



ANSWER

GRADE 3 • MODULE 5

KEY

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GRADE 3 • MODULE 5

Fractions as Numbers on the Number Line

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ANSWER KEY

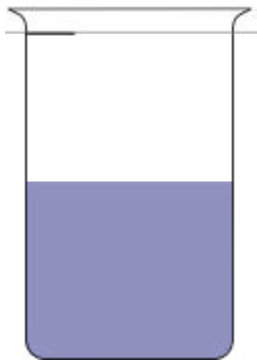
For video tutorials on many of these problems,
please visit <http://bit.ly/engageportal>

DISCLAIMER: EngageNY is regularly updating their curriculum,
so some problems in my answer key may no longer
match future versions of this module.

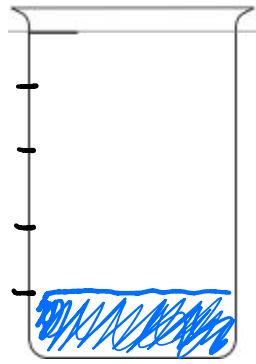
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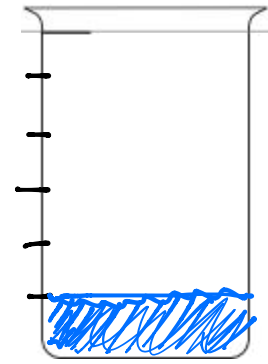
1. A beaker is considered full, when the liquid reaches the fill line shown near the top. Estimate the amount of water in the beaker by shading the drawing as indicated. The first one is done for you.



1 half



1 fifth



1 sixth

2. Danielle cut her candy bar into equal pieces as shown in the rectangles below. In the blanks below, name the fraction of candy bar represented by the shaded part.



$\frac{1}{3}$

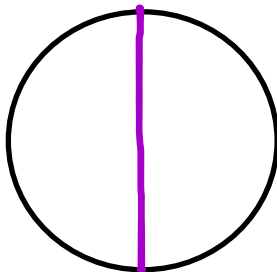


$\frac{1}{4}$

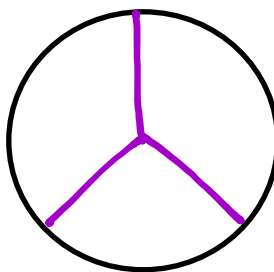


$\frac{1}{7}$

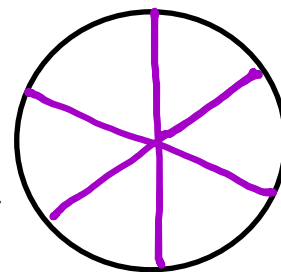
3. Each circle represents 1 whole pie. Estimate to show how you would cut the pie into fractional units as indicated below.



halves

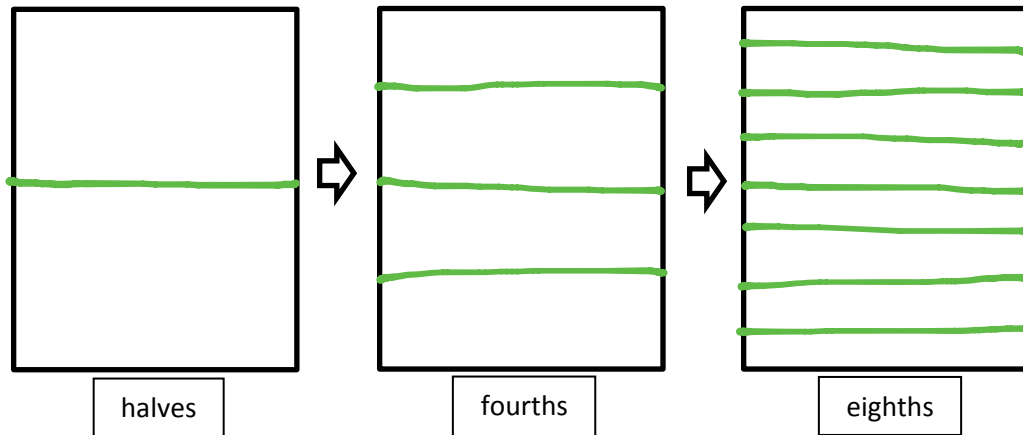


thirds

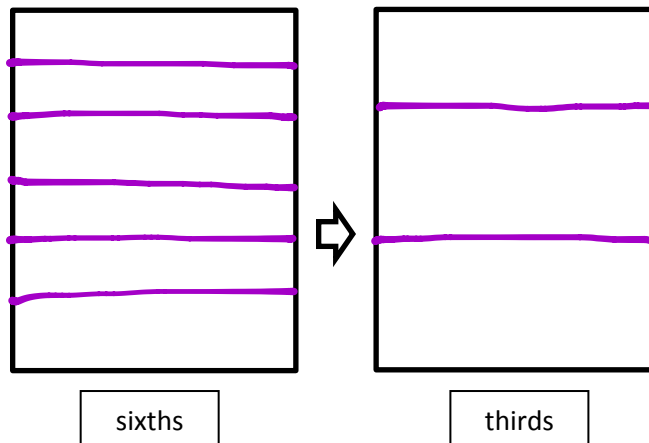


sixths

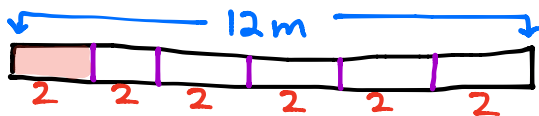
4. Each rectangle represents 1 sheet of paper. Estimate to draw lines to show how you would cut the paper into fractional units as indicated below.



5. Each rectangle represents 1 sheet of paper. Estimate to draw lines to show how you would cut the paper into fractional units as indicated below.

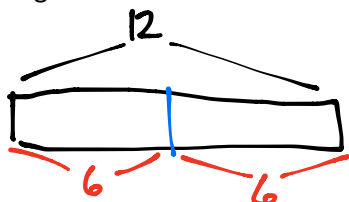


6. Yuri has a rope 12m long. He cuts it into pieces that are each 2m long. What fraction of the rope is one piece? (Use your yellow strip from the lesson to help you.) Draw a picture.



One piece is $\frac{1}{6}$ of the rope.

7. Dawn bought 12 grams of chocolate. She ate half of the chocolate. How many grams of chocolate did she eat?

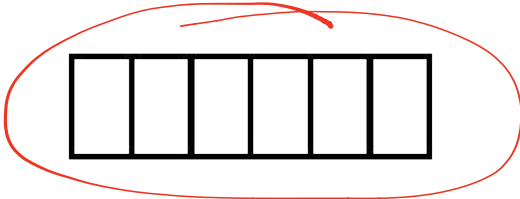
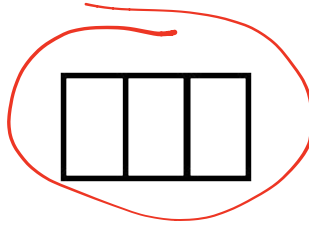


$\frac{1}{2}$ of 12 g is 6 grams.

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1. Circle the strips that are cut into equal parts.



$\frac{1}{2}$ is shaded

a. There are 2 equal parts in all. 1 are shaded.



$\frac{1}{3}$ is shaded

b. There are 3 equal parts in all. 1 are shaded.



$\frac{1}{5}$ is shaded

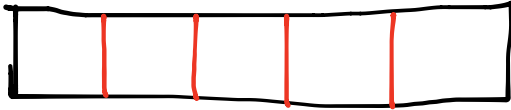
c. There are 5 equal parts in all. 1 are shaded.



$\frac{7}{14}$ is shaded

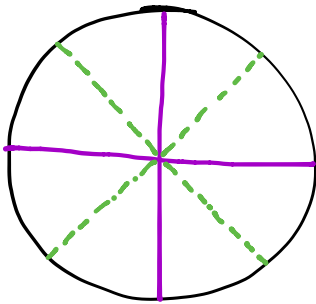
d. There are 14 equal parts in all. 7 are shaded.

3. Dylan plans to eat $\frac{1}{5}$ of his candy bar. His 4 friends want him to share the rest equally. Show how Dylan and his friends can each get an equal share of the candy bar.



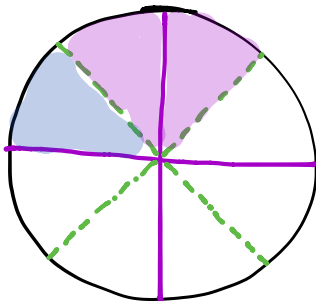
Each person gets $\frac{1}{5}$ of the candy bar.

4. Nasir baked a pie and cut it in fourths. He then took each of the pieces and cut them in half.
- a. What fraction of the original pie does each piece represent?



Each piece represents $\frac{1}{8}$ of the original pie.

- b. Nasir ate one piece of pie on Wednesday and two pieces on Tuesday. What fraction of the original pie was not eaten?

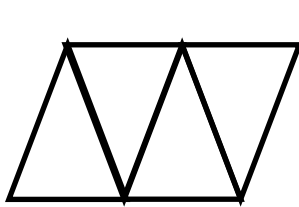


$\frac{5}{8}$ of the pie is not eaten.

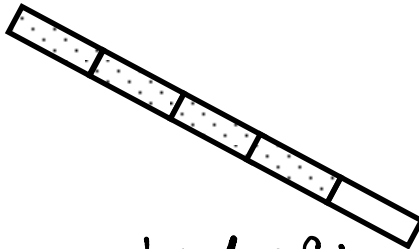
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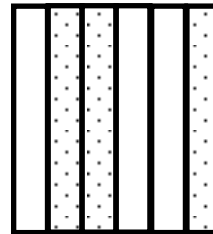
1. Each shape is a whole divided into equal parts. Name the fractional unit and then count and tell how many of those units are shaded. The first one is done for you.



