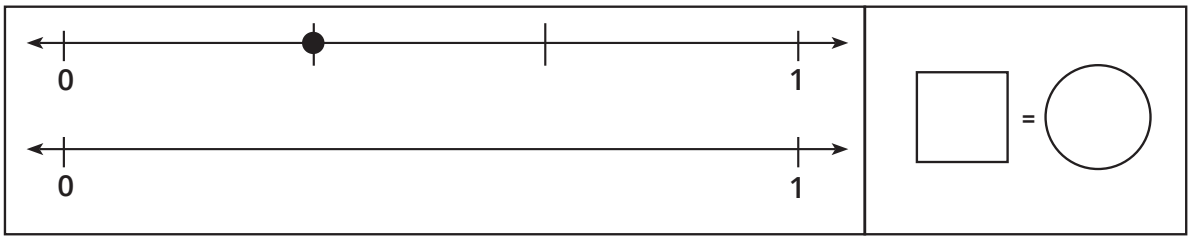
Adam and his brother bought two pieces of aish baladi that were the same size. Adam cut his piece into fourths, and his brother cut his piece into thirds. When they were finished eating the bread, Adam's little brother said, "That was not fair because you got more than me. You had 4 pieces, and I only had 3."

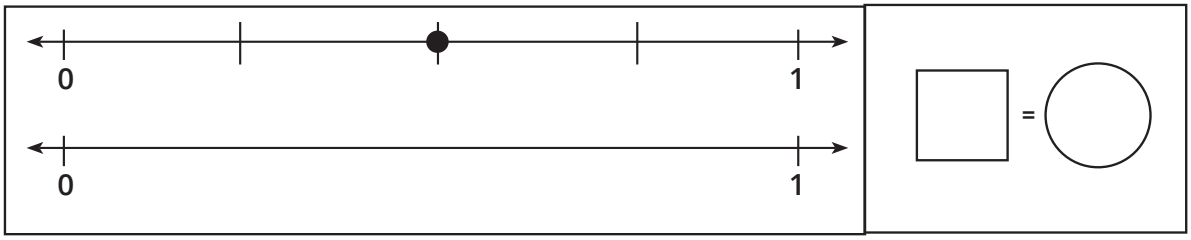
Should Adam's little brother be mad? What could you say to explain the situation to him? You may use words, numbers, and pictures to explain your thinking. Try using a number line.

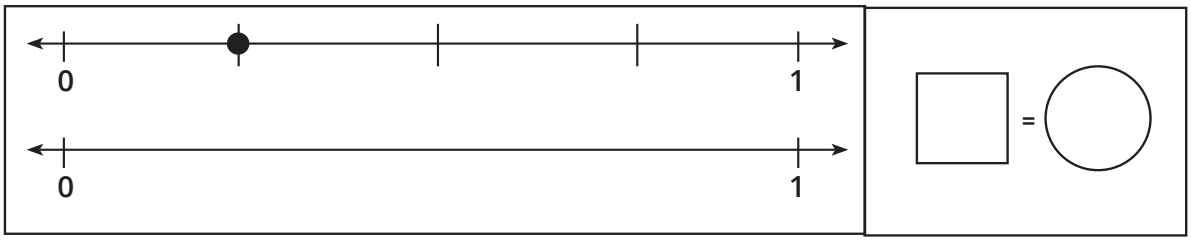
APPLY

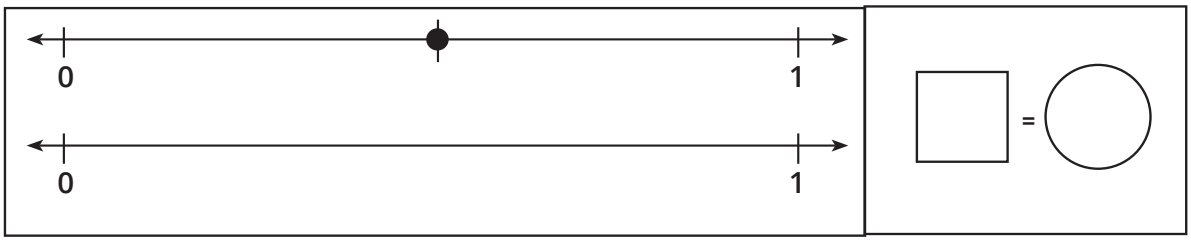
Directions: Each problem below has two number lines. Complete the following steps for each problem:

1. Write the fraction name for the dot on the first number line.
2. Label the number line and write the fraction in the square.
3. Use the second number line below to show a fraction equivalent to the first fraction. (You may use halves, thirds, fourths, fifths, sixths, or eighths. Use fraction strips to help you if needed.)
4. Mark and label the number line and write the equivalent fraction in the circle.







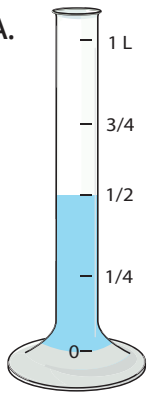


LESSON 5: APPLICATIONS ON EQUIVALENT FRACTIONS

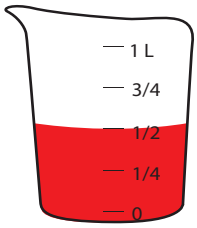
CONNECT

Directions: Solve the story problem. Show your work in the box below.

A.



B.



Wafaa has 2 different beakers. Each holds exactly 1 liter.She pours $\frac{1}{2}$ liter of blue liquid into Beaker A. She pours $\frac{1}{2}$ liter of red liquid into Beaker B. Mohamed says the amounts are not equal. Waff a says they are. Who is correct? Explain your thinking.

APPLY

DIrections: Solve each problem. Show your work in the boxes provided.

1. Habiba and Hatem both had 1 liter of juice. Habiba said that her family drank $\frac{2}{4}$ of the liter. Hatem said his family drank the same amount. If Hatem measured his amount in eighths, how much juice did his family drink? Draw a number line, model, or a picture of your fraction strips to help solve the problem and explain your thinking.

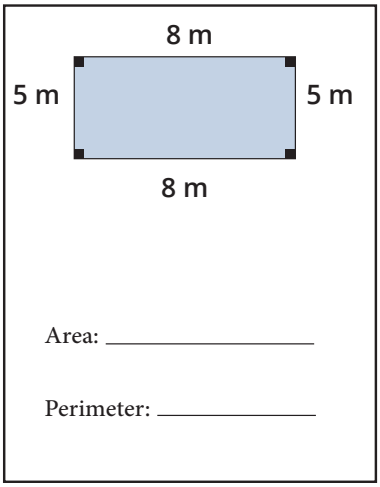
2. Jana and Menna each made a large pizza for dinner. Jana's pizza was cut into sixths, and Menna's pizza was cut into twelfths. Jana ate $\frac{2}{6}$ of her pizza. If Menna wants to eat the same amount of pizza as Jana, how many slices of pizza will she have to eat? Write the answer as a fraction. Draw a number line, model, or a picture of your fraction strips to help solve the problem and explain your thinking.

3. Moutaz and Kamal were eating same-sized cakes. Moutaz's cake was cut into thirds and Kamal's cake was cut into sixths. Moutaz ate 2 slices of his cake. What fraction of his cake does Kamal have to eat to eat the same amount as Moutaz? Draw a number line, model, or a picture of your fraction strips to help solve the problem and explain your thinking.

4. Mom gave Walid and Naglaa candy bars that were the same size. Walid ate $\frac{2}{3}$ of his candy bar. Naglaa ate $\frac{4}{6}$ of her candy bar. Who ate more of their candy bar? Draw a number line, model, or a picture of your fraction strips to help solve the problem and explain your thinking.

