TEKSING TOWARD STAAR

MATHEMATICS

Grade 3 Student Book

Six Weeks 1

Lesson 1

Problem-Solving Model

Step	Description of Step
1	**Analyze the given information.** •Summarize the problem in your own words. •Describe the main idea of the problem. •Identify information needed to solve the problem.
2	**Formulate a plan or strategy.** •Draw a picture or a diagram. •Find a pattern. •Guess and check. •Act it out. •Create or use a chart or a table. •Work a simpler problem. •Work backwards. •Make an organized list. •Use logical reasoning. •Brainstorm. •Write a number sentence or an equation.
3	**Determine a solution.** •Estimate the solution to the problem. •Solve the problem.
4	**Justify the solution.** •Explain why your solution solves the problem.
5	**Evaluate the process and the reasonableness of your solution.** •Make sure the solution matches the problem. •Solve the problem in a different way.

Problem-Solving Questions

Directions:
- **Work with a partner.**
- **Write your answers on notebook paper.**
- **Answer questions 1-3.**
- **Complete the solution to the problem.**
- **Answer questions 4-10.**

1. What is the main idea of this problem?

2. What are the supporting details in this problem?

3. What skills, concepts and understanding of math vocabulary are needed to be able to answer this problem?

4. Did this problem involve mathematics arising in everyday life, society, or the work place?

5. What is a good problem solving strategy for this problem?

6. Can you explain how you used any math tools, mental math, estimation or number sense to solve this problem?

7. Did this problem involve using multiple representations (symbols, diagrams, graphs, math language)?

8. Did you use any relationships to solve this problem?

9. How can you justify your solution to the problem?

10. How can you check for reasonableness of your solution to this problem?

Student Activity 1

BASE-10 MODELS

MATERIALS: 1 set of base-10 sticks made during Problem-Solving 1, 1 set of base-10 blocks (3 thousands cubes, 9 hundreds flats, 9 ten rods, 9 unit cubes)

PART I: Work with a partner to represent numbers. Use the base-10 sticks.

You will draw a quick sketch to represent each of your models. Use these symbols for your quick sketch.

This symbol represents 100

This symbol represents 10

This symbol represents 1
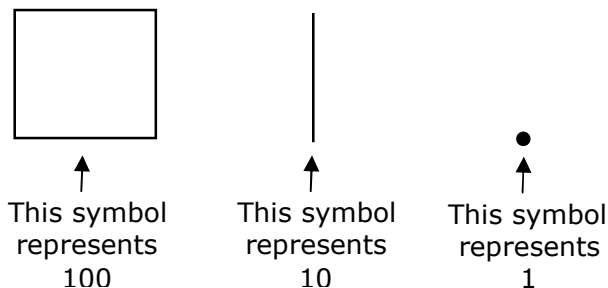
PROBLEM 1: Use your set of base-10 sticks to model the number 57. Draw a quick sketch to represent your model in the space below.

PROBLEM 2: Use your set of base-10 sticks to model the number 689. Draw a quick sketch to represent your model in the space below.

PROBLEM 3: Use your set of base-10 sticks to model the number 73. Draw a quick sketch to represent your model in the space below.
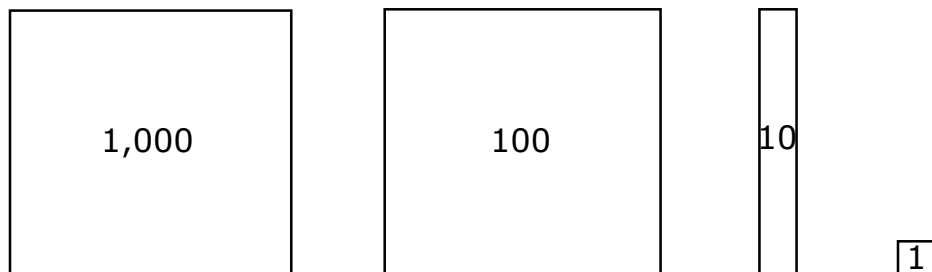
PROBLEM 4: Use your set of base-10 sticks to model the number 506. Draw a quick sketch to represent your model in the space below.

PROBLEM 5: Use your set of base-10 sticks to model the number 840. Draw a quick sketch to represent your model in the space below.

Be sure to put your base-10 sticks back into the gallon baggie when you are finished.

PART II: Work with your partner to represent numbers. Use base-10 blocks.

Use these pictures to represent a thousands cube, a hundreds flat, a ten rod, and a unit cube:

PROBLEM 1: Use your set of base-10 blocks to model the number 49. Draw a picture to represent your model in the space below.

PROBLEM 2: Use your set of base-10 blocks to model the number 587. Draw a picture to represent your model in the space below.

PROBLEM 3: Use your set of base-10 blocks to model the number 1,064. Draw a picture to represent your model in the space below.

PROBLEM 4: Use your set of base-10 blocks to model the number 706. Draw a picture to represent your model in the space below.

PROBLEM 5: Use your set of base-10 blocks to model the number 2,323. Draw a picture to represent your model in the space below.

PROBLEM 6: Use your set of base-10 blocks to model the number 860. Draw a picture to represent your model in the space below.

PROBLEM 7: Use your set of base-10 blocks to model the number 1,503. Draw a picture to represent your model in the space below.

PROBLEM 8: Use your set of base-10 blocks to model the number 704. Draw a picture to represent your model in the space below.

PROBLEM 9: Use your set of base-10 blocks to model the number 1,072. Draw a picture to represent your model in the space below.

PROBLEM 10: Use your set of base-10 blocks to model the number 3,820. Draw a picture to represent your model in the space below.

Your teacher will tell you where to return your set of base-10 blocks.

PART III: Work with your partner to answer this question.

What did you learn from this activity?

NAME_____   DATE_____   SCORE ____/5

3.2A/3.2B Skills and Concepts Homework 1

Ask someone to help you find 100 small items (beans, rice, stir sticks, crayons, paper clips, etc.) to use to complete your homework. Put the 100 items in a baggie or a container.

1. Use your 100 small items to model 13. Be sure to create your model in sets of 10 and a set of ones. Draw a sketch of your model in the space below.

   Write 13 in words.

2. Use your 100 small items to model 28. Be sure to create your model in sets of 10 and a set of ones. Draw a sketch of your model in the space below.

   Write 28 in words.

3. Use your 100 small items to model 45. Be sure to create your model in sets of 10 and a set of ones. Draw a sketch of your model in the space below.

   Write 45 in words.

4. Use your 100 small items to model 67. Be sure to create your model in sets of 10 and a set of ones. Draw a sketch of your model in the space below.

   Write 67 in words.