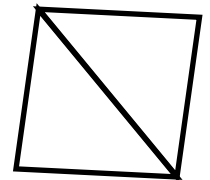
The unit is 1 fourth.
2 fourths are shaded.



unit is 1 fifth
4 fifths are shaded

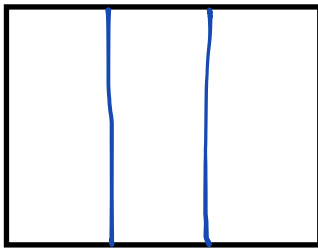


unit is 1 sixth
3 sixths are shaded



unit is 1 half
0 halves are shaded

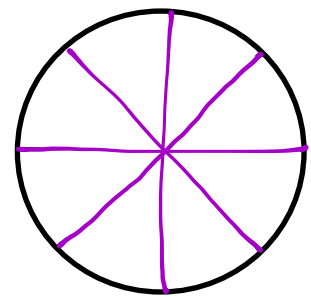
2. Each shape is 1 whole. Estimate to divide each into equal parts. Divide each whole using a different fractional unit. Write the name of the fractional unit on the line below the shape.



The unit is 1 third

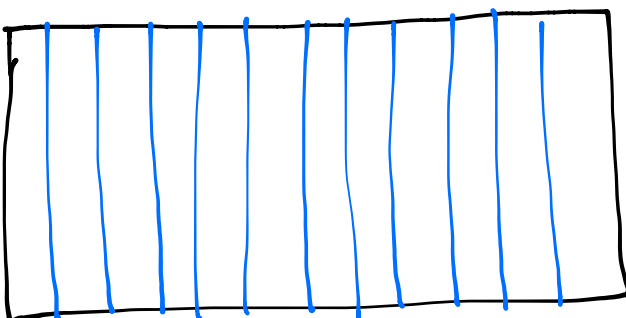


the unit is 1 fourth



The unit is 1 eighth

3. An artist wants to draw a calendar on one sheet of paper to show each month of the year. Draw the artist's calendar. Show how he can divide his calendar so that each month is given the same space. What fraction of the calendar bar does each month receive?



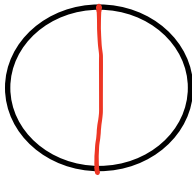
Each month receives 1 twelfth.

Name _____

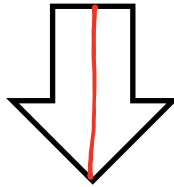
Date _____

Each shape is 1 whole. Estimate to equally partition the following images to show the fractional unit of:

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



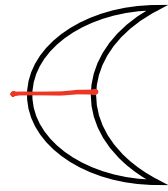
A



B

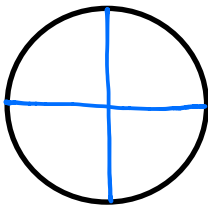


C



D

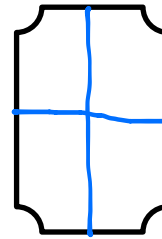
2. $\frac{1}{4}$



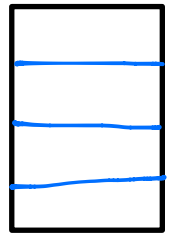
A



B

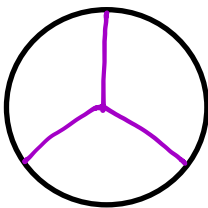


C



D

3. $\frac{1}{3}$



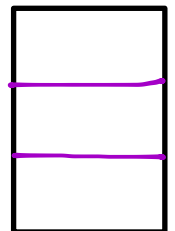
A



B



C



D

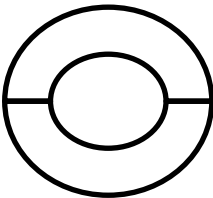
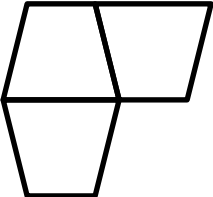
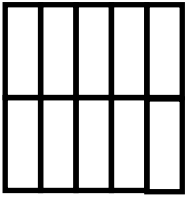
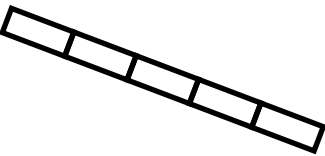
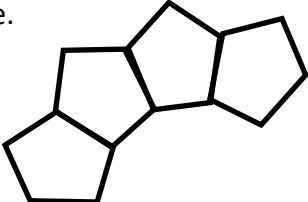
4. Each of the shapes represent 1 whole. Match each shape to its unit fraction.

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

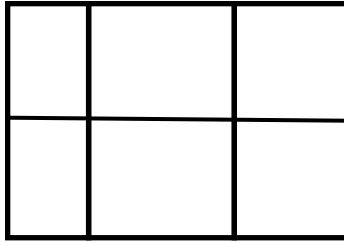
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1. Fill in the chart. Then whisper the fraction.

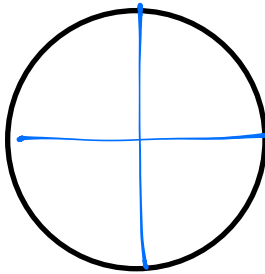
| | Total Number of Equal Parts | Total Number of Equal Parts Shaded | Unit Form | Fraction |
|-------------------------------------------------------------------------------------------|-----------------------------|------------------------------------|-----------|----------------|
| a.  | 2 | 1 | half | $\frac{1}{2}$ |
| b.  | 3 | 1 | third | $\frac{1}{3}$ |
| c.  | 10 | 1 | tenths | $\frac{1}{10}$ |
| d.  | 5 | 1 | fifth | $\frac{1}{5}$ |
| e.  | 4 | 1 | fourth | $\frac{1}{4}$ |

2. This figure is divided into six parts. Are they sixths? Explain your answer.



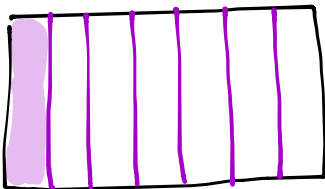
This figure has not been cut into sixths because the six pieces are not equal in size.

3. Terry and his 3 friends baked a pizza during his sleepover. They want to share the pizza equally. Show how Terry can slice the pizza so that he and his 3 friends can each get an equal amount with none leftover.

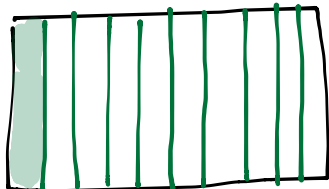


Each person will get $\frac{1}{4}$ of a pizza.

4. Draw two identical rectangles. Shade 1 seventh of one rectangle and 1 tenth of the other. Label the unit fractions. Use your rectangles to explain why $\frac{1}{7}$ is greater than $\frac{1}{10}$.



$\Rightarrow \frac{1}{7}$



$\Rightarrow \frac{1}{10}$

Sevenths are bigger than tenths because the 1 whole is cut into only 7 pieces compared to 10. Fewer pieces means bigger pieces.

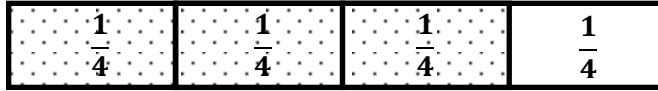
Name _____

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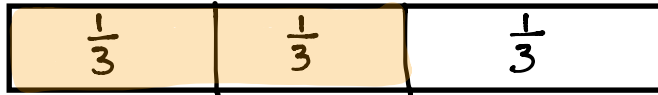
1. Complete the number sentence. Estimate to equally partition each strip and shade the answer.

Sample:

3 fourths = $\frac{3}{4}$



a. 2 thirds = $\frac{2}{3}$



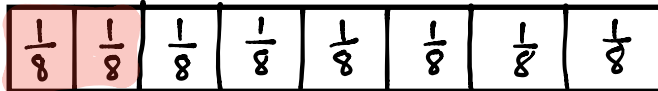
b. 5 sevenths = $\frac{5}{7}$



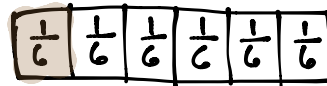
c. 3 fifths = $\frac{3}{5}$



d. 2 eighths = $\frac{2}{8}$



2. Mr. Abney bought 6 kg of rice. He cooked 1 kg of it for dinner.



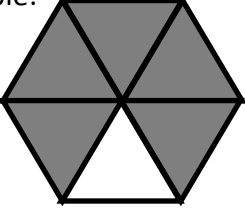
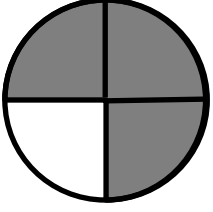
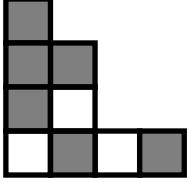
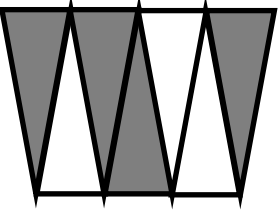
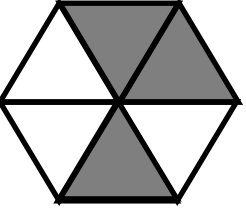
a. What fraction of the rice did he cook for dinner?

Mr. Abney cooked $\frac{1}{6}$ of the rice.

b. What fraction of the rice was left?

$\frac{5}{6}$ of the rice is left.