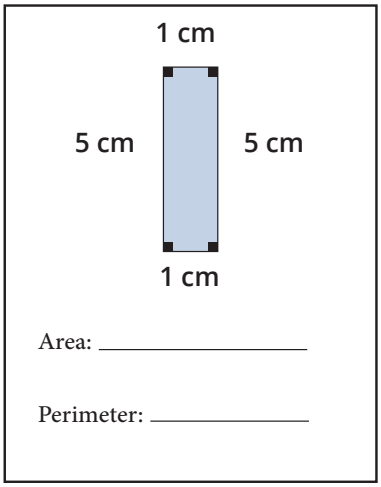
LESSON 6: DIVIDING USING THE BAR MODELS

CONNECT



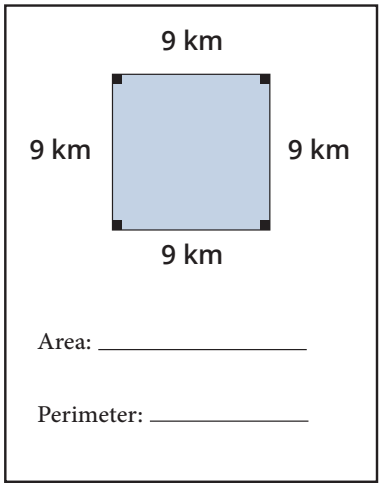
Area: _____

Perimeter: _____



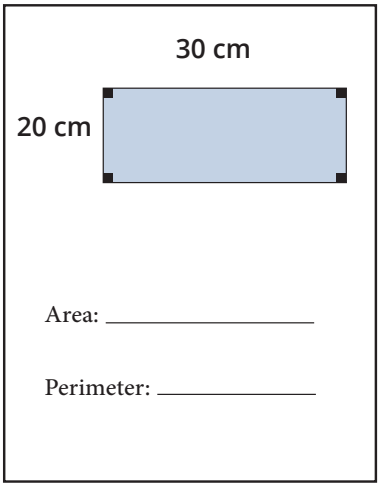
Area: _____

Perimeter: _____



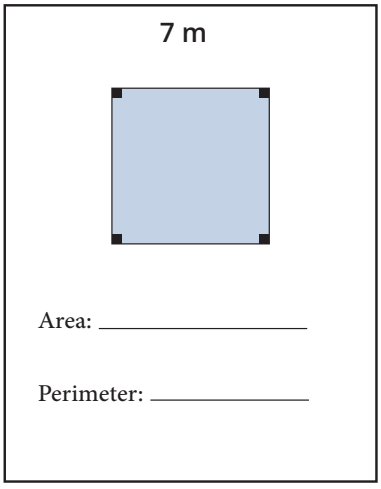
Area: _____

Perimeter: _____



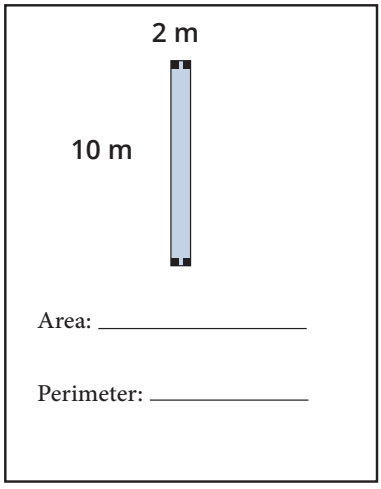
Area: _____

Perimeter: _____



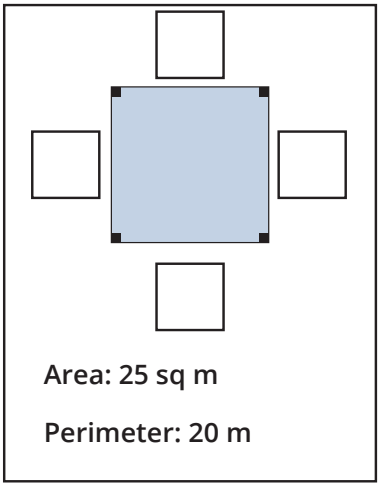
Area: _____

Perimeter: _____



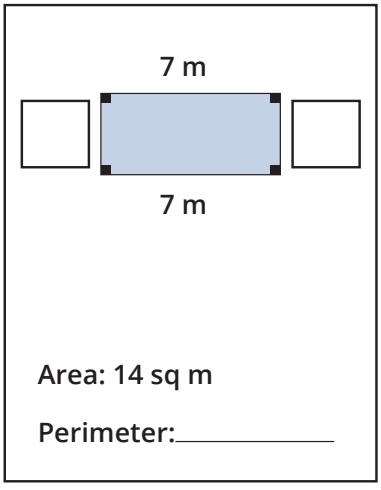
Area: _____

Perimeter: _____



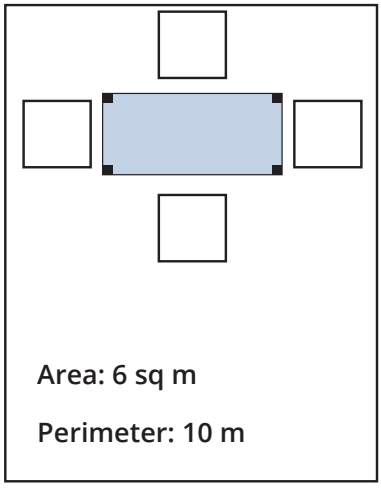
Area: 25 sq m

Perimeter: 20 m



Area: 14 sq m

Perimeter: _____



Area: 6 sq m

Perimeter: 10 m

APPLY

Group Practice

Omar has 18 pieces of candy. He wants to give the same amount to each of his 6 friends. How many pieces would each friend get?

_____

_____ candies _____ ÷ _____ = _____

Independent Practice

Directions: Solve the following division problems. Show your work in the bar model. Then, write an equation to match the story problem.

1. I have 20 figs to divide evenly between 4 plates. How many figs should I put on each plate?

20

_____ figs _____ ÷ _____ = _____

2. There are 28 crayons in the classroom that need to be placed in 4 cups. Each cup must have the same number of crayons. How many crayons will be in each cup?

28

_____ crayons

____ ÷ ____ = ____

3. Diaa has 36 toys he would like to split evenly among 6 friends. How many toys should each friend receive?

_____

_____ toys

____ ÷ ____ = ____

4. Write a story problem that matches the bar model below.

42

6	6	6	6	6	6	6

LESSON 7: STORY PROBLEMS ON DIVISION

CONNECT

Directions: Look at the question below and the student's response. Identify what the student did correctly and what the student did wrong. Then, answer the question on your own.

Write and solve a division equation that matches this word problem: Reda had 20 pieces of fruit. He divided them equally among 4 bags. How many pieces of fruit went in each bag?

Student response:

4 pieces of fruit ÷ 20 bags = 5 pieces of fruit in each bag

What did the student do correctly?	What did the student do wrong? Why do you think the student made this error?	Write the division equation and solve the problem on your own.

APPLY

GROUP PRACTICE

I have 18 dates. Each person will get 2 dates. How many people can I feed?