5. Use your 100 small items to model 89. Be sure to create your model in sets of 10 and a set of ones. Draw a sketch of your model in the space below.

   Write 89 in words.

Student Activity 2

Work with a partner to complete Student Activity 2.

PROBLEM 1: Record 246 in the place value chart.

Hundreds	Tens	Ones

_____ + _____ + ____

The place value chart shows the value of each digit.

• The digit ____ is in the hundreds place so it represents ____ hundreds and has a value

  of _____.

• The digit ____ is in the tens place so it represents ____ tens and has a value of _____.

• The digit ____ is in the ones place so it represents ____ ones and has a value of ____.

PROBLEM 2: Record 3,146 in the place value chart.

Thousands	Hundreds	Tens	Ones

_____ + _____ + _____ + ____

The place value chart shows the value of each digit.

• The digit ____ is in the thousands place so it represents ____ thousands and has a

  value of _____.

• The digit ____ is in the hundreds place so it represents ____ hundreds and has a value

  of _____.

• The digit ____ is in the tens place so it represents ____ tens and has a value of _____.

• The digit ____ is in the ones place so it represents ____ ones and has a value of ____.

PROBLEM 3: Record 23,073 in the place value chart. (**NOTE:** Don't forget zeros!)

Ten Thousands	Thousands	Hundreds	Tens	Ones

_____ + _____ + _____ + _____ + ____

The place value chart shows the value of each digit.

• The digit ____ is in the ten thousands place so it represents ____ ten thousands and

  has a value of _____.

• The digit ____ is in the thousands place so it represents ____ thousands and has a value of _____.

• The digit ____ is in the hundreds place so it represents ____ hundreds and has a value of _____.

• The digit ____ is in the tens place so it represents ____ tens and has a value of _____.

• The digit ____ is in the ones place so it represents ____ ones and has a value of ____.

PROBLEM 4: Record 250,497 in the place value chart. (**NOTE:** Don't forget zeros!)

Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

_____ + _____ + _____ + _____ + ____ + __

The place value chart shows the value of each digit.

• The digit ____ is in the hundred thousands place so it represents ____ hundred thousands and has a value of _____.

• The digit ____ is in the ten thousands place so it represents ____ ten thousands and has a value of _____.

• The digit ____ is in the thousands place so it represents ____ thousands and has a value of _____.

• The digit ____ is in the hundreds place so it represents ____ hundreds and has a value of _____.

• The digit ____ is in the tens place so it represents ____ tens and has a value of _____.

• The digit ____ is in the ones place so it represents ____ ones and has a value of ____.

NAME_____   DATE_____   SCORE ____/5

3.2A/3.2B Skills and Concepts Homework 2

1. Write fourteen thousand, six hundred fifty-seven in standard form. Make a place value chart to prove your answer is correct.

2. Write 704,000 in words. Explain why your answer is correct.

3. Write twenty-eight thousand, three hundred ninety-one in expanded notation. Make a place value chart to prove your answer is correct.

4. What is the value of the digit 3 in the number 356,048? Make a place value chart to prove your answer is correct.

5. Erin wrote a number with a 2 in the thousands place, a 7 in the hundreds place, and a 5 in the tens place. What number could Erin have written? Make a place value chart to prove your answer is correct.

Student Activity 3

Work with a partner to complete Student Activity 3.

PROBLEM 1: Write the number 357 in expanded notation.

Record 357 in the place value chart.

Hundreds	Tens	Ones

__ × ____ + __ × ___ + __ × __

The place value chart shows the value of each digit.

• The digit ____ is in the hundreds place so it represents 3 _____ and

   has a value of _____.

• The digit ____ is in the _____ place so it represents ___ tens and has a

   value of _____.

• The digit ____ is in the ones place so it represents 7 _____ and has a value

   of ____.

The value of the number 357 is _____ + _____ + __.

PROBLEM 2: Write the number 2,035 in expanded notation.

Record 2,035 in the place value chart.

Thousands	Hundreds	Tens	Ones

__ × _____ + __ × ____ + __ × ___ + __ × __

The place value chart shows the value of each digit.

• The digit ____ is in the thousands place so it represents ____ thousands and has a

   value of _____.

• The digit ____ is in the hundreds place so it represents 0 _____ and

   has a value of _____.

• The digit ____ is in the _____ place so it represents ___ tens and has a

   value of _____.

• The digit ____ is in the ones place so it represents 5 _____ and has a value
   of ____.

The value of the number 2,035 is _____ + _____ + _____ + ___.

PROBLEM 3: Write the number 34,084 in expanded notation.

Ten Thousands	Thousands	Hundreds	Tens	Ones

__ × _____ + __ × _____ + __ × ____ + __ × ___ + __ × __

The place value chart shows the value of each digit.

• The digit ____ is in the ten thousands place so it represents 3 _____

  and has a value of _____.

• The digit 4 is in the _____ place so it represents ____ thousands

  and has a value of _____.

• The digit 0 is in the hundreds place so it represents 0 _____ and

  has a value of _____.

• The digit ____ is in the _____ place so it represents ____ tens and has a

  value of _____.

• The digit ____ is in the ones place so it represents 4 _____ and has a value

  of ____.

The value of the number 34,084 is _____ + _____ + _____ + _____ + __.

PROBLEM 4: Write the number 140,386 in expanded notation.

Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

__ × _____ + __ × _____ + __ × _____ + __ × _____ + __ × ____ + __ × __

The place value chart shows the value of each digit.

• The digit ____ is in the hundred thousands place so it represents ____ hundred

  thousands and has a value of _____.

• The digit ____ is in the ten thousands place so it represents ____ ten thousands and

  has a value of _____.

• The digit ____ is in the thousands place so it represents ____ thousands and has a

  value of _____.

• The digit ____ is in the hundreds place so it represents ____ hundreds and has a value

  of _____.

• The digit ____ is in the tens place so it represents ____ tens and has a value of _____.

• The digit ____ is in the ones place so it represents ____ ones and has a value of ____.

The value of 140,386 is _____ + _____ + _____ + _____ + ___ + __.

NAME_____   DATE_____   SCORE ____/5

3.2A/3.2B Skills and Concepts Homework 3

1. Write two hundred forty-three in standard form. Make a place value chart to prove your answer is correct.

2. Write a number in standard form that has the same value as 500 + 30 + 4. Explain why your answer is correct.

3. Write seven hundred eight in standard form. Make a place value chart to prove your answer is correct.

4. Write 763,456 in expanded notation. Make a place value chart to prove your answer is correct.

5. Write a number in standard form that has the same value as 400 + 60 + 8. Explain why your answer is correct.

Student Activity 4

Work with a partner to complete Student Activity 4.