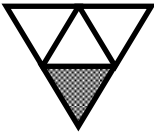

3. Fill in the chart.

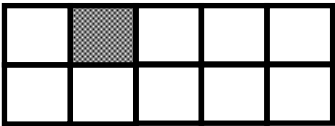

| | Total Number of Equal Parts | Total Number of Shaded Equal Parts | Unit Fraction | Fraction Shaded |
|----------------------------------------------------------------------------------------------|-----------------------------|------------------------------------|---------------|-----------------|
| Sample:  | 6 | 5 | $\frac{1}{6}$ | $\frac{5}{6}$ |
| a.  | 4 | 3 | $\frac{1}{4}$ | $\frac{3}{4}$ |
| b.  | 9 | 6 | $\frac{1}{9}$ | $\frac{6}{9}$ |
| c.  | 7 | 4 | $\frac{1}{7}$ | $\frac{4}{7}$ |
| d.  | 6 | 3 | $\frac{1}{6}$ | $\frac{3}{6}$ |

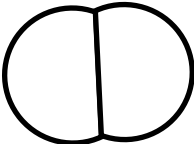
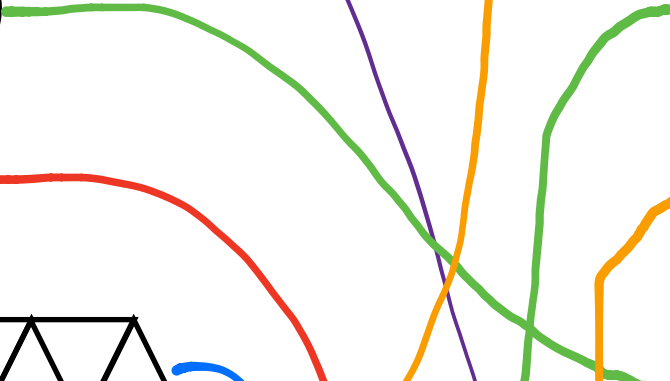
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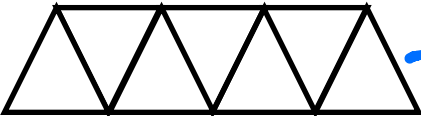
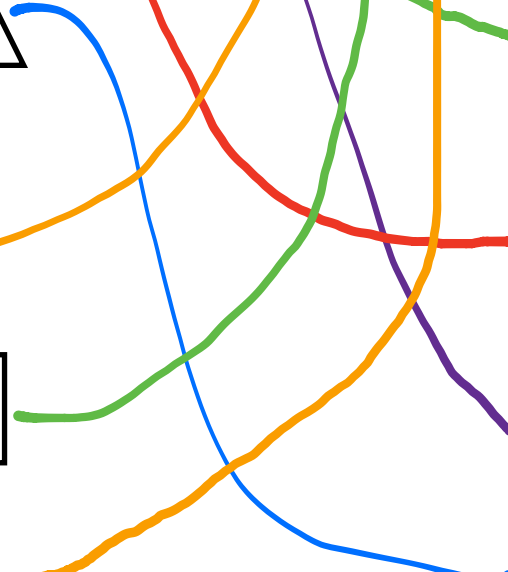
Whisper the fraction of the shape that is shaded. Then match the shape to the amount that is not shaded.

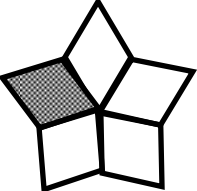

1.   9 tenths

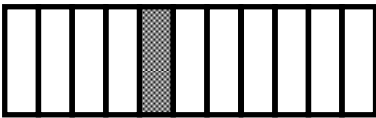

2.   4 fifths



3.   10 elevenths

4.   5 sixths

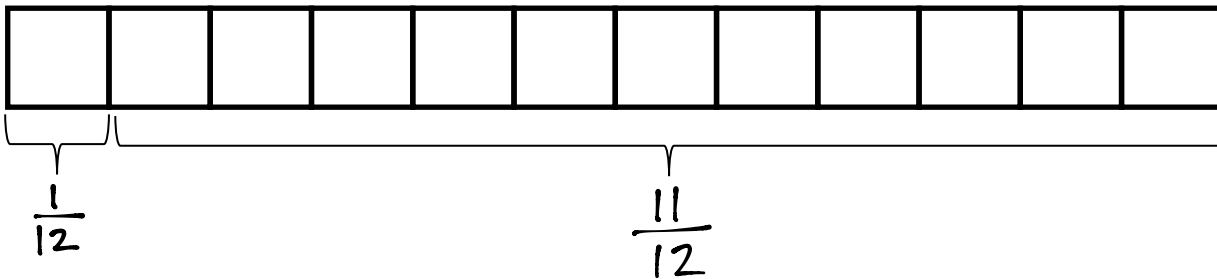
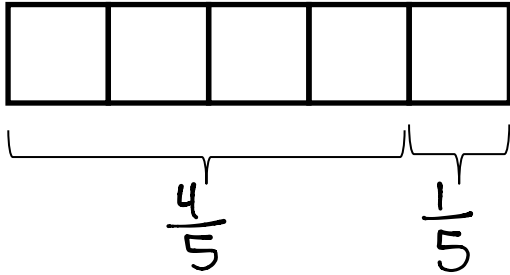
5.   1 half

6.   2 thirds

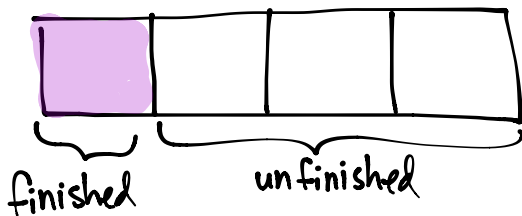
7.   3 fourths

8.   6 sevenths

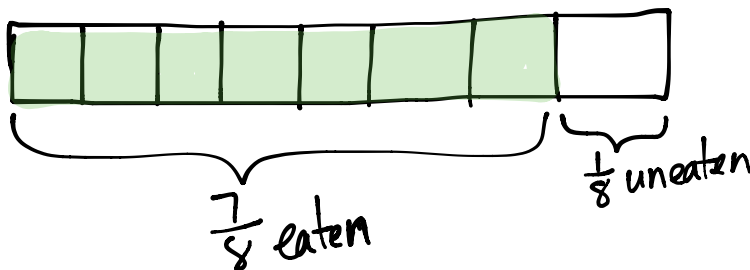
9. Each strip represents 1 whole. Write a fraction to label the shaded and un-shaded parts.



10. Carlia finished 1 fourth of her homework on Saturday. What fraction of her homework has she not finished? Draw and explain.



11. Jerome cooks 8 cups of oatmeal for his family. They eat 7 eighths of the oatmeal. What fraction of the oatmeal is uneaten? Draw and explain.



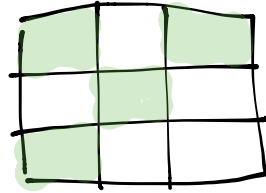
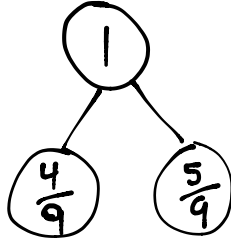
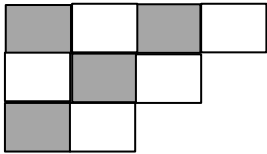
Out of 8 equal parts, only 1 part remains uneaten. This is $\frac{1}{8}$ of the oatmeal.

Name _____

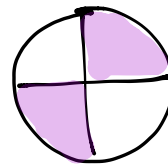
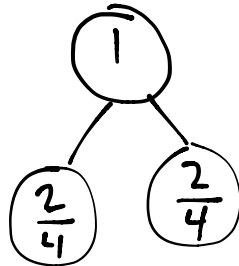
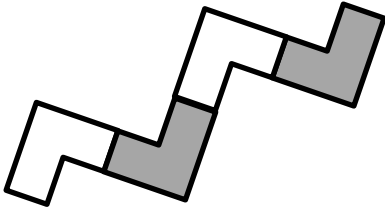
Date _____

Show a number bond representing what is shaded and unshaded in each of the figures. Draw a different visual model that would be represented by the same number bond.

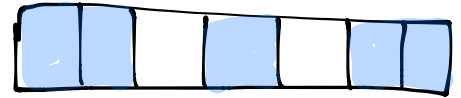
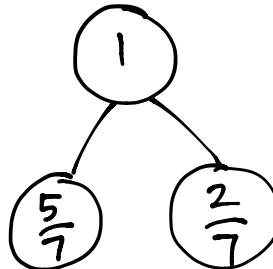
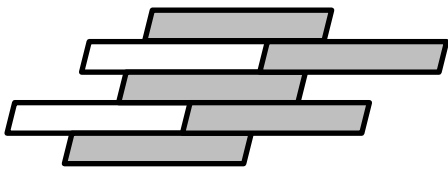
Sample:



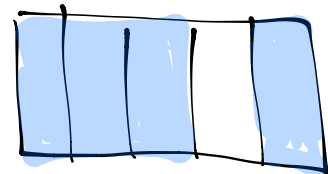
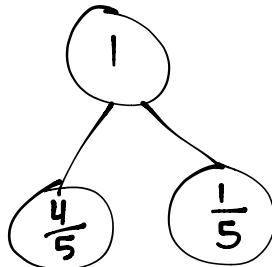
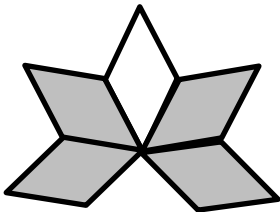
1.



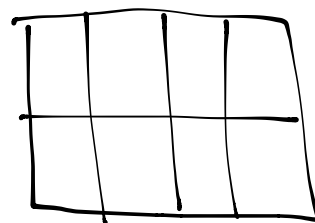
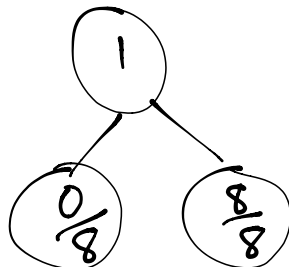
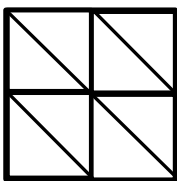
2.