18

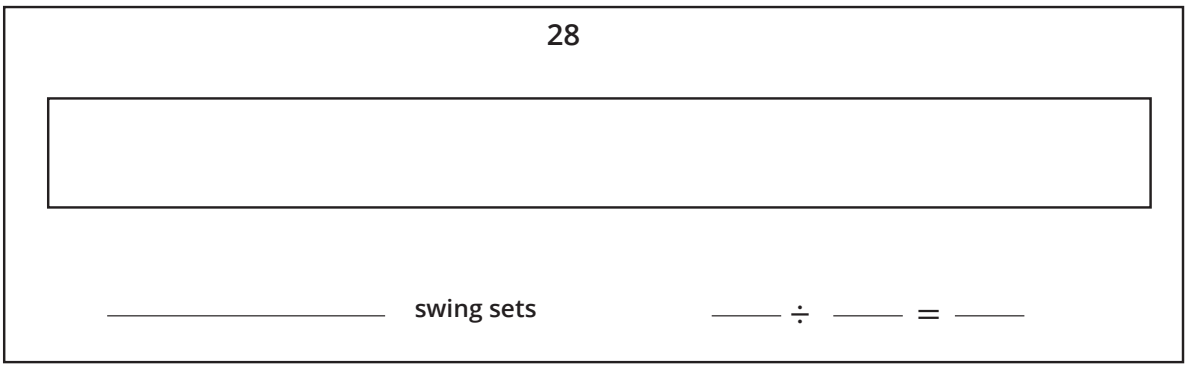
_____ people

____ ÷ ____ = ____

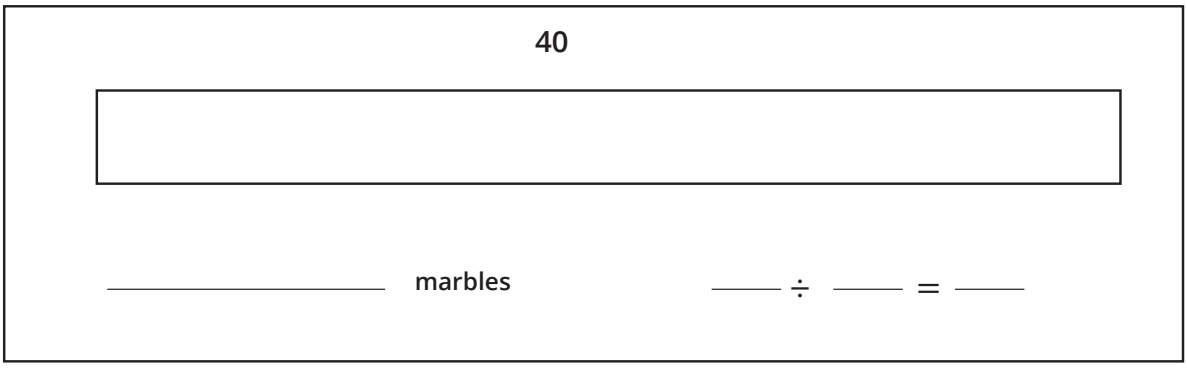
INDEPENDENT PRACTICE

Directions: Solve the following division problems. Show your work in the bar model. Then, write an equation to match the story problem.

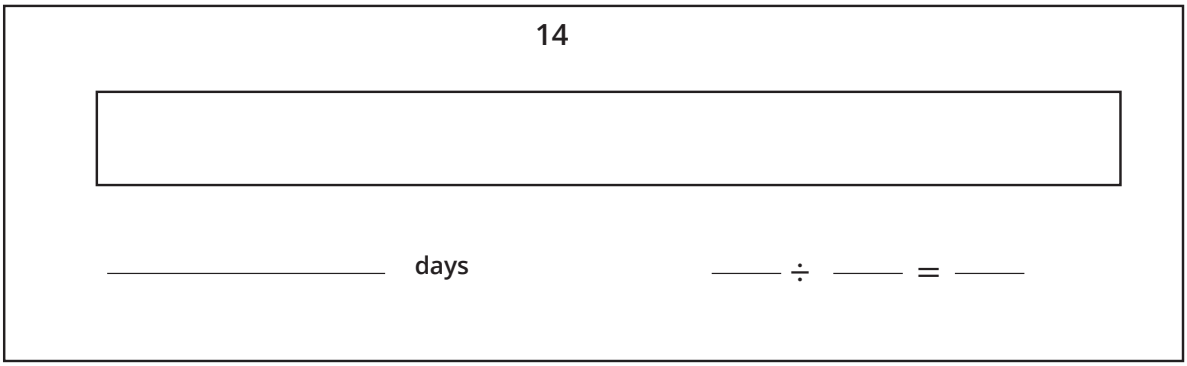
1. The class has 28 students. You can fit 4 students on a swing set. How many swing sets are needed for the whole class to swing?



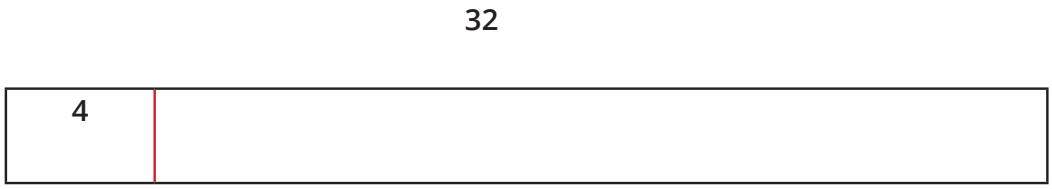
2. Diaa placed 40 marbles in rows of 5. How many rows did he make?



3. Omnia studied 14 hours. If she studied for 2 hours each day, how many days did she study?



4. Write your own grouping story problem that matches the bar model below. The bar model is not finished.



Challenge:

Directions: Solve the problem below. Draw a bar model showing your solution in the box.

Seif is sorting crayons into groups of 9. How many groups will he make if he has 81 crayons?

REFLECT:

Directions: Reflect on what you have learned about division.

Describe how you use division in your everyday life outside of math class. You should use words and numbers in your explanation and may use pictures.

LESSON 8: THE RELATION BETWEEN MULTIPLICATION AND DIVISION

CONNECT

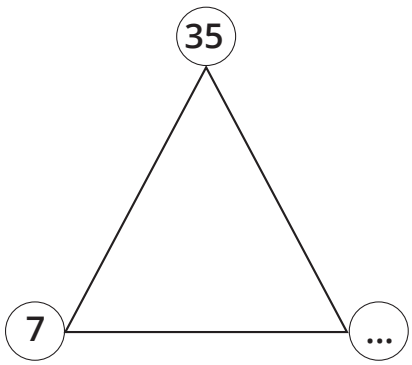
Directions: Read the problem below. Solve it and show your work in the box.

Gaber has 24 cookies to give away. How many different ways can he share his cookies equally with friends?

Example: He could give 1 friend 24 cookies, or he could give 24 friends 1 cookie.

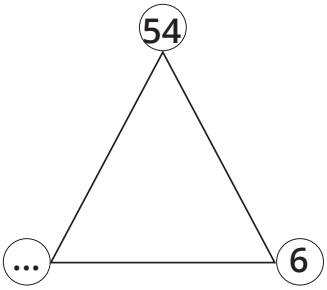
APPLY

Directions: For each fact family below, find the missing factor and write four different equations to show the relationships among the family members.



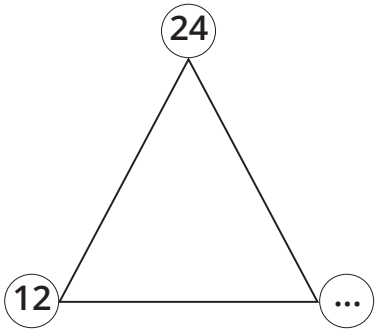
____ × ____ = ____ ____ × ____ = ____

____ ÷ ____ = ____ ____ ÷ ____ = ____


54
...
6

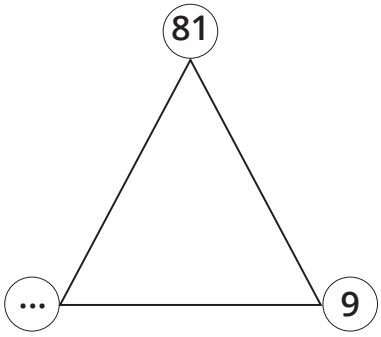
____ × ____ = ____ ____ × ____ = ____

____ ÷ ____ = ____ ____ ÷ ____ = ____


24
12
...

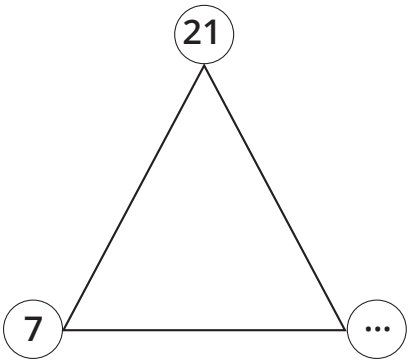
____ × ____ = ____ ____ × ____ = ____

____ ÷ ____ = ____ ____ ÷ ____ = ____


81
...
9

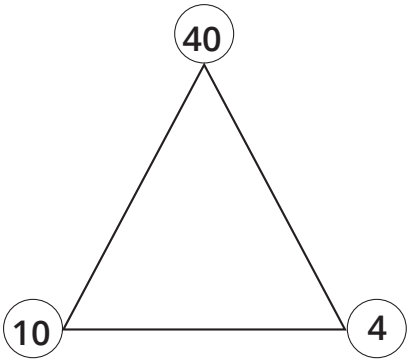
____ × ____ = ____ ____ × ____ = ____

____ ÷ ____ = ____ ____ ÷ ____ = ____



____ × ____ = ____	____ × ____ = ____
____ ÷ ____ = ____	____ ÷ ____ = ____

Directions: In the box below, write a multiplication and a division story problem about this fact family.