PROBLEM 1: Read the number 419. This number is a _____-digit number.

Record the number 419 in the place value chart.

Hundreds	Tens	Ones

Write: _____

Read the numbers from _____ to _____.

Say: _____

PROBLEM 2: Read the number 3,974. This number is a _____-digit number.

A _____ is used to separate _____.

Record 3,974 in the place value chart.

Thousands	Hundreds	Tens	Ones

To read this number:

• first, say the _____-digit number to the _____ of the comma,

  _____;

• next, say the name of the period, _____;

• then, say the _____-digit number to the _____ of the comma,

  _____.

Read the number 3,974 as

_____.

PROBLEM 3: Read the number 45,073. This is a _____-digit number.

A _____ is used to separate _____.

Record the number 45,073 in the place value chart.

Ten Thousands	Thousands	Hundreds	Tens	Ones

The ___ shows there are no hundreds.

To read this number:

• first, say the _____-digit number to the _____ of the comma,

_____;

• next, say the name of the period, _____;

• then, say the _____-digit number to the right of the comma,

_____.

Read the number 45,073 as

_____.

PROBLEM 4: Read the number 563,906. This is a _____-digit number.

A _____ is used to separate _____.

Record the number 563,906 in the place value chart.

Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

The _____ shows there are no _____.

To read this number:

• first, say the _____-digit number to the _____ of the comma,

_____;

• next, say the name of the period, _____;

• then, say the _____-digit number to the right of the comma,

_____.

Read the number 563,906 as

_____.

NAME_____   DATE_____   SCORE ____/5

3.2A/3.2B Skills and Concepts Homework 4

1. Write seventeen thousand, two hundred forty-three in standard form. Make a place value chart to prove your answer is correct.

2. Write a number that has the same value as 700,000 + 50,000 + 30 + 4. Explain why your answer is correct.

3. Write six hundred seventy-four thousand, eight in expanded notation. Make a place value chart to prove your answer is correct.

4. What is the value of the digit 7 in the number 276,048? Make a place value chart to prove your answer is correct.

5. When you go from right to left in a number, how are the values of the places related to each other? Explain how you know your answer is correct.

Hands-On Activity 1

Place Value Game

Materials: Place Value Game Board per student, 10-section spinner per group of 4

Procedure – Round 1

- Work in groups of 4. Your teacher will give you 1 spinner for your group. Each student in the group will record on their own Place Value Game Board.

- Each student will spin the spinner. The student that spins the lowest number is Student 1. The student that spins the next lowest number is Student 2. The student that spins the highest number is Student 3. The student that spins the next highest number is Student 4.

- Student 1 spins the spinner. Each student writes the digit that comes up on the spinner in one space on his or her Place Value Game Board. Once the digit is written, it cannot be erased or moved.

  EXAMPLE: Student 1 rolls a 7. Each student writes a 7 in one of the places on their Place Value Game Board - ROUND 1.

  <p align="center">7</p>
  _____ _____ _____, _____ _____ _____

- Student 2 spins the spinner. Each student writes the digit that comes up on the spinner in one space on his or her Place Value Game Board. Once the digit is written, it cannot be erased or moved.

- Student 3 spins the spinner. Each student writes the digit that comes up on the spinner in one space on his or her Place Value Game Board. Once the digit is written, it cannot be erased or moved.

- Student 4 spins the spinner. Each student writes the digit that comes up on the spinner in one space on his or her Place Value Game Board. Once the digit is written, it cannot be erased or moved.

- Student 1 spins the spinner. Each student writes the digit that comes up on the spinner in one space on his or her Place Value Game Board. Once the digit is written, it cannot be erased or moved.

- Student 2 spins the spinner. Each student writes the digit that comes up on the spinner in one space on his or her Place Value Game Board. Once the digit is written, it cannot be erased or moved.

Procedure − Round 2

- Student 3 spins the spinner. Each student writes the digit that comes up on the spinner in one space on his or her Place Value Game Board. Once the digit is written, it cannot be erased or moved.

- Student 4 spins the spinner. Each student writes the digit that comes up on the spinner in one space on his or her Place Value Game Board. Once the digit is written, it cannot be erased or moved.

- Student 1 spins the spinner. Each student writes the digit that comes up on the spinner in one space on his or her Place Value Game Board. Once the digit is written, it cannot be erased or moved.

- Student 2 spins the spinner. Each student writes the digit that comes up on the spinner in one space on his or her Place Value Game Board. Once the digit is written, it cannot be erased or moved.

- Student 3 spins the spinner. Each student writes the digit that comes up on the spinner in one space on his or her Place Value Game Board. Once the digit is written, it cannot be erased or moved.

- Student 4 spins the spinner. Each student writes the digit that comes up on the spinner in one space on his or her Place Value Game Board. Once the digit is written, it cannot be erased or moved.

Procedure − Round 3

- Student 1 spins the spinner. Each student writes the digit that comes up on the spinner in one space on his or her Place Value Game Board. Once the digit is written, it cannot be erased or moved.

- Student 2 spins the spinner. Each student writes the digit that comes up on the spinner in one space on his or her Place Value Game Board. Once the digit is written, it cannot be erased or moved.

- Student 3 spins the spinner. Each student writes the digit that comes up on the spinner in one space on his or her Place Value Game Board. Once the digit is written, it cannot be erased or moved.

- Student 4 spins the spinner. Each student writes the digit that comes up on the spinner in one space on his or her Place Value Game Board. Once the digit is written, it cannot be erased or moved.

- Student 1 spins the spinner. Each student writes the digit that comes up on the spinner in one space on his or her Place Value Game Board. Once the digit is written, it cannot be erased or moved.

- Student 2 spins the spinner. Each student writes the digit that comes up on the spinner in one space on his or her Place Value Game Board. Once the digit is written, it cannot be erased or moved.

Procedure – Round 4

- Student 3 spins the spinner. Each student writes the digit that comes up on the spinner in one space on his or her Place Value Game Board. Once the digit is written, it cannot be erased or moved.

- Student 4 spins the spinner. Each student writes the digit that comes up on the spinner in one space on his or her Place Value Game Board. Once the digit is written, it cannot be erased or moved.

- Student 1 spins the spinner. Each student writes the digit that comes up on the spinner in one space on his or her Place Value Game Board. Once the digit is written, it cannot be erased or moved.

- Student 2 spins the spinner. Each student writes the digit that comes up on the spinner in one space on his or her Place Value Game Board. Once the digit is written, it cannot be erased or moved.

- Student 3 spins the spinner. Each student writes the digit that comes up on the spinner in one space on his or her Place Value Game Board. Once the digit is written, it cannot be erased or moved.