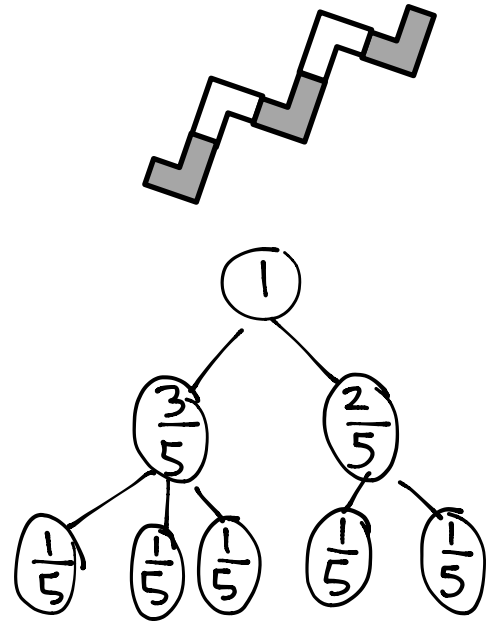
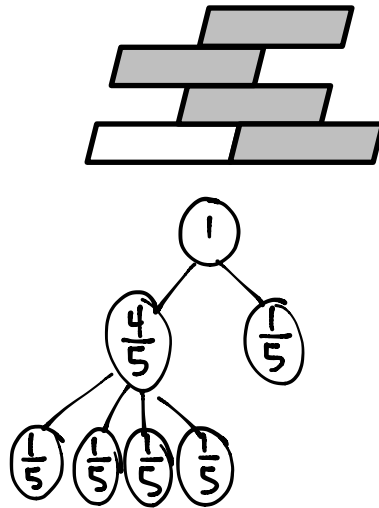
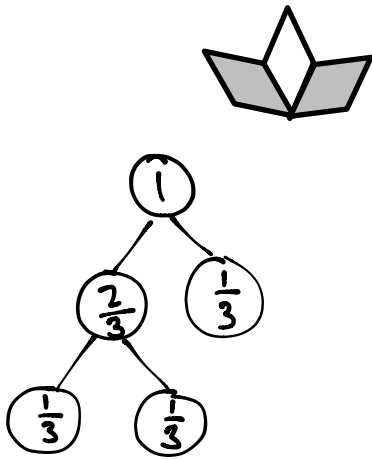
3.



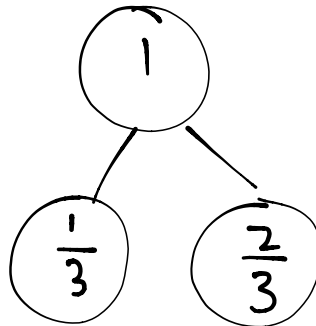
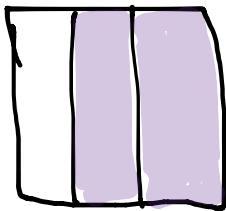
4.



5. Draw a number bond with 2 parts showing the shaded and unshaded fractions of each figure. Decompose both parts of the number bond into unit fractions.



6. Johnny made a square peanut butter and jelly sandwich. He ate $\frac{1}{3}$ of it and left the rest on his plate. Draw a picture of Johnny's sandwich. Shade the part he left on his plate then draw a number bond that matches what you drew. What part of his sandwich did Johnny leave on his plate?

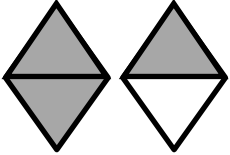
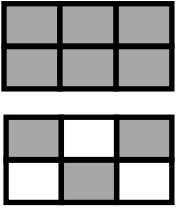
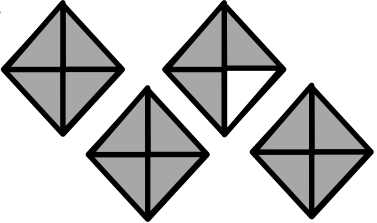

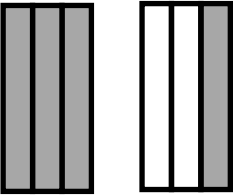
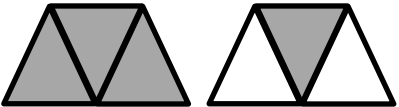


Johnny left $\frac{2}{3}$ of his sandwich on his plate.

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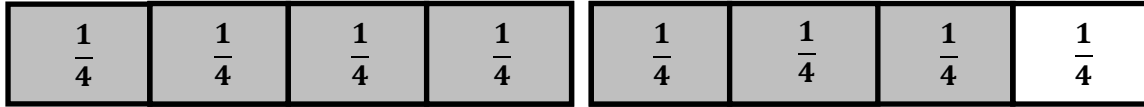
1. Each shape represents 1 whole. Fill in the chart.

| | Unit Fraction | Total Number of Units Shaded | Fraction Shaded |
|-------------------------------------------------------------------------------------------------|---------------|------------------------------|-----------------|
| a. Sample:  | $\frac{1}{2}$ | 3 | $\frac{3}{2}$ |
| b.  | $\frac{1}{6}$ | 9 | $\frac{9}{6}$ |
| c.  | $\frac{1}{4}$ | 15 | $\frac{15}{4}$ |
| d.  | $\frac{1}{2}$ | 6 | $\frac{6}{2}$ |
| e.  | $\frac{1}{3}$ | 4 | $\frac{4}{3}$ |
| f.  | $\frac{1}{3}$ | 4 | $\frac{4}{3}$ |

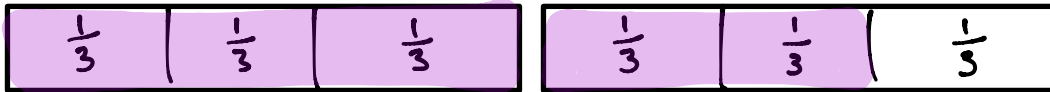
2. Estimate to draw and shade units on the fraction strips. Solve.

Sample:

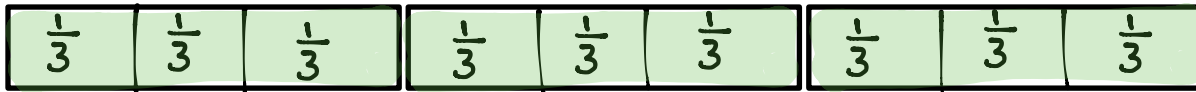
7 fourths = $\frac{7}{4}$



a. 5 thirds = $\frac{5}{3}$



b. 9 thirds = $\frac{9}{3}$



3. Reggie bought 2 candy bars. Draw the candy bars and estimate to partition each bar into 4 equal pieces.



a. Reggie ate 5 pieces. Shade the amount he ate.



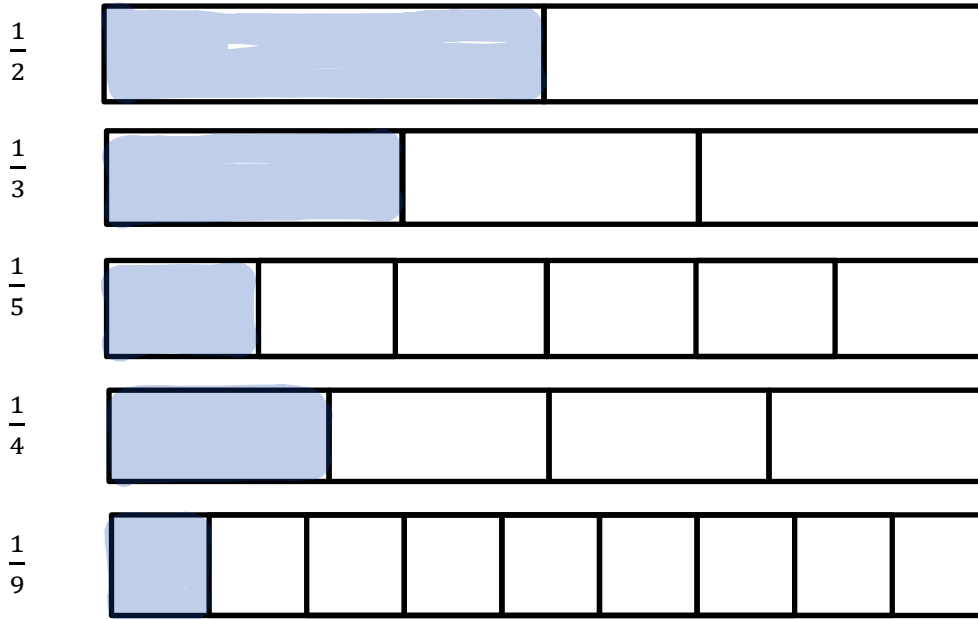
b. Write a fraction to show how many candy bars Reggie ate.

Reggie ate $\frac{5}{4}$ candy bars.

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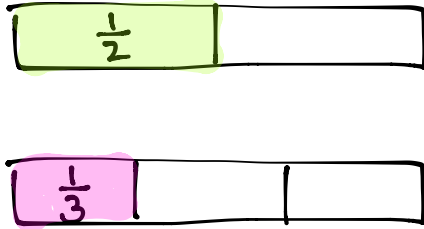
1. Each fraction strip is 1 whole. All the fraction strips are equal in length. Color one fractional unit in each strip. Then answer the questions below.