Multiplication Story Problem

Division Story Problem

LESSON 1: MULTIPLICATION FACTS WITH DIFFERENT STRATEGIES

CONNECT

Directions: Read the problem below. Solve it and show your work in the box.

Emad and Ezz each have a piece of rope. Emad's rope is 47 cm long. Ezz's rope is 15 cm longer than Emad's. How long are their ropes all together?

APPLY

Directions: Fill out the multiplication fl uency chart below.

Multiplication Fact	Fluent (yes or no)	Strategy
0		
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

Directions: Solve the multiplication problems below. Solve your fluent facts first.

9 × 7 = _____	3 × 1 = _____	9 × 3 = _____	8 × 5 = _____
12 × 2 = _____	11 × 7 = _____	3× 3 = _____	4 × 4 = _____
8 × 2 = _____	10 × 10 = _____	10 × 3 = _____	10 × 4 = _____
6 × 8 = _____	9 × 5 = _____	5 × 2 = _____	5 × 3 = _____
11 × 3 = _____	9 × 4 = _____	8 × 4 = _____	6 × 6 = _____
8 × 6 = _____	7 × 1 = _____	9 × 8 = _____	10 × 8 = _____
10 × 6 = _____	6 × 2 = _____	7 × 3 = _____	6 × 4 = _____
12 × 1 = _____	4 × 2 = _____	3 × 4 = _____	11 × 5 = _____
8 × 1 = _____	6 × 5 = _____	9 × 5 = _____	4 × 1 = _____
8 × 7 = _____	0 × 12 = _____	1 × 9 = _____	8 × 3 = _____

CHALLENGE:

Mystery Numbers:

1- I have a zero in the Ones place.

One of my factors is 4.

I am double 10.

What number am I? _____

2- I have 6 different factors.

I have a 1 in the Tens place.

6 is one of my factors.

What numbers might I be? _____ ; _____

3- If you double the number in my Tens place, you get the number in my Ones place.

I am a product of the same factors multiplied together.

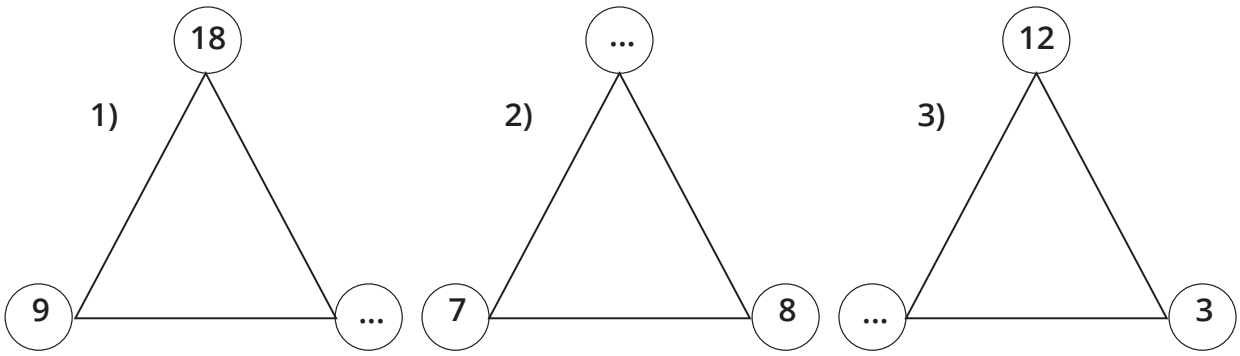
I have a factor of 12.

What number am I? _____

LESSON 2: STORY PROBLEMS ON MULTIPLICATION AND DIVISION

CONNECT

Directions: Determine the missing number in each fact family below. For each fact family, record the missing number in the empty box.



Directions: Determine the missing number in each equation below. For each equation, record the missing number in the empty box.

4) $8 \times \square = 16$

5) $10 \div \square = 2$

6) $\square \times 7 = 21$

7) $\square \div 3 = 4$

APPLY

Group Practice

Directions: Read the story problem. Then, in the box below, write an equation with an unknown to match this story problem:

I have 20 crayons. I want to put the crayons into boxes. Each box can hold 5 crayons. How many boxes will I need?

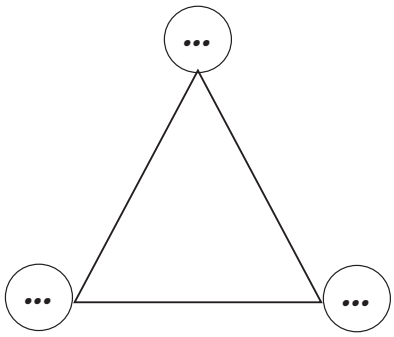
Independent Practice

Directions: Read each story problem below. For each problem, write an equation with an unknown to represent what is happening in the story. Then, solve the story problem. You may use a fact family triangle to help you with your work.

1. There are 9 elephants at the zoo. Each elephant eats 2 bales of hay in a day. How many bales of hay does the zookeeper need to feed all 9 elephants for one day?

Equation with unknown:

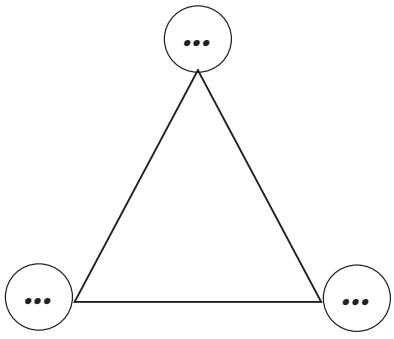
Answer:



2. Adam baked 24 cookies. He gives a bag to 8 of his friends. How many cookies are in each bag?

Equation with unknown:

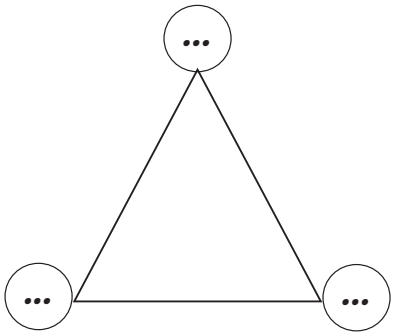
Answer:



3. The zookeeper has 81 fish. Each crocodile at the zoo gets 9 fish. If all the crocodiles get fed, how many crocodiles are there at the zoo?

Equation with unknown:

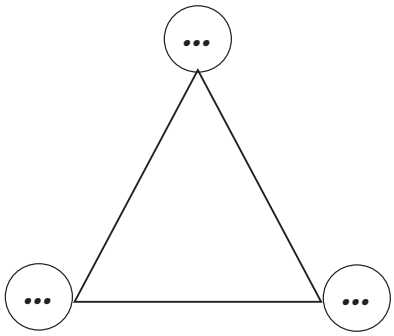
Answer:



4. Adam and his friends walked to the zoo. The tickets cost 8 LE each. If Adam and his friends spend 72 LE all together, how many tickets did they buy?

Equation with unknown:

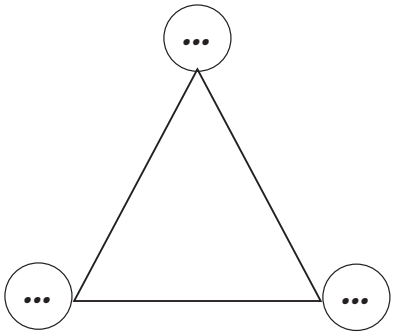
Answer:



5. At the hippo exhibit in the zoo, Adam and his friends count 16 hippo feet. If every hippo has 4 feet, how many hippos are at the zoo?

Equation with unknown:

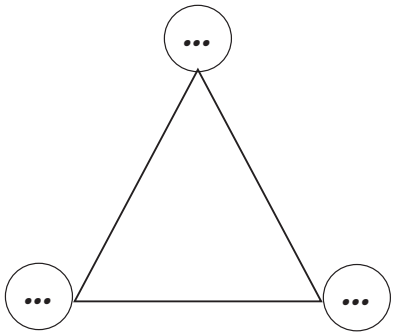
Answer:



6. The zookeeper is giving a talk at an auditorium about peacocks. Adam and his friends go to listen. The auditorium can hold 48 people. If there are 6 rows, how many chairs are in each row?