- Student 4 spins the spinner. Each student writes the digit that comes up on the spinner in one space on his or her Place Value Game Board. Once the digit is written, it cannot be erased or moved.

Procedure – Round 5

- Student 1 spins the spinner. Each student writes the digit that comes up on the spinner in one space on his or her Place Value Game Board. Once the digit is written, it cannot be erased or moved.

- Student 2 spins the spinner. Each student writes the digit that comes up on the spinner in one space on his or her Place Value Game Board. Once the digit is written, it cannot be erased or moved.

- Student 3 spins the spinner. Each student writes the digit that comes up on the spinner in one space on his or her Place Value Game Board. Once the digit is written, it cannot be erased or moved.

- Student 4 spins the spinner. Each student writes the digit that comes up on the spinner in one space on his or her Place Value Game Board. Once the digit is written, it cannot be erased or moved.

- Student 1 spins the spinner. Each student writes the digit that comes up on the spinner in one space on his or her Place Value Game Board. Once the digit is written, it cannot be erased or moved.

- Student 2 spins the spinner. Each student writes the digit that comes up on the spinner in one space on his or her Place Value Game Board. Once the digit is written, it cannot be erased or moved.

Answer the following questions about your Place Value Game Board:

• Write the number you wrote for Round 1 in words in the space below.

• Write the number you wrote for Round 3 in words in the space below.

• Write the number you wrote for Round 5 in words in the space below.

• What is the number with the greatest value that could have been written for Round 2?

• What is the number with the greatest value that could have been written for Round 4?

• What strategy would you use the next time you play this game?

• Rearrange the digits in your smallest number to make the largest number you can.

_____

• Rearrange the digits in your largest number to make the smallest number you can.

_____

Work with your group to answer the following questions:

• Which Student in your group made the number with the greatest value in Round 2?

_____ How do you know this is the number with the greatest value?

• Which Student in your group made the number with the greatest value in Round 5?

_____ How do you know this is the number with the greatest value?

• Which Student in your group made the number with the least value in Round 3?

_____ How do you know this is the number with the least value?

• Which Student in your group made the number with the least value in Round 4?

_____ How do you know this is the number with the least value?

Lesson 6

Hands-On Activity 1

Fractional Parts of Whole Objects

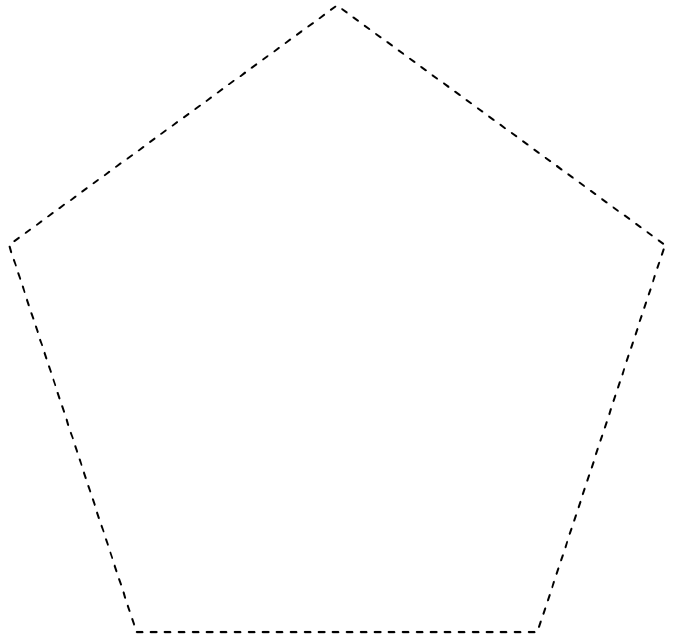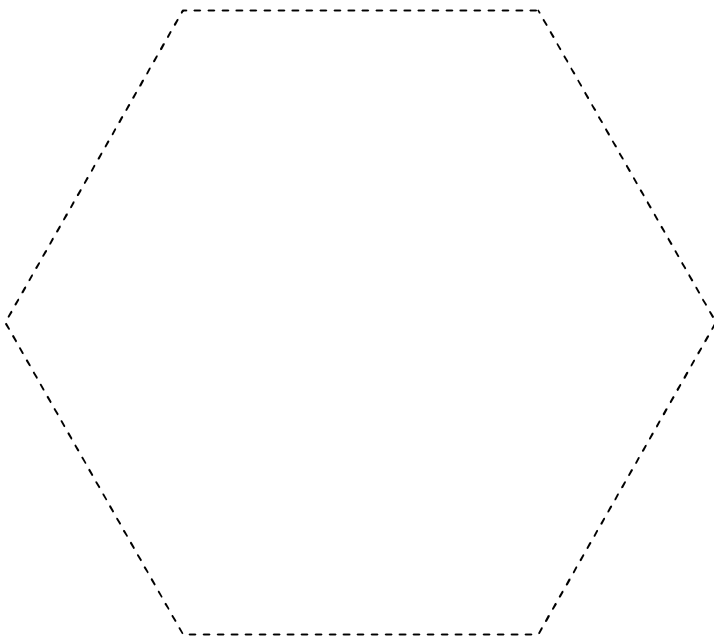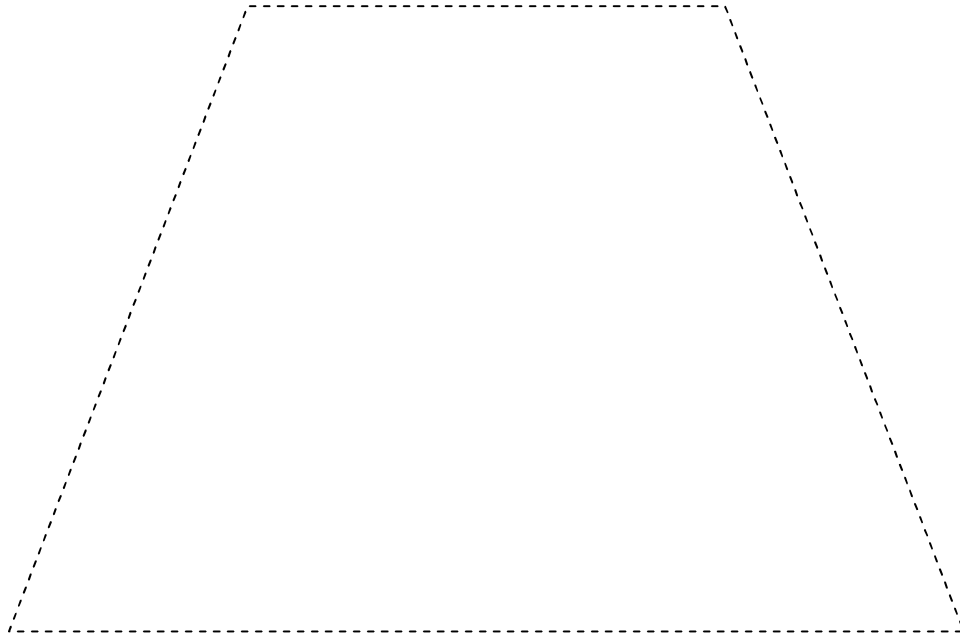**Materials:** 2 pair of scissors, 2 blue crayons, 2 red crayons.