2. Circle *less than* or *greater than*. Whisper the complete sentence.

- | | | | | | |
|---------------------|--------------|---------------|---------------------|--------------|---------------|
| a. $\frac{1}{2}$ is | less than | $\frac{1}{3}$ | b. $\frac{1}{9}$ is | less than | $\frac{1}{2}$ |
| | greater than | | | greater than | |
| c. $\frac{1}{4}$ is | less than | $\frac{1}{2}$ | d. $\frac{1}{4}$ is | less than | $\frac{1}{9}$ |
| | greater than | | | greater than | |
| e. $\frac{1}{5}$ is | less than | $\frac{1}{3}$ | f. $\frac{1}{5}$ is | less than | $\frac{1}{4}$ |
| | greater than | | | greater than | |
| g. $\frac{1}{2}$ is | less than | $\frac{1}{5}$ | h. 6 fifths is | less than | 3 thirds |
| | greater than | | | greater than | |

3. After his football game, Malik drinks $\frac{1}{2}$ liter of water and $\frac{1}{3}$ liter of juice. Did Malik drink more water or juice? Draw and estimate to partition. Explain your answer.



Malik drank more water, because $\frac{1}{2}$ is bigger than $\frac{1}{3}$.

4. Compare unit fractions and write $>$, $<$, or $=$.

- a. 1 fourth $>$ 1 eighth
 b. 1 seventh $<$ 1 fifth
 c. 1 eighth $=$ $\frac{1}{8}$
 d. 1 twelfth $<$ $\frac{1}{10}$
 e. $\frac{1}{15}$ $<$ 1 thirteenth
 f. 3 thirds $=$ 1 whole

5. Write a word problem using comparing fractions for your friends to solve. Be sure to show the solution so that your friends can check their work.

ANSWERS WILL VARY. Here is an example...

In one minute Cherise ran $\frac{1}{3}$ of a mile while Alicia ran $\frac{1}{5}$ of a mile. Who ran further?

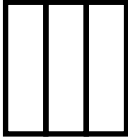
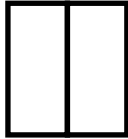
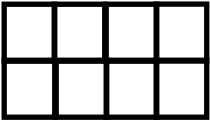
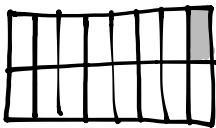
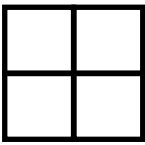
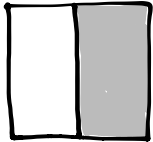
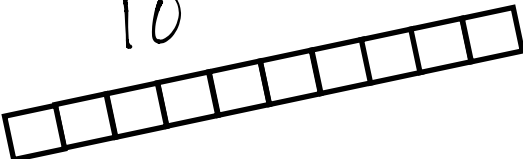
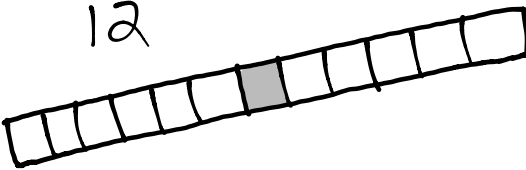
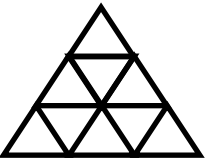
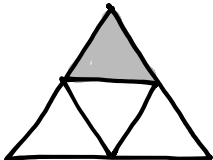


ANSWER: Cherise ran further.

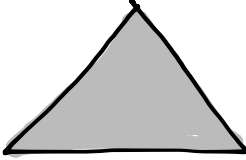
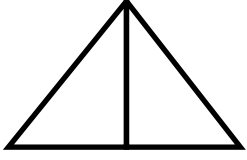
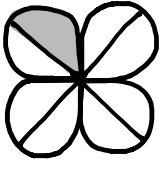
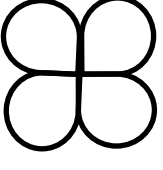
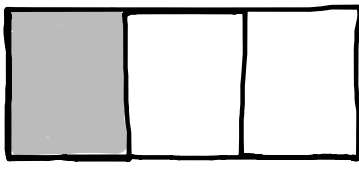
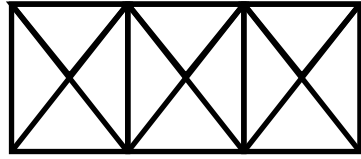
Name _____

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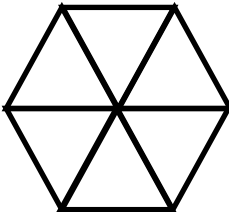
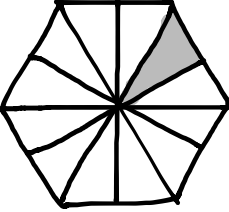
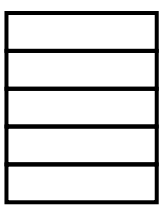
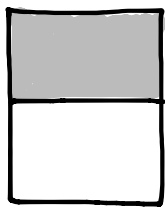
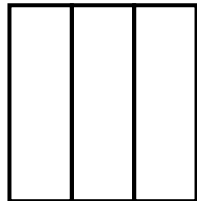
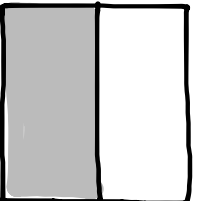
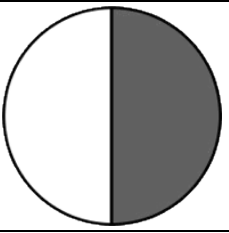
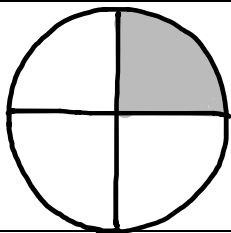
Label the unit fraction. In each blank draw and label the same whole with a shaded unit fraction that makes the sentence true. There is more than 1 correct way to make the sentence true.

| | | |
|----------------------------------------------------------------------------------------------------------------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------|
| <p>Sample:</p> <p>$\frac{1}{3}$</p>  | <p>is less than</p> | <p>$\frac{1}{2}$</p>  |
| <p>1.</p> <p>$\frac{1}{8}$</p>  | <p>is greater than</p> |  <p>$\frac{1}{16}$</p> |
| <p>2.</p> <p>$\frac{1}{4}$</p>  | <p>is less than</p> |  <p>$\frac{1}{2}$</p> |
| <p>3.</p> <p>$\frac{1}{10}$</p>  | <p>is greater than</p> | <p>$\frac{1}{12}$</p>  |
| <p>4.</p> <p>$\frac{1}{9}$</p>  | <p>is less than</p> | <p>$\frac{1}{4}$</p>  |

ANSWERS WILL VARY

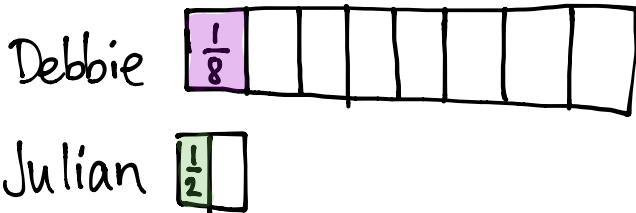
| | | |
|-----------------------------------------------------------------------------------------------------------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------|
| <p>5.</p>  <p>$\frac{1}{1}$</p> | <p>is greater than</p> |  <p>$\frac{1}{2}$</p> |
| <p>6.</p>  <p>$\frac{1}{8}$</p> | <p>is less than</p> |  <p>$\frac{1}{4}$</p> |
| <p>7.</p> <p>$\frac{1}{3}$</p>  | <p>is greater than</p> |  <p>$\frac{1}{12}$</p> |

8. Fill in the blank with a fraction to make the statement true and draw a matching model.

| | | | |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |
| <p>$\frac{1}{6}$</p> | <p>is greater than</p> | <p>$\frac{1}{5}$</p> | <p>is less than</p> |
|  |  |  |  |
| <p>$\frac{1}{3}$</p> | <p>is less than</p> | <p>$\frac{1}{2}$</p> | <p>is greater than</p> |

9. Debbie ate $\frac{1}{8}$ of a large brownie. Julian ate $\frac{1}{2}$ of a small brownie. Julian says, "I ate more brownies than you because $\frac{1}{2} > \frac{1}{8}$."

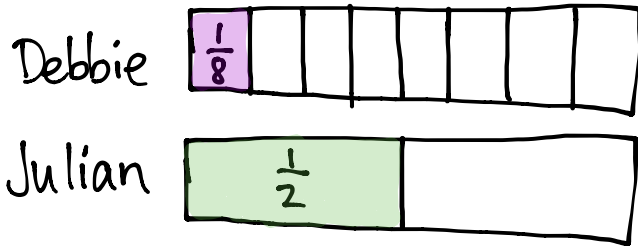
a. Use pictures and words to explain Julian's mistake.



If Debbie's brownie is big enough, her $\frac{1}{8}$ brownie will be bigger than Julian's $\frac{1}{2}$ of a small brownie.

b. How could you change the problem so that Julian is correct? Use pictures and words to explain.

If Debbie and Julian started with identical brownies, then Julian's statement would be correct.



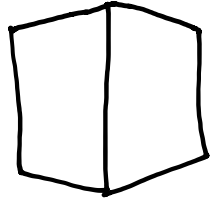
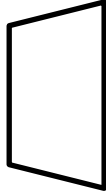
$$\frac{1}{2} > \frac{1}{8}$$

NOTE: Answers will vary based on how students arrange the pieces in the 1 whole, but the area should match the answer key.

Name _____ Date _____

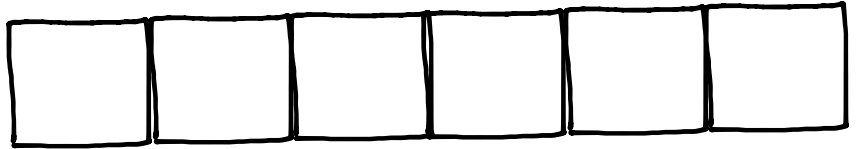
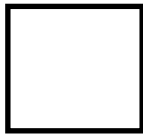
Each shape represents the given unit fraction. Estimate to draw the whole.