Equation with unknown:

Answer:



REFLECT:

Directions: Reflect on what you have learned about finding the unknown in an equation or story problem. Then, respond to the journal prompt below.

What strategy did you use today to find the unknown number in an equation or story problem? You may use words, numbers, and pictures to explain your thinking

LESSON 3: CREATING STORY PROBLEMS ON MULTIPLICATION

CONNECT

Directions: Read the problem, discuss it with a Shoulder Partner, and then solve the problem, showing your work in the box.

An apple has an average mass of 70 grams, and an orange has an average mass of 130 grams. If Basma had 4 apples and 4 oranges, what is the mass of all the fruit?

STEP 1:

STEP 2:

APPLY

Directions: Follow the steps below for each problem.

1. Write a multiplication story problem that could be represented by the equation shown.
2. Exchange books with a partner. Solve each other's story problem.
3. Take back your own book. Check each other's work.
4. Repeat the steps for problems 2 and 3.

Helpful Hint: Look at the examples on the board to guide you in your writing if you are stuck.

1) $7 \times 4 =$ _____

Story problem:

Work space:

2) 8 × 9 = _____

Story problem:

Work space:

3) 6 × 8 = _____

Story problem:

Work space:

CHALLENGE

Directions: Write your own equation. Then, create a multiplication story problem using your numbers.

EQUATION: ☐ × ☐ = ☐

LESSON 4: CREATING STORY PROBLEMS ON DIVISION

APPLY

Group Practice

$$12 \div 4 = \_\_\_\_$$

Independent Practice

Directions: Follow the steps below for each problem.

1. Write a division story problem that could be represented by the equation shown.
2. Exchange books with a partner. Solve each other's story problem.
3. Take back your own book. Check each other's work.
4. Repeat the steps for problems 2 and 3.

Helpful Hint: Look at the examples on the board to guide you in your writing if you are stuck.

1) $20 \div 5 = \_\_\_\_$

Story problem:

Work space:

2) $24 \div 6 = \_\_\_\_$

Story problem:

Work space:

3) 36 ÷ 6 = _____

Story problem:

Work space:

Challenge:

Directions: Write your own equation. Then, create a division story problem using your numbers.

EQUATION: ☐ × ☐ = ☐

LESSON 5: STORY PROBLEMS ON THE PERIMETER AND THE AREA

CONNECT

Directions: Read the following problem silently. Then, discuss with your Shoulder Partner and solve in the box.

Coach brought 28 footballs in a bag for practice. There were another 17 footballs on the field. 19 balls were not used for practice. How many footballs were used at practice?

APPLY

Group Practice

Part 1 Directions : Omar measured his garden, and it is 3 meters wide and 4 meters long. Draw a sketch of Omar's garden and label the dimensions.

Part 2 Directions : Find the area of Omar's garden and record your findings below. Then, find the perimeter of Omar's garden and record your findings below. Remember to label your answers.

What is the area of Omar's garden?

What is the perimeter of Omar's garden?

What if Omar's garden had the same perimeter but was a triangle? Draw a sketch of that garden and label the sides.

Partner Practice:

Directions : Read the following problems. Sketch each shape and label it. Then, answer the questions, showing your work below each question.

1. Gehad drew a square that has side lengths of 8 cm.

Sketch Gehad's square:

What is the perimeter of the square?

What is the area of the square?

If Mona drew an octagon that had the same perimeter, what would it look like?

2. Ashraf has a rectangular rug in his house that measures 8 meters by 2 meters.

Sketch Ashraf's rug:

What is the perimeter of the rug?

What is the area of the rug?

Noran has a rug in her house with the same perimeter but is not a rectangle. What could her rug look like?

3. Jana draws a rectangle with a length of 7 cm and a width of 4 cm, and Mona draws a rectangle with a length of 5 cm and a width of 4 cm.

Sketch Jana and Mona's rectangles:

What is the perimeter of Jana's rectangle?

What is the perimeter of Mona's rectangle?

What would be the perimeter if they laid their rectangle side by side to make one long rectangle?

What is the area of the new long rectangle?

4. Mohab drew a hexagon with a perimeter of 24 cm.

Sketch Mohab's hexagon below.

Draw one quadrilateral and one other shape that could have the same perimeter.

Label the sides.

5. Moustafa drew three rectangles next to each other. Each rectangle was 5 cm long and 2 cm wide.

Sketch the three rectangles.

What is the perimeter of one rectangle?

What is the area of one rectangle?

What is the perimeter of all three rectangles together?

What is the area of all three rectangles together?

CHALLENGE:

Directions: Write your own story problem about area or perimeter and then have your partner solve it.

LESSON 6: THE PERIMETER FOR A GIVEN AREA AND A SIDE LENGTH

CONNECT

Directions: Read the story below. Then record the times in the story on the analog clocks.

Gamal planned out his day on a piece of paper. He plans to wake up at 7:15 a.m. and leave for school at 8:30 a.m. It takes him 15 minutes to walk to and from school. He will spend six hours at school and leave for home immediately after school. What will the analog clocks in his house look like when he wakes up, leaves for school, and arrives back at home?

Wake up

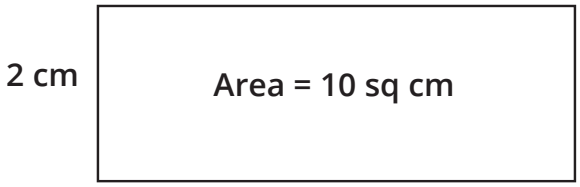
Leave for school

Arrive back at home

APPLY

Group Practice

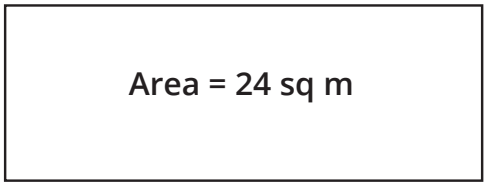
Directions: Look at the rectangle below and think about how you could find the total perimeter using the information given.



Partner Practice

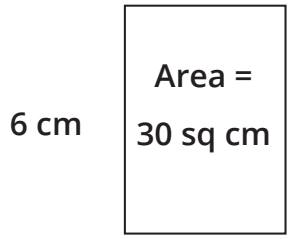
Directions: For each problem, find the total perimeter or answer the story problem in the box.

1. Below is a football field.



What is the total perimeter of the field?

2. Wagdy drew the following rectangle.

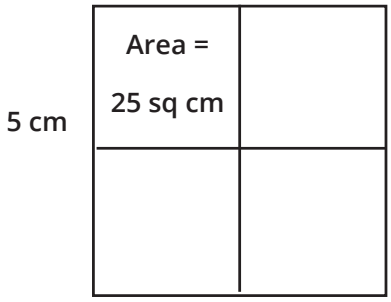


What is the total perimeter of Wagdy's rectangle?

Sketch another rectangle that has the same area.

What is the total perimeter of your new rectangle?

3. Salma drew four identical squares. The area of one of the squares is 25 square cm and the length of one side is 5 cm.



What is the total perimeter of the four squares?

What would be the total area of the four squares?

4. Taha made a tiny rectangular painting with an area of 72 square cm. The width of her painting is 9 cm.

Sketch Taha's painting:

What is the length of her painting?

What is the total perimeter of her painting?

Challenge:

Directions: Read each riddle. Draw at least two shapes that fit the riddle and then record the perimeter.

Riddle One:

I can be a rectangle or a square.
I have an area of 36 square units.
My width is greater than 2 units.
What do I look like?

Shape one:	Shape two:
Total perimeter =	Total perimeter =

Riddle Two:

I am a rectangle.
I have an area of 48 square units.
My length is less than 12 units long.
What do I look like?

Shape one:	Shape two:
Total perimeter =	Total perimeter =

REFLECT:

Directions: Reflect on the work you have done to solve challenging problems involving area and perimeter. Then, read the question and answer it in the box below.