Procedure: Work with a partner to complete **Hands-On Activity 1**.
Cut along the lines to cut out the figures on this page and the next page.
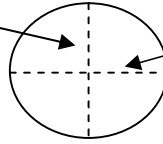You and your partner both need a set of these figures.
You will use them for this activity.
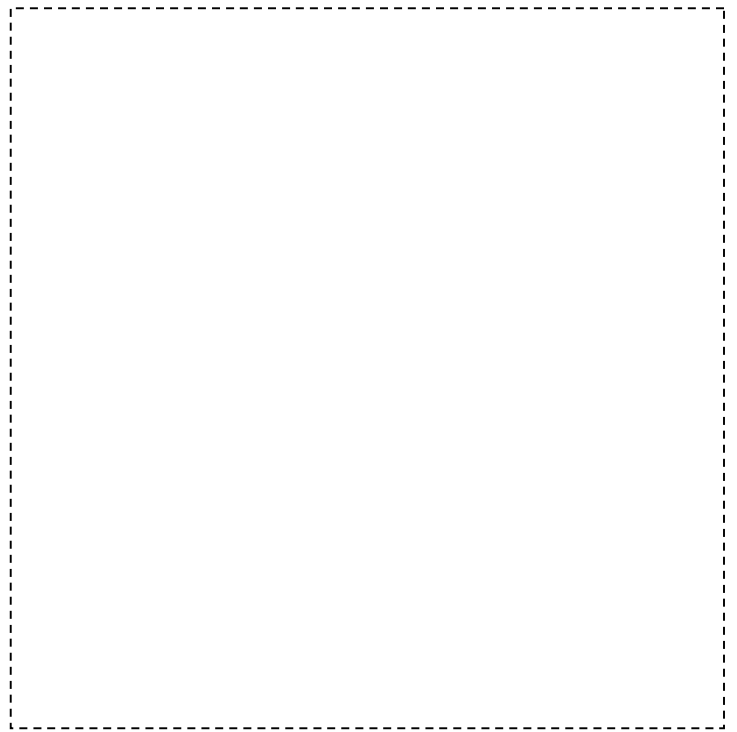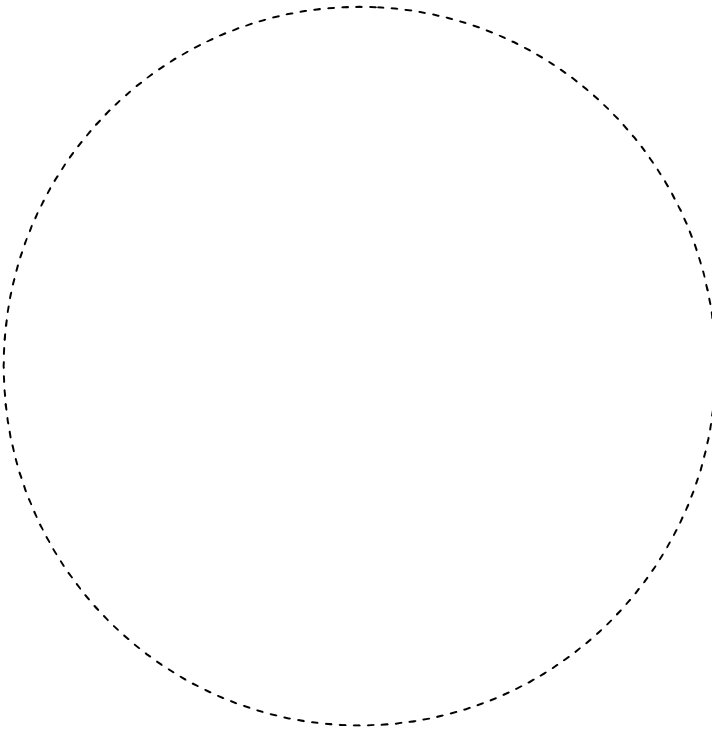
PART I

Fold your circle vertically into 2 equal parts, then fold the circle horizontally into two equal parts.

Your circle has 4 equal parts now. Color 2 of the parts red.

The red parts are ___ out of the ___ equal parts. The fraction that represents the red parts is $\dfrac{\square}{\square}$.

The numerator of the fraction is _____. What does the numerator represent in your model?

The denominator of the fraction is _____. What does the denominator represent in your model?

PART II

Fold the square into 8 equal parts.
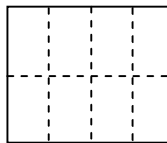
Color 3 of the parts blue.

The blue parts are ___ out of the ___ equal parts. The fraction that represents the blue parts is $\dfrac{\square}{\square}$.

The numerator of the fraction is _____. What does the numerator represent in your model?

The denominator of the fraction is _____. What does the denominator represent in your model?

PART III

Fold the rectangle into 6 equal parts.

Color 3 of the parts red.

The red parts are ___ out of the ___ equal parts. The fraction that represents the red
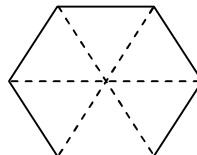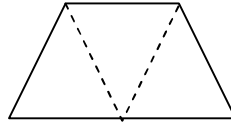
parts is $\frac{\square}{\square}$.

The numerator of the fraction is _____. What does the numerator represent in your model?

The denominator of the fraction is _____. What does the denominator represent in your model?

PART IV

Divide the hexagon into 6 equal parts.

Color 5 of the parts blue.

The blue parts are ___ out of the ___ equal parts. The fraction that represents the blue

parts is $\frac{\square}{\square}$.

The numerator of the fraction is _____. What does the numerator represent in your model?

The denominator of the fraction is _____. What does the denominator represent in your model?

PART V

Fold the trapezoid into 3 equal parts.
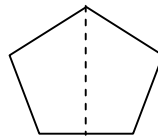
Color 2 of the parts red.

The red parts are ___ out of the ___ equal parts. The fraction that represents the red parts is $\frac{\square}{\square}$.