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



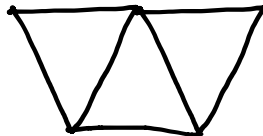
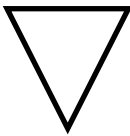
= 1 whole

2. $\frac{1}{6}$



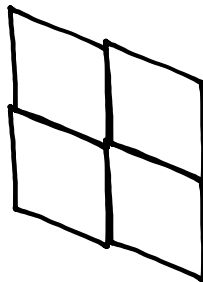
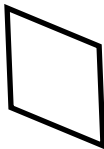
= 1 whole

3. 1 third



= 1 whole

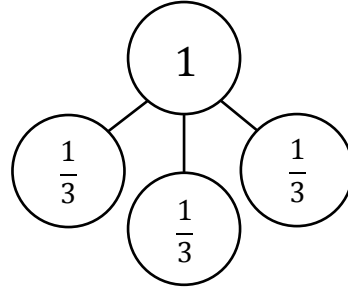
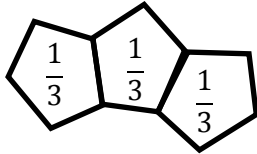
4. 1 fourth



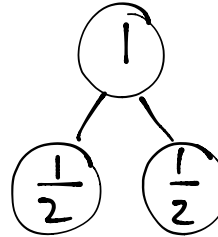
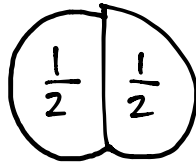
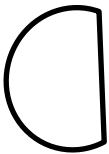
= 1 whole

Each shape represents the given unit fraction. Estimate to draw the corresponding whole, label the unit fractions, then write a number bond that matches the drawing. The first one is done for you.

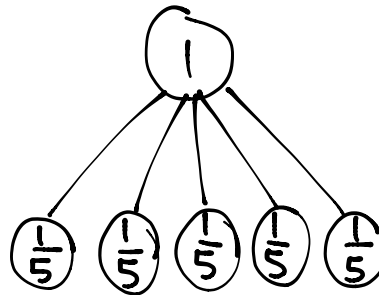
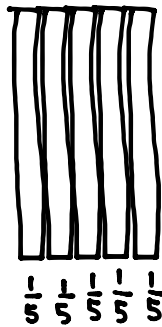
5. $\frac{1}{3}$



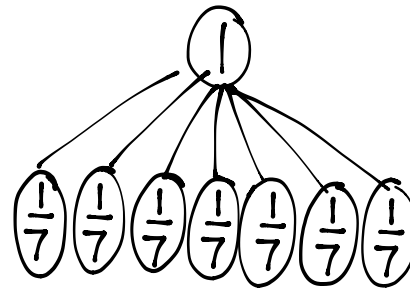
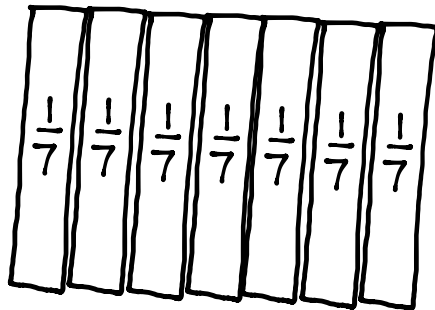
6. $\frac{1}{2}$




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



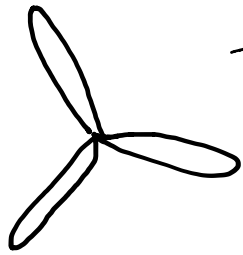
8. $\frac{1}{7}$



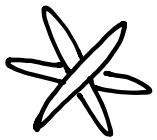
9. Evan and Yong used this shape , representing the unit fraction $\frac{1}{3}$, to draw 1 whole. Shania thinks both of them did it correctly. Do you agree with her? Explain.



ANSWERS WILL VARY. Here is one possible opinion...



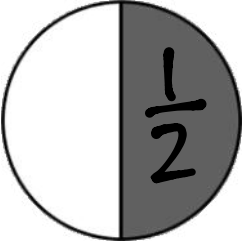
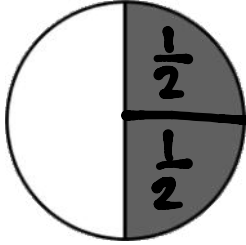
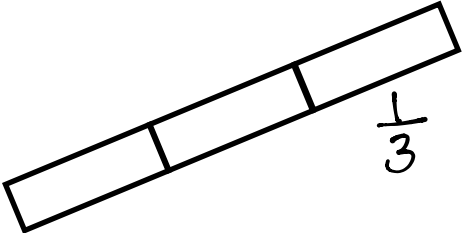
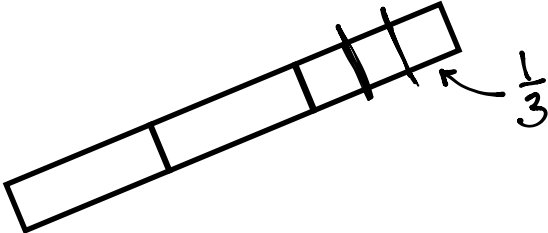
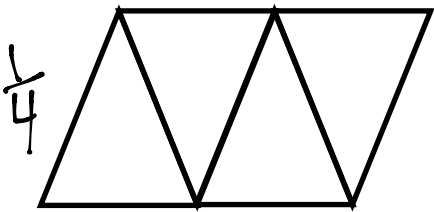
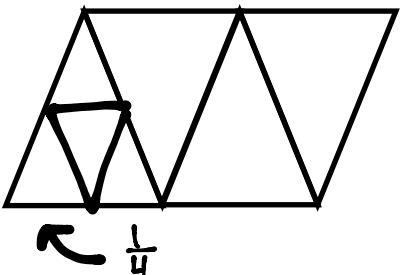
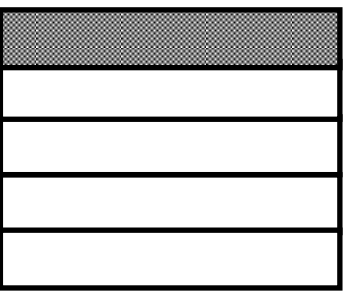
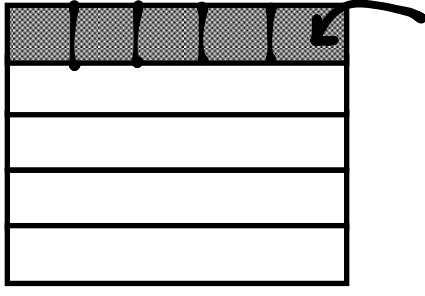
This figure accurately represents 1 whole because the three identical pieces do not overlap.



This figure does not represent 1 whole because the pieces overlap.

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| The shape represents 1 whole. Write a fraction to describe the shaded part. | The shaded part represents 1 whole. Divide 1 whole to show the same unit fraction you wrote in A. |
|------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| <p>1A.</p>  | <p>B.</p>  |
| <p>2A.</p>  | <p>B.</p>  |
| <p>3A.</p>  | <p>B.</p>  |
| <p>4A.</p>  | <p>B.</p>  |

5. Use the pictures below to complete the following statements.



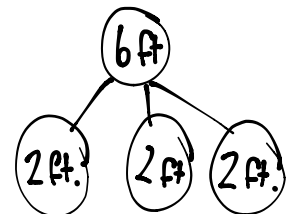
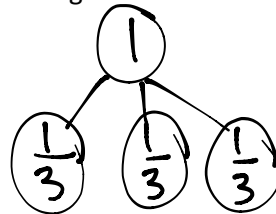
a. Rack B is about $\frac{1}{2}$ the length of Towel Rack C.

b. Rack A is about $\frac{1}{3}$ the length of Towel Rack C.

c. If Towel Rack C measures 6 ft. long, then Towel Rack B is about 3 ft. long and Towel Rack A is about 2 ft. long.

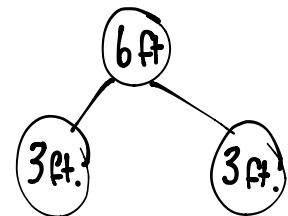
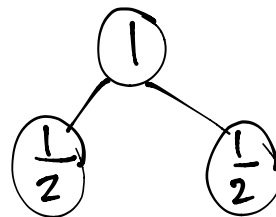
d. About how many copies of Towel Rack A equal the length of Towel Rack C? Write number bonds to help you.

3 copies of Rack A equals the length of Rack C.



e. About how many copies of Towel Rack B equal the length of Towel Rack C? Write out number bonds to help you.

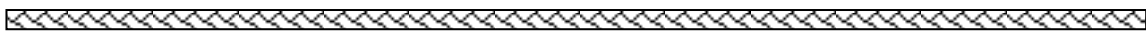
2 copies of Rack B equals the length of Rack C.

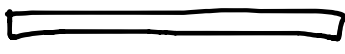


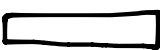
6. Draw 4 strings, A, B, C, and D by following the directions below. String A is already done for you.

- String B is $\frac{1}{3}$ of String A.
- String C is $\frac{1}{2}$ of String B.
- String D is $\frac{1}{3}$ of String C.

BONUS: String E is 5 times the length of String D.