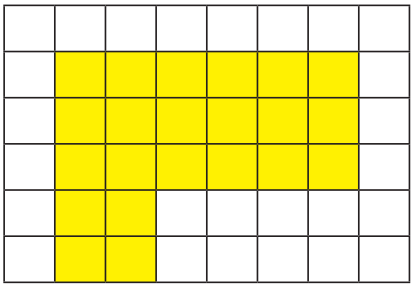
Which was easier to determine for you? Was it easier to find the perimeter for a given area or to find the area for a given perimeter? You may use words, numbers, and pictures to support your thinking.

LESSON 7: APPLICATIONS ON THE PERIMETER AND THE AREA

CONNECT

Directions: Below is a floor plan for a bedroom. Find and label the dimensions and answer the question below the fl oor plan.

Bedroom Floor Plan



What is the area of this bedroom in square units?

_____

APPLY

Directions: Answer the questions below and explain your thinking.

What types of rooms does your house need?

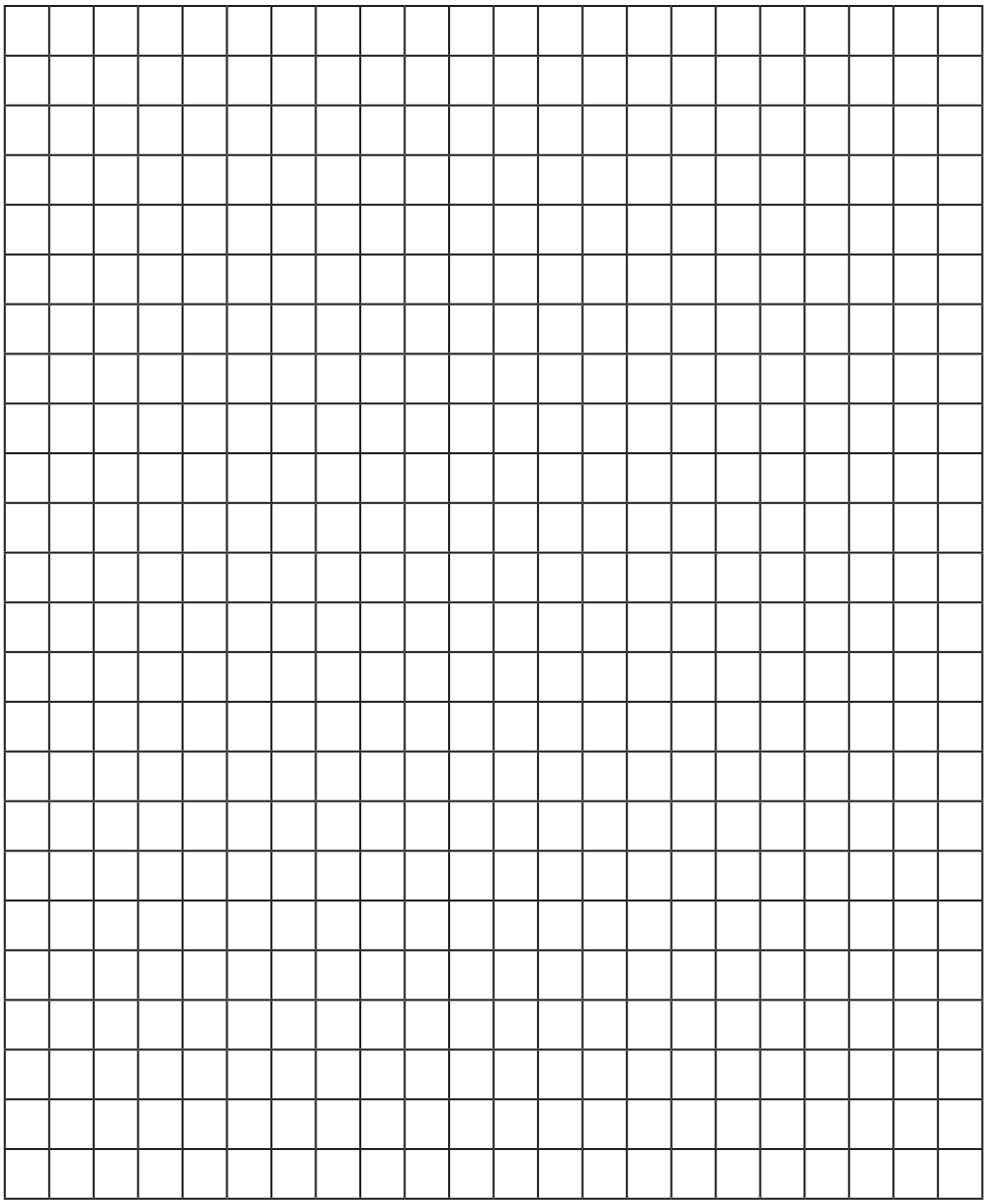
Which rooms should be bigger than others?

Which rooms should be smaller?

What types of things are in each room?

MY DREAM HOUSE

Directions: Draw a rough draft of your dream house on the grid below. Label each room with its name, area, and perimeter. Label the units. When you are finished, calculate the total perimeter and area of your house and record them at the bottom of this page.



Total perimeter of my dream house: _____

Total area of my dream house: _____

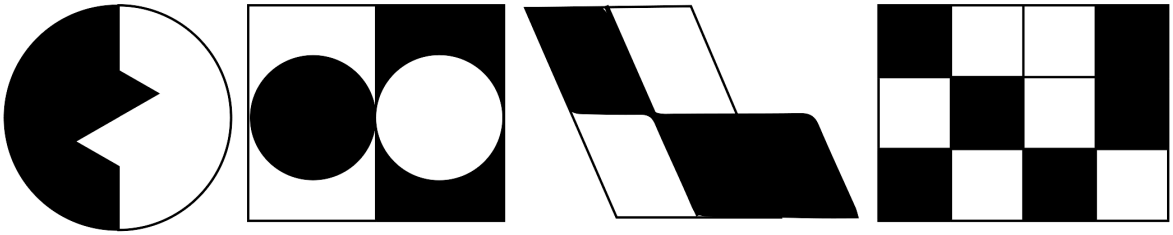
LESSON 1: CREATING HALVES WITH NON-ROUTINE WAYS

CONNECT

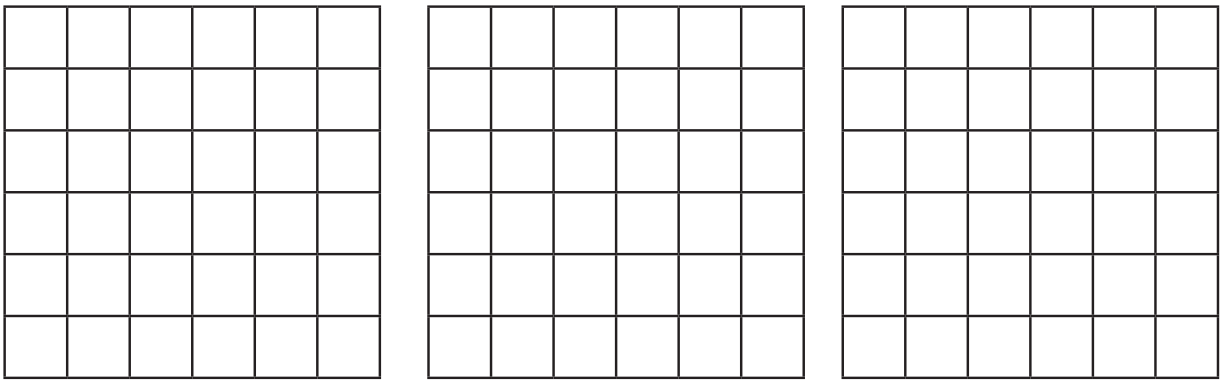
26 + 18 =	475 + 25 =	115 - 108 =
297 + 3 =	473 - 52 =	527 - 19 =
387 + 13 =	80 - 74 =	68 - 29 =

APPLY

Directions: Circle the shapes below that show one-half shaded.



Directions: Shade exactly one-half of each square below. Make sure your squares look different from each other.