The numerator of the fraction is _____. What does the numerator represent in your model?

The denominator of the fraction is _____. What does the denominator represent in your model?

PART VI

Fold the pentagon into 2 equal parts.

Color 1 of the parts blue.

The blue parts are ___ out of the ___ equal parts. The fraction that represents the blue parts is $\frac{\square}{\square}$.

The numerator of the fraction is _____. What does the numerator represent in your model?

The denominator of the fraction is _____. What does the denominator represent in your model?

What did you learn from this activity?

Hands-On Activity 2

Fractional Parts of Sets of Objects

Materials: Your teacher will give each partner pair a zipper baggie with 4 red color tiles, 4 blue color tiles, 6 pennies, 3 yellow cubes, and 3 green cubes

Procedure: Work with a partner to complete **Hands-On Activity 2**.

PART I

Create a set with 4 red color tiles and 4 blue color tiles. Draw a sketch of your set of tiles. Label the red tiles with R and the blue tiles with B.

The red tiles are ___ out of the ___ equal parts. The fraction that represents the red parts of the set is $\dfrac{\Box}{\Box}$.

The numerator of the fraction is _____. What does the numerator represent in your model?

The denominator of the fraction is _____. What does the denominator represent in your model?

PART II

Create a set with 5 pennies "heads up" and 1 penny "tails up".
Draw a sketch of your set of pennies. Label the "heads up" pennies with H and the "tails up" penny with T.

The "tails up" penny is ___ out of the ___ equal parts. The fraction that represents the "tails up" part of the set of pennies is $\dfrac{\Box}{\Box}$.

The numerator of the fraction is _____. What does the numerator represent in your model?

The denominator of the fraction is _____. What does the denominator represent in your model?

PART III

Create a set with 1 yellow cube and 2 green cubes. Draw a sketch of your set of cubes. Label the yellow cubes with Y and the green cubes with G.

The green cubes are ___ out of the ___ equal parts. The fraction that represents the

green cube parts of the set is $\dfrac{\square}{\square}$.

The numerator of the fraction is _____. What does the numerator represent in your model?

The denominator of the fraction is _____. What does the denominator represent in your model?

PART IV

Create a set with 1 red color tile and 1 blue color tile. Draw a sketch of your set of tiles. Label the red tile with R and the blue tile with B.

The blue tile is ___ out of the ___ equal parts. The fraction that represents the blue

part of the set is $\dfrac{\square}{\square}$.

The numerator of the fraction is _____. What does the numerator represent in your model?

The denominator of the fraction is _____. What does the denominator represent in your model?

PART V

Create a set with 1 penny "heads up" and 5 pennies "tails up".
Draw a sketch of your set of pennies. Label the "heads up" penny with H and the "tails up" pennies with T.

The "tails up" pennies are ___ out of the ___ equal parts. The fraction that represents

the "tails up" part of the set of pennies is $\frac{\Box}{\Box}$.

The numerator of the fraction is _____. What does the numerator represent in your model?

The denominator of the fraction is _____. What does the denominator represent in your model?

PART VI

Create a set with 3 yellow cubes and 1 green cube. Draw a sketch of your set of cubes. Label the yellow cubes with Y and the green cube with G.

The yellow cubes are ___ out of the ___ equal parts. The fraction that represents the

yellow cube parts of the set is $\frac{\Box}{\Box}$.

The numerator of the fraction is _____. What does the numerator represent in your model?

The denominator of the fraction is _____. What does the denominator represent in your model?

What did you learn from this activity?

Hands-On Activity 3

Fractions are Parts of Things

Materials: Fraction Model Kit for each pair of students includes fraction number cards, fraction word cards, two 4" by 8" white paper rectangles, two 4" by 4" white paper squares, 8 red color tiles, 8 blue color tiles, 8 pennies, set of pattern blocks (8 yellow hexagons, 8 blue rhombuses, 8 red trapezoids, 8 green triangles)

Procedure: Work with a partner for this activity.

• Your teacher will give you a Fraction Model Kit. Place the Fraction Number Cards face down in a pile on the desk. Spread the Fraction Word Cards out face up in the center of the table. Leave the other materials in the kit until they are needed.

• Flip a coin the decide who is Student 1 and who is Student 2. The first student to land the coin "heads up" is Student 1.

ROUND 1

• Student 1 takes the top card from the Fraction Number Cards pile on the desk.

• Student 2 chooses materials from the kit and models the fraction number card. Then Student 2 explains why the model matches the fraction number card. Tell what part of the model represents the denominator and what part of the model represents the numerator.

• Student 1 finds a Fraction Word Card that matches the model.

• Student 2 finds another Fraction Word Card that matches the model.

• Student 1 explains why the second word card also matches the model. Tell what part of the model represents the denominator and what part of the model represents the numerator.

• Student 2 places the cards from Round 1 in a discard pile and Student 1 places the model materials back into the fraction kit.

ROUND 2

• Student 2 takes the top card from the Fraction Number Cards pile on the desk.

• Student 1 chooses materials from the kit and models the fraction number card. Then Student 1 explains why the model matches the fraction number card. Tell what part of the model represents the denominator and what part of the model represents the numerator.

• Student 2 finds a Fraction Word Card that matches the model.

• Student 1 finds another Fraction Word Card that matches the model.

• Student 2 explains why the second word card also matches the model. Tell what part of the model represents the denominator and what part of the model represents the numerator.

• Student 1 places the cards from Round 2 in a discard pile and Student 2 places the model materials back into the fraction kit.

ROUND 3

- Student 1 takes the top card from the Fraction Number Cards pile on the desk.

- Student 2 chooses materials from the kit and models the fraction number card. Then Student 2 explains why the model matches the fraction number card. Tell what part of the model represents the denominator and what part of the model represents the numerator.

- Student 1 finds a Fraction Word Card that matches the model.

- Student 2 finds another Fraction Word Card that matches the model.

- Student 1 explains why the second word card also matches the model. Tell what part of the model represents the denominator and what part of the model represents the numerator.

- Student 2 places the cards from Round 3 in a discard pile and Student 1 places the model materials back into the fraction kit.

ROUND 4

- Student 2 takes the top card from the Fraction Number Cards pile on the desk.

- Student 1 chooses materials from the kit and models the fraction number card. Then Student 1 explains why the model matches the fraction number card. Tell what part of the model represents the denominator and what part of the model represents the numerator.

- Student 2 finds a Fraction Word Card that matches the model.

- Student 1 finds another Fraction Word Card that matches the model.

- Student 2 explains why the second word card also matches the model. Tell what part of the model represents the denominator and what part of the model represents the numerator.