String A 

B 

C 

D 

E 

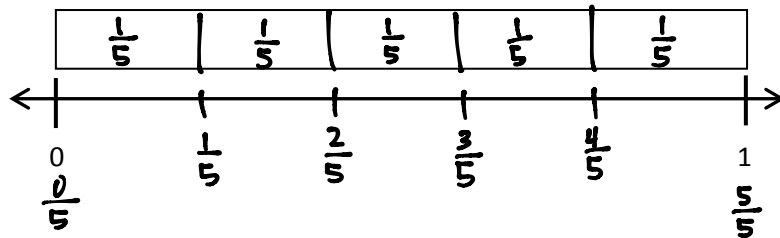
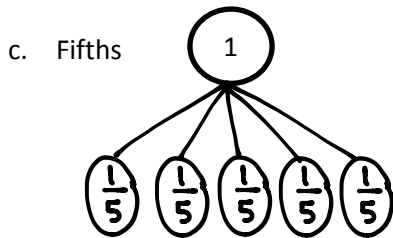
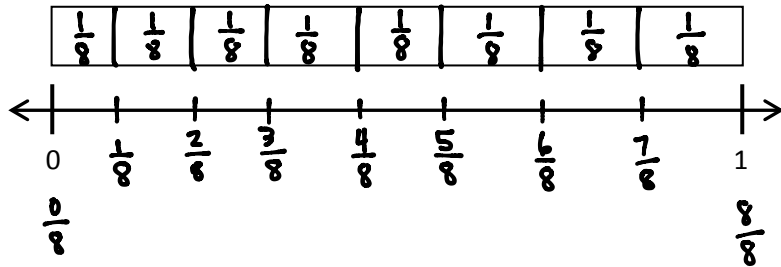
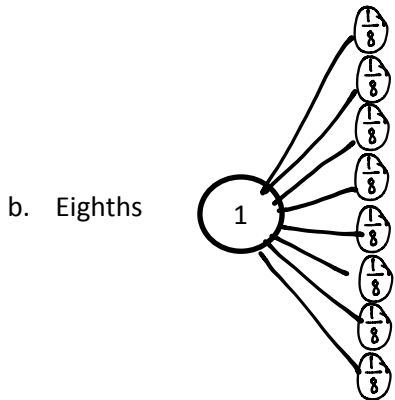
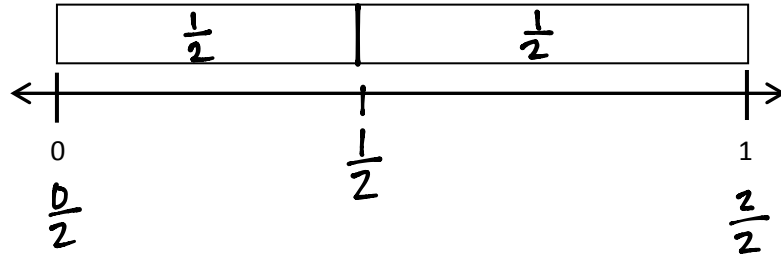
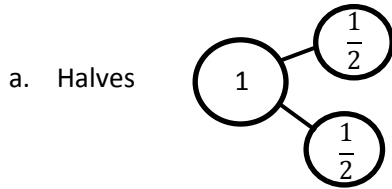
E should be $\frac{5}{6}$ as long as B.

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1. Write number bonds. Partition the fraction strip to show the unit fractions of the number bond. Use the fraction strip to help you label the unit fractions on the number line. Include 0 unit fractions.

Sample:



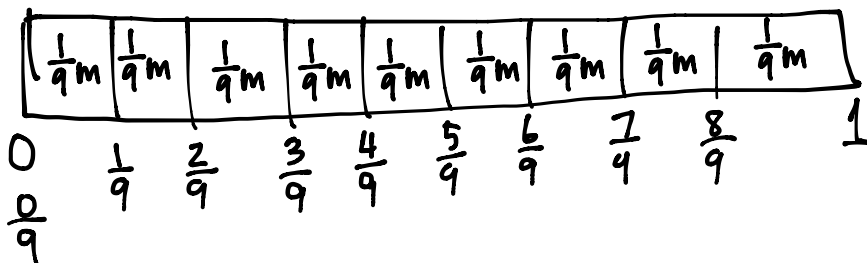
7

2. Carter needs to wrap ~~8~~ presents. He lays the ribbon out flat and says, "If I make 6 equally spaced cuts, I'll have just enough pieces. I can use 1 piece for each package, and I won't have any pieces left over." Does he have enough pieces to wrap all the presents?



Six cuts will create seven lengths of ribbon. Carter will have enough to wrap the presents.

3. Mrs. Rivera is planting flowers in her 1 meter long rectangular plant box. She divides the plant box into sections $\frac{1}{9}$ m in length, and plants 1 seed in each section. Draw and label a fraction strip representing the plant box from 0m to 1m. Represent each section where Mrs. Rivera will plant a seed. Label all the fractions.



- a. How many seeds will she be able to plant in 1 plant box?

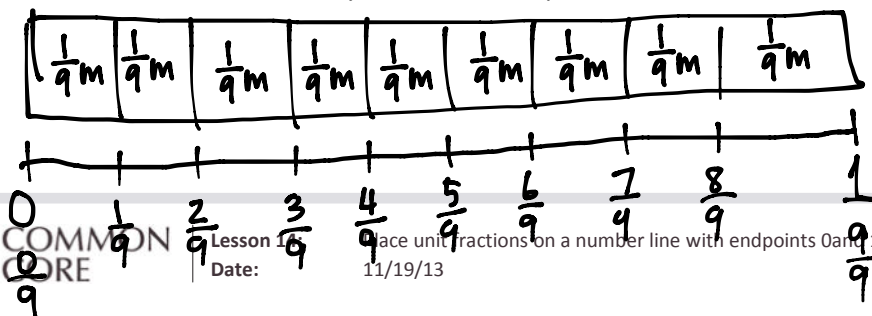
She will plant 9 seeds in 1 plant box.

- b. How many seeds will she be able to plant in 4 plant boxes?

$$9 \times 4 = 36$$

She will be able to plant 36 seeds in 4 plant boxes.

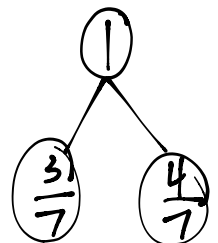
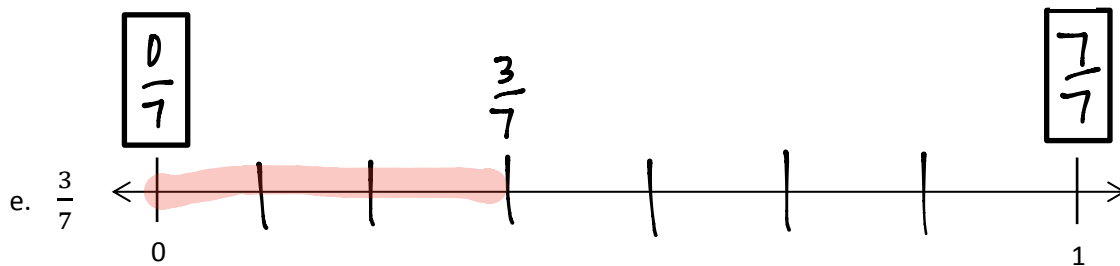
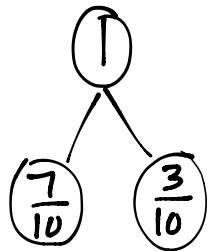
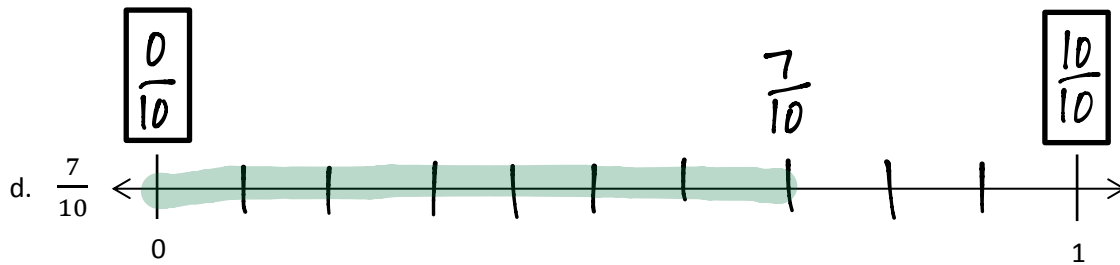
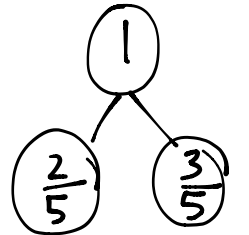
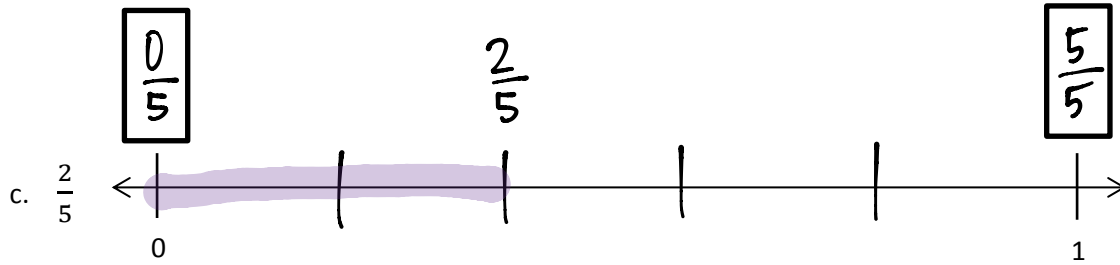
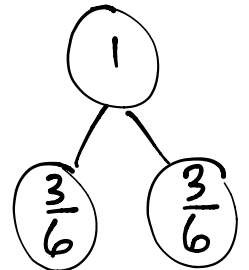
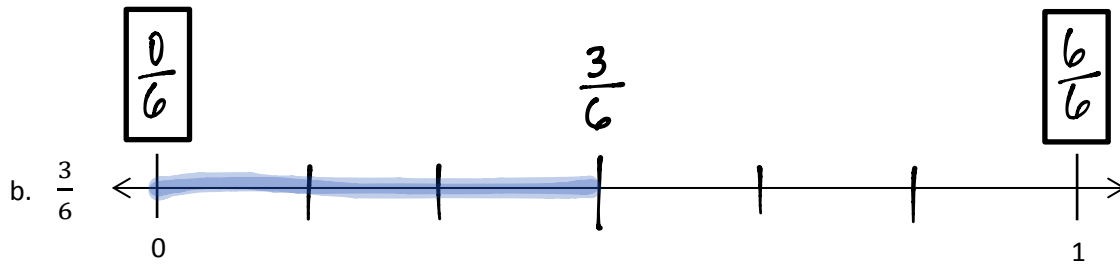
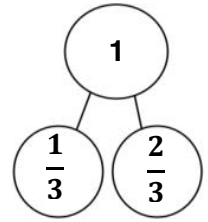
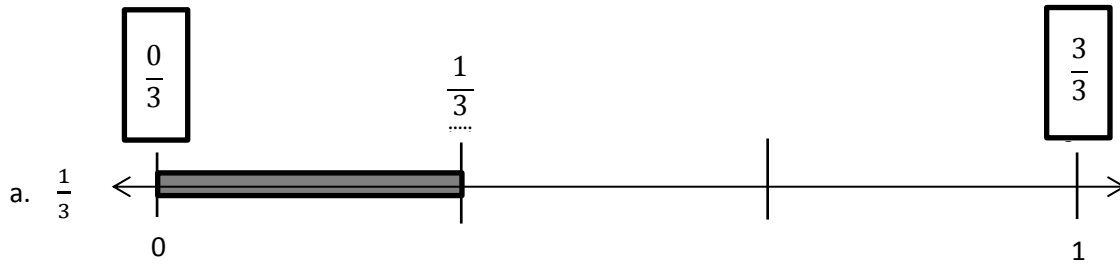
- c. Draw a number line below your fraction strip and mark all the fractions.