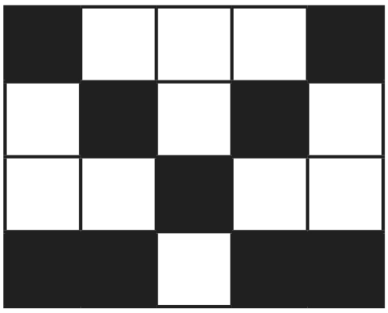
Group Practice

Doha creates a fenced garden in a field. The garden is a rectangle measuring 6 meters by 8 meters. She wants to grow fruit in $\frac{1}{2}$ of the garden. What is the area of $\frac{1}{2}$ of her garden?

Show your work in the box below.

Independent Practice

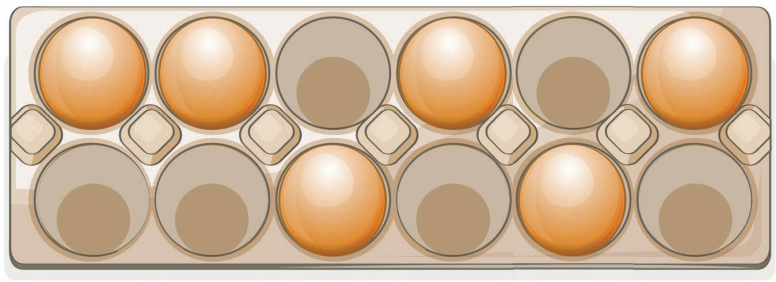
1. Gamal shades the rectangle as shown below and says one-half of the big rectangle is shaded. Do you agree? Why or why not?



Explain your thinking in the box below.

2. Jana needs to paint a wall equally with two different colors. The wall is 8 meters by 4 meters. How much of the wall should she paint with one color? Show your work in the box below.

3. Nagi and his sister are making eggs. Nagi says there is a half carton left. Do you agree? Explain your thinking in the box below.



REFLECT:

Directions: Reflect on the work you did today to solve problems. Then, respond to the journal prompt below.

What math skills helped you solve today's problems? You may use words, pictures, and numbers to explain your thinking.

LESSON 2: ORDERING FRACTIONS USING THE NUMBER LINE

CONNECT

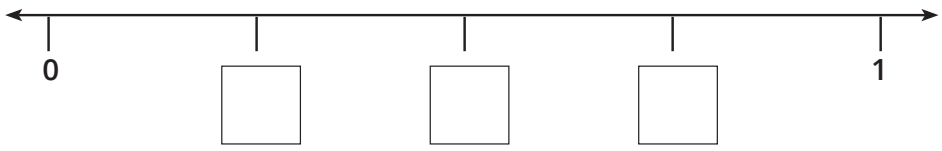
Directions: Practice your 6 facts by solving as many of the following problems as you can. Circle the easiest problems for you to solve and draw a square around the most challenging ones.

1 × 6 = _____	72 ÷ 6 = _____	10 × 6 = _____	42 ÷ 6 = _____
2 × 6 = _____	12 ÷ 6 = _____	6 × 6 = _____	36 ÷ 6 = _____
3 × 6 = _____	24 ÷ 6 = _____	7 × 6 = _____	48 ÷ 6 = _____
4 × 6 = _____	6 ÷ 6 = _____	8 × 6 = _____	60 ÷ 6 = _____
5 × 6 = _____	30 ÷ 6 = _____	9 × 6 = _____	54 ÷ 6 = _____
6 × 9 = _____	18 ÷ 6 = _____	8 × 6 = _____	6 × 7 = _____
6 ÷ 6 = _____	0 × 6 = _____	10 × 6 = _____	6 × 6 = _____
12 × 6 = _____	6 × 11 = _____	0 ÷ 6 = _____	24 ÷ 6 = _____
66 ÷ 6 = _____	48 ÷ 6 = _____	6 × 9 = _____	6 × 7 = _____
2 × 6 = _____	18 ÷ 6 = _____	5 × 6 = _____	9 × 6 = _____

APPLY

Group Practice

Directions: Look at the number line below. Write the fraction that is represented by each mark on the number line. Zero and 1 are already labeled. (Hint: How many equal parts is the line divided into?)



Independent Practice

Directions: Solve the following problems by placing each fraction on the number line in the correct order. Each number line is divided into halves to start.

1. Place the following fractions on the number line in the correct order.

$\frac{3}{6}$ ‘ $\frac{1}{4}$ ‘ $\frac{7}{8}$ ‘ $\frac{2}{8}$

2. Place the following fractions on the number line in the correct order.

$\frac{3}{4}$ ‘ $\frac{2}{3}$ ‘ $\frac{4}{4}$ ‘ $\frac{4}{6}$

3. Place the following fractions on the number line in the correct order.

$\frac{1}{3}$; $\frac{2}{8}$; $\frac{6}{8}$; $\frac{12}{12}$

4. Place the following fractions on the number line in the correct order.

$\frac{6}{12}$; $\frac{2}{8}$; $\frac{1}{4}$; $\frac{10}{12}$

CHALLENGE:

Directions: Look at the number line below. Then, find at least three other equivalent fractions that could be placed on the number line and record them. (Do not list any more equivalent fractions for 3/6. Challenge yourself to find others.)

$\frac{1}{2}$

$\frac{6}{12}$

LESSON 3: APPLICATIONS ON NUMBERS

CONNECT

Directions: Roll two dice. Add the numbers together and multiply the total by 7. Then, color the matching product in the game board. The object of the game is to color four connecting squares. The squares can go across, up, down, or diagonally.

14	63	70	42	49	63
42	35	21	70	28	77
28	77	63	49	56	21
70	42	14	42	84	63
84	35	56	28	28	35
21	63	70	49	77	84
77	35	56	10	42	35
14	49	42	56	63	77
84	56	21	84	21	14
14	28	70	49	63	56

APPLY

Directions: Solve the problems below.

Write 75 Tens in standard form.	Write 2 Hundreds + 32 Tens + 17 Ones in standard form.
Write 14,780 in word form.	Write 45 Tens + 20 Ones + 50 Hundreds in standard form.
What is the largest number you can make with the digits 5 ,4 ,7 , 0 ?	What is the largest number you can make with the digits 2 ,4 ,1 ,3 ?
The digit in my Thousands place is less than the digit in my Ones place. Who am I? a) 345,123 b) 943,107 c) 745,132 d) 29,357	The digit in my Hundreds place is 3 more than the digit in my Ten Thousands place. Who am I? a) 354,234 b) 351,869 c) 350,285 d) 234,943

What is the smallest number you can make from the digits 9 ,0 ,3 ,7 ?	What is the smallest number you can make from the digits 6 ,7 ,1 ,1 ,2 ?
Order the following from least to greatest: 354,001 ;354,010 ;543,100 ;345,010	Write the word form for 308,562.
The digit in my Hundreds place is 8 and my Thousands place has a 3. If the digit in my Tens and Ones places is 2, who am I?	The product of 5 times 0 is in my Tens place, and my Hundreds place holds the product of 3 times 2. Put a 2 in my Ones place and tell me who I am.

LESSON 4: ELAPSED TIME

APPLY

Group Practice

Directions: Read and solve the first problem. Show your work in the box below.

1. Amir went to the museum with his family. They arrived at 10:00 a.m. and they left the museum to go back home at 3:30 p.m. How long were they at the museum?

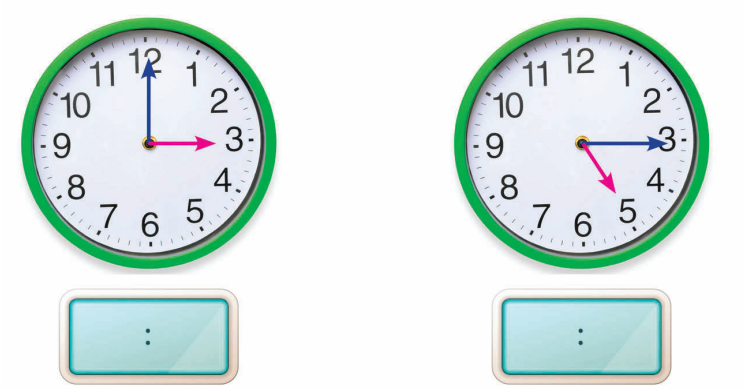
2. Ziad woke up at 7:00 a.m. He has to leave at 8:00 a.m. for school. It takes him 20 minutes to eat breakfast, 5 minutes to brush his teeth and hair, and 10 minutes to pack his bag. If he wanted to watch a 30-minute cartoon, would he have enough time before he leaves for school? Show your work in the box below.