- Student 1 places the cards from Round 4 in a discard pile and Student 2 places the model materials back into the fraction kit.

ROUND 5

- Student 1 takes the top card from the Fraction Number Cards pile on the desk.

- Student 2 chooses materials from the kit and models the fraction number card. Then Student 2 explains why the model matches the fraction number card. Tell what part of the model represents the denominator and what part of the model represents the numerator.

- Student 1 finds a Fraction Word Card that matches the model.

- Student 2 finds another Fraction Word Card that matches the model.

- Student 1 explains why the second word card also matches the model. Tell what part of the model represents the denominator and what part of the model represents the numerator.

- Student 2 places the cards from Round 5 in a discard pile and Student 1 places the model materials back into the fraction kit.

Work with your partner to answer the questions about the Fractions Are Parts of Things game. Write your answer in the space below the question.

1. How did you decide the total number of objects to use in a model?

2. How did you decide the number of objects you needed to represent the denominator in the model?

3. How did you decide the number of objects you needed to represent the numerator in the model?

4. Why did you need a different representation for the numerator? (For example: why did you use some pennies that were "heads up" and some pennies that were "tails up"?

5. Why can two different fraction numbers be represented by each model?

6. What did you learn about fractions during this activity?

3.3A/3.3B/3.7A Skills and Concepts Homework 1

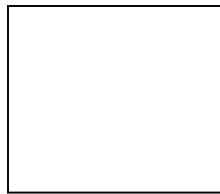1. Divide the circle into 4 equal parts. Color 3 of the parts red.
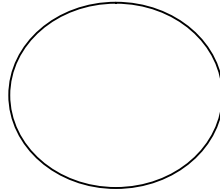
   The red parts are __ out of the __ equal parts. The fraction that represents the red

   parts is $\frac{\square}{\square}$.

   The numerator of the fraction is _____. What does the numerator represent in your model?

   The denominator of the fraction is _____. What does the denominator represent in your model?

2. Divide the square into 8 equal parts. Color 5 of the parts blue.

   The blue parts are __ out of the __ equal parts. The fraction that represents the

   parts that are **NOT** blue is $\frac{\square}{\square}$.

   The numerator of the fraction is _____. What does the numerator represent in your model?

   The denominator of the fraction is _____. What does the denominator represent in your model?

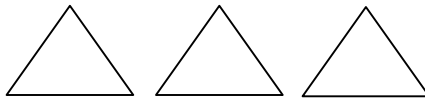3. Divide the rectangle into 6 equal parts. Color 3 of the parts red.

The red parts are ___ out of the ___ equal parts. The fraction that represents the red parts is $\frac{\square}{\square}$.

The numerator of the fraction is _____. What does the numerator represent in your model?

The denominator of the fraction is _____. What does the denominator represent in your model?

4. A set of triangle is shown below. Color 2 of the triangles in the set blue.

The blue parts are ___ out of the ___ equal parts. The fraction that represents the parts that are **NOT** blue is $\frac{\square}{\square}$.

The numerator of the fraction is _____. What does the numerator represent in your model?

The denominator of the fraction is _____. What does the denominator represent in your model?

5. A set of hexagons is shown below. Color 2 of the hexagons in the set red.
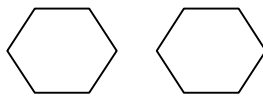
The red parts of the set are ___ out of the ___ equal parts. The fraction that represents the parts that are red is $\frac{\square}{\square}$.

The numerator of the fraction is _____. What does the numerator represent in your model?

The denominator of the fraction is _____. What does the denominator represent in your model?

Student Activity 1

Work with a partner to complete Student Activity 2.

Materials: 1 set of fraction strips, 1 map pencil

You can use a number line to show fractions.
• The length from 0 to 1 on a number line represents one whole.
• The line can be divided into any number of equal parts, or lengths.
• The labels for the lengths on the line will begin with a fraction that represents zero

equal parts. EXAMPLE: $\dfrac{0}{2}$

• The labels for the lengths on the line will end with a fraction that represents 1 whole.

EXAMPLE: $\dfrac{2}{2}$

PROBLEM 1: Draw a point to represent $\dfrac{2}{3}$ on the number line.

$\longleftrightarrow$

Step 1: Lay the correct fraction strip above the number line.

Step 2: Use the fraction bar to help you draw lines on the number line to represent the correct number of equal lengths. Make lines for the beginning of each section and the end of the last section.

Step 3: Correctly label each mark on the number line with a fraction. Label under the number line.

Remember to label the first mark with a fraction that represents zero equal sections and label the last mark with a fraction that represents 1 whole.

Step 4: Now draw a point on the number line to represent $\dfrac{2}{3}$.

The number line shows _____ equal lengths.

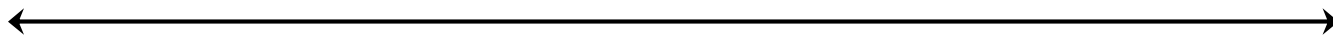The first mark on the number line represents what fraction? _____

The last mark on the number line represents what fraction? _____

How many sections are needed to represent $\dfrac{2}{3}$ of the length of the number line? _____

How did you know where to draw the point to represent $\dfrac{2}{3}$?

How did you know which mark to label $\dfrac{2}{3}$?

PROBLEM 2: Draw a point to represent $\dfrac{3}{8}$ on the number line.

Step 1: Lay the correct fraction strip above the number line.

Step 2: Use the fraction bar to help you draw lines on the number line to represent the correct number of equal lengths. Make lines for the beginning of each section and the end of the last section.

Step 3: Correctly label each mark on the number line with a fraction. Label under the number line.

Remember to label the first mark with a fraction that represents zero equal sections and label the last mark with a fraction that represents 1 whole.

Step 4: Now draw a point on the number line to represent $\dfrac{3}{8}$.

The number line shows _____ equal lengths.

The first mark on the number line represents what fraction? _____

The last mark on the number line represents what fraction? _____

How many sections are needed to represent $\dfrac{3}{8}$ of the length of the number line? _____

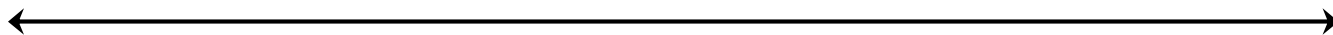How did you know where to draw the point to represent $\dfrac{3}{8}$?

How did you know which mark to label $\dfrac{3}{8}$?

How did you know which mark to label $\dfrac{0}{8}$?

How did you know which mark to label $\dfrac{8}{8}$?

Describe your number line.

PROBLEM 3: Draw a point to represent $\frac{1}{2}$ on the number line.

Step 1: Lay the correct fraction strip above the number line.