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1. Estimate to label the fractions on the number line from 0 to 1. The first one is done for you. Draw a number bond to match.



2. Henry has 5 dimes. Ben has 9 dimes. Tina has 2 dimes.

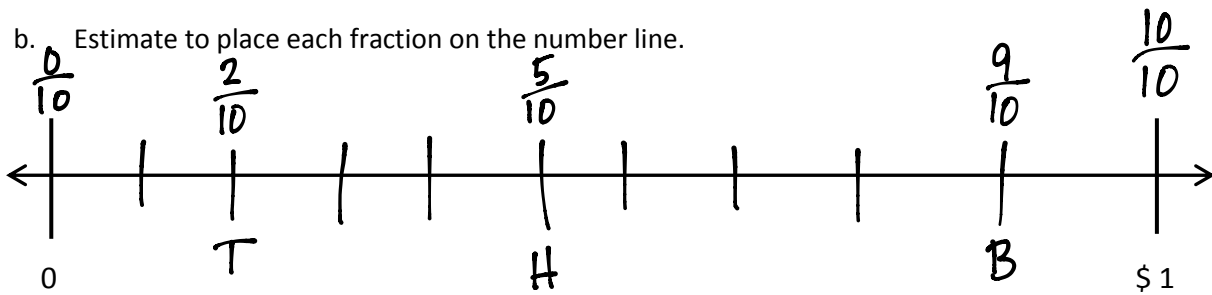
a. Write the value of each person's money as a fraction of a dollar:

Henry: $\frac{5}{10}$

Ben: $\frac{9}{10}$

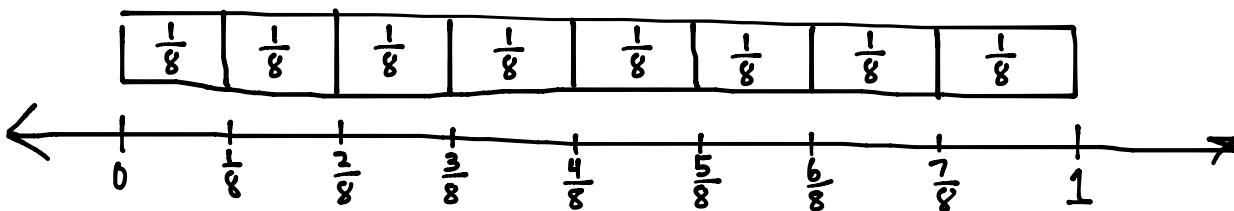
Tina: $\frac{2}{10}$

b. Estimate to place each fraction on the number line.



3. Draw a number line. Use a fraction strip to locate 0 and 1. Fold the strip to make 8 equal parts.

a. Use the strip to measure and label your number line with 8 unit fractions.

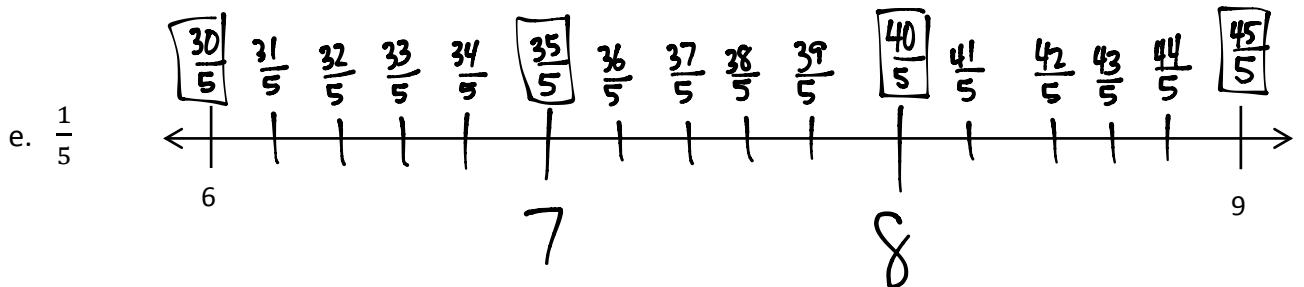
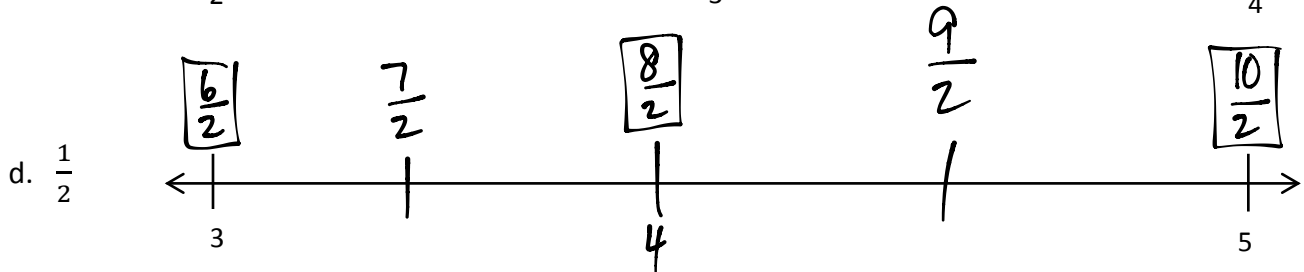
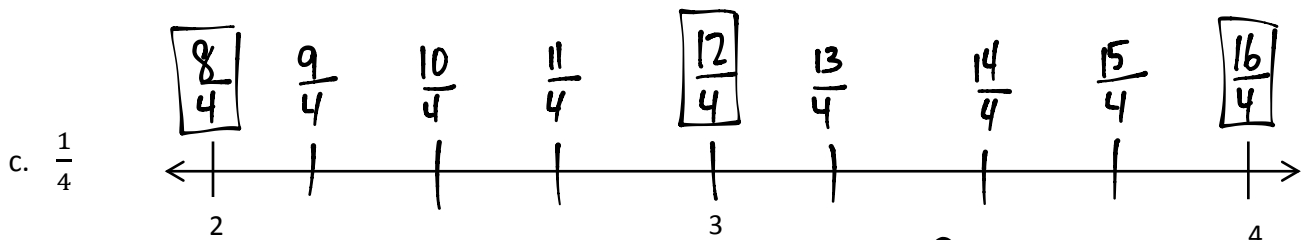
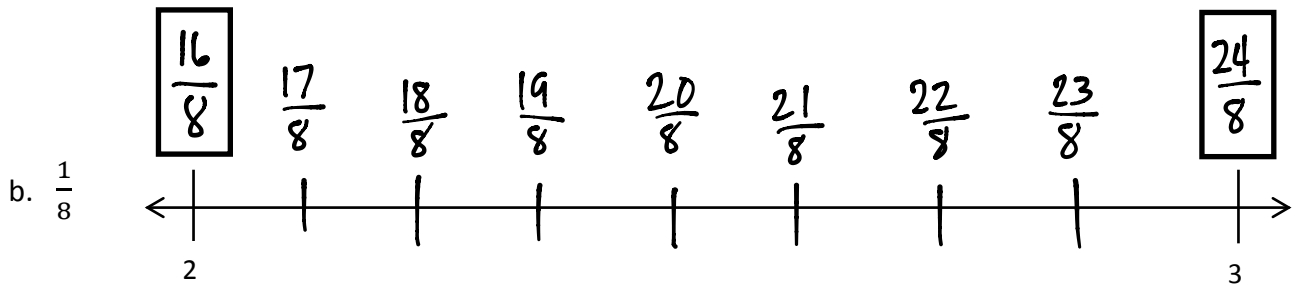