Independent Practice

Directions: Use what you know about time and elapsed time to solve the problems below.

1. How much time has elapsed?
   a. 6:30 a.m. → 7:00 a.m. _____
   b. 4:30 p.m. → 9:00 p.m. _____
   c. 11:15 a.m. → 5:30 p.m. _____

2. Look at the analog clocks. Write the time below and then determine how much time has elapsed between the two times.



How much time has passed? _____

Directions: Solve the story problems below about elapsed time. Show how you solved the problem in the box below. If it helps, draw analog clocks or make bar models.

3. Ameen arrives at school at 7:30 a.m. He leaves school at 3:15 p.m. How long is Ameen at school?

4. Heba spent 3 hours at dance practice. She finished at 6:10 p.m. What time did she start?

5. Kamal's family took a road trip. They left at 7:30 a.m. and drove until 12:15 p.m., when they stopped for lunch. How many hours were they on the road?

6. Ali's family spent 30 minutes eating lunch before they got back on the road. What time did they start driving again?

7. Madiha made a cake for her sister's birthday. It took her 25 minutes to mix it, 45 minutes to bake, and then another 30 minutes to frost it. How long did it take Madiha to complete the cake?

CHALLENGE:

1. Hany had football practice after school. He left school at 3:30 p.m. He walked for 15 minutes to the field, practiced for an hour and a half, and then walked 20 minutes home. What time did he get home?

2. Samy comes home from school and starts his homework. It takes him 22 minutes to do his math, 20 minutes to read, and he has a science experiment that takes 18 minutes. Hala has the same homework. She takes 15 minutes to do her math, reads for 20 minutes, and then the science experiment only takes her 11 minutes.

How long does it take Gaber to finish all his homework?

How long does it take Hala to finish all of her homework?

How much longer did it take Gaber to do his homework?

LESSON 5: APPLICATIONS ON DATA REPRESENTATIONS

CONNECT

Directions: Solve the problems below. Then, answer the question at the bottom of the page.

18 ÷ 3 = _____	27 ÷ 3 = _____	3 ÷ 1 = _____	12 ÷ 3 = _____
24 ÷ 3 = _____	3 ÷ 3 = _____	36 ÷ 4 = _____	28 ÷ 4 = _____
12 ÷ 4 = _____	24 ÷ 4 = _____	36 ÷ 4 = _____	21 ÷ 3 = _____
20 ÷ 4 = _____	32 ÷ 4 = _____	30 ÷ 3 = _____	40 ÷ 4 = _____
18 ÷ 3 = _____	8 ÷ 4 = _____	4 ÷ 4 = _____	12 ÷ 3 = _____
9 ÷ 3 = _____	40 ÷ 4 = _____	30 ÷ 3 = _____	20 ÷ 4 = _____
8 ÷ 4 = _____	6 ÷ 3 = _____	44 ÷ 4 = _____	48 ÷ 4 = _____

How does knowing your 3s facts help you with your 4s facts?

APPLY

Directions: Follow the directions below to gather data and create a line plot and bar graph to display your data.

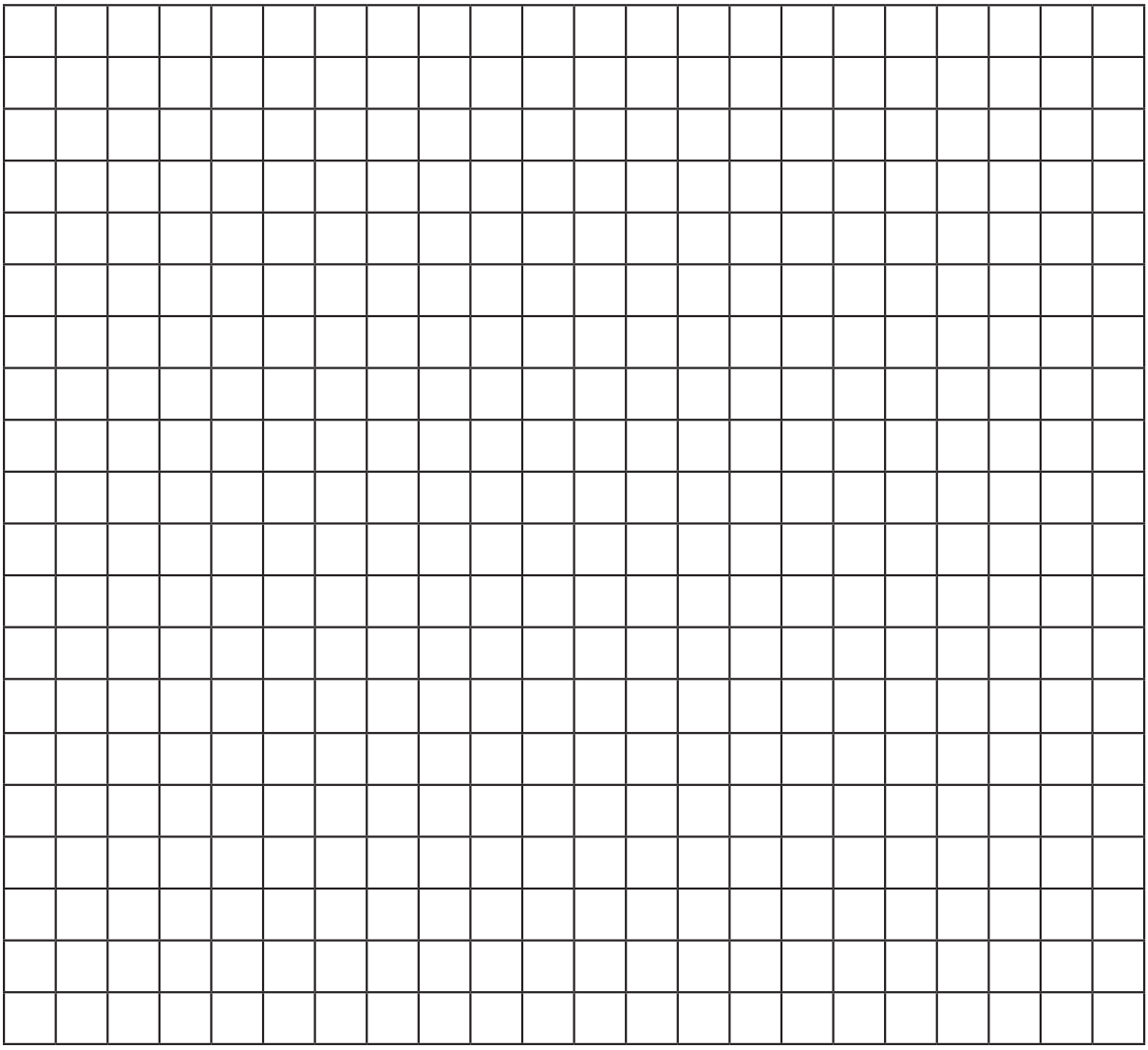
1. Use tally marks to record your teacher's 5 rolls in the table below.
2. Work with your partner to roll the die 45 more times. Use tally marks to record each roll in the table below. Be careful to keep track of your number of rolls so you roll exactly 50 times.

Which Number Wins?

Number	Tallies
1	
2	
3	
4	
5	
6	

3. Use the data in your table to make a line plot. Be sure to add a title and a key.

4. Using the grid paper below, create a bar graph to display the data you collected. Be sure to label the horizontal and vertical axes and to give your graph a title.



Directions: Answer the questions below about your data and graphs.

5. Which number did you roll the most?
6. Which number did you roll the least?
7. How many times did you roll an even number?
8. What is the difference between the total number of even number rolls and the total number of odd number rolls?
9. What number would you predict would "win" if you rolled the die 100 times? Why? What information in the graphs supports your answer?

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١٩ x ٢٧ سم	١٣٢ صفحة	٤ لون	٤ لون	٢٠٠ جرام	٨٠ جرام	جانبى	١٠/٣/٢٢/١٥/٣٤/١٠٣٨

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