Step 2: Use the fraction bar to help you draw lines on the number line to represent the correct number of equal lengths. Make lines for the beginning of each section and the end of the last section.

Step 3: Correctly label each mark on the number line with a fraction. Label under the number line.

     Remember to label the first mark with a fraction that represents zero equal sections and label the last mark with a fraction that represents 1 whole.

Step 4: Now draw a point on the number line to represent $\frac{1}{2}$.

The number line shows _____ equal lengths.

The first mark on the number line represents what fraction? _____

The last mark on the number line represents what fraction? _____

How many sections are needed to represent $\frac{1}{2}$ of the length of the number line? _____

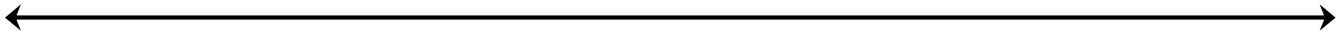How did you know where to draw the point to represent $\frac{1}{2}$?

How did you know which mark to label $\frac{1}{2}$?

How did you know which mark to label $\frac{0}{2}$?

How did you know which mark to label $\frac{2}{2}$?

Describe your number line.

PROBLEM 4: Draw a point to represent $\frac{5}{6}$ on the number line.

Step 1: Lay the correct fraction strip above the number line.

Step 2: Use the fraction bar to help you draw lines on the number line to represent the correct number of equal lengths. Make lines for the beginning of each section and the end of the last section.

Step 3: Correctly label each mark on the number line with a fraction. Label under the number line.

Remember to label the first mark with a fraction that represents zero equal sections and label the last mark with a fraction that represents 1 whole.

Step 4: Now draw a point on the number line to represent $\frac{5}{6}$.

The number line shows _____ equal lengths.

The first mark on the number line represents what fraction? _____

The last mark on the number line represents what fraction? _____

How many sections are needed to represent $\frac{5}{6}$ of the length of the number line? _____

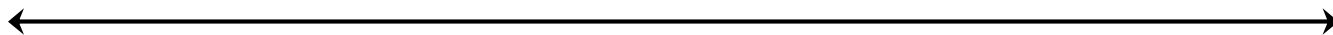How did you know where to draw the point to represent $\frac{5}{6}$?

How did you know which mark to label $\frac{5}{6}$?

How did you know which mark to label $\frac{0}{6}$?

How did you know which mark to label $\frac{6}{6}$?

Describe your number line.

PROBLEM 5: Draw a point to represent $\frac{1}{4}$ on the number line.

$\longleftarrow$ _____ $\longrightarrow$

Step 1: Lay the correct fraction strip above the number line.

Step 2: Use the fraction bar to help you draw lines on the number line to represent the correct number of equal lengths. Make lines for the beginning of each section and the end of the last section.

Step 3: Correctly label each mark on the number line with a fraction. Label under the number line.

Remember to label the first mark with a fraction that represents zero equal sections and label the last mark with a fraction that represents 1 whole.

Step 4: Now draw a point on the number line to represent $\frac{1}{4}$.

The number line shows _____ equal lengths.

The first mark on the number line represents what fraction? _____

The last mark on the number line represents what fraction? _____

How many sections are needed to represent $\frac{1}{4}$ of the length of the number line? _____

How did you know where to draw the point to represent $\frac{1}{4}$?

How did you know which mark to label $\frac{1}{4}$?

How did you know which mark to label $\frac{0}{4}$?

How did you know which mark to label $\frac{4}{4}$?


Describe your number line.

PROBLEM 5: There is a walking track on the playground of an elementary school. Four laps around the track is a distance of 1 mile. Third grade students walk $\frac{2}{4}$ mile on the track during morning recess. How many laps do they walk around the track? Complete the number line and draw a point to represent $\frac{2}{4}$ on the number line.

←─────────────────────────────────────→
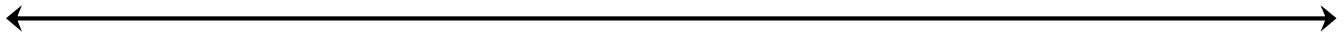
PROBLEM 6: Nate rides his bicycle on the City Park bike path. He stops at $\frac{3}{8}$ and $\frac{5}{8}$ of the total length of the bike path. Complete the number line and draw points to represent $\frac{3}{8}$ and $\frac{5}{8}$ on the number line.

←─────────────────────────────────────→

PROBLEM 7: Margie made a full pitcher of fresh lemonade. The pitcher holds 6 cups. Complete the number line and draw points to represent how full the pitcher is when it holds 2 cups and when it holds 5 cups.
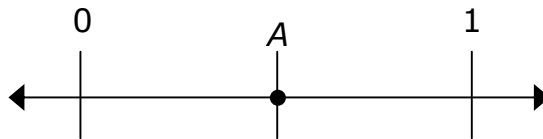
←─────────────────────────────────────→
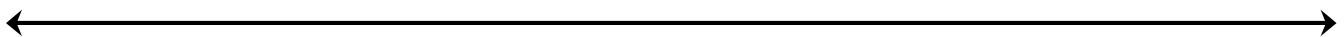
NAME_____   DATE_____   SCORE ____/5

3.3A/3.3B/3.7A Skills and Concepts Homework 2

1. Correctly label the fractional part of the line represented by each mark on the number line. Label the fractions below the number line.
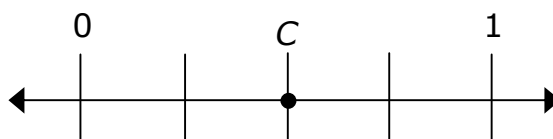
```
        0              A            1
   ◄─────┼─────────────●────────────┼─────►
```

What fraction does Point *A* represent? _____   Explain how you know your answer is correct.

2. Correctly label the fractional part of the line represented by each mark on the number line. Label the fractions below the number line.

```
    0                                    D      1
◄───┼─────┼─────┼─────┼─────┼─────●─────┼───►
```

What fraction does Point *D* represent? _____   Explain how you know your answer is correct.

3. Correctly label the fractional part of the line represented by each mark on the number line. Label the fractions below the number line.

```
        0          C           1
   ◄─────┼─────┼─────●─────┼─────┼─────►
```

What fraction does Point *C* represent? _____   Explain how you know your answer is correct.

4. Correctly label the fractional part of the line represented by each mark on the number line. Label the fractions below the number line.

0   B   1

What fraction does Point *B* represent? _____ Explain how you know your answer is correct.

5. Correctly label the fractional part of the line represented by each mark on the number line. Label the fractions below the number line.

0   E   1

What fraction does Point *C* represent? _____ Explain how you know your answer is correct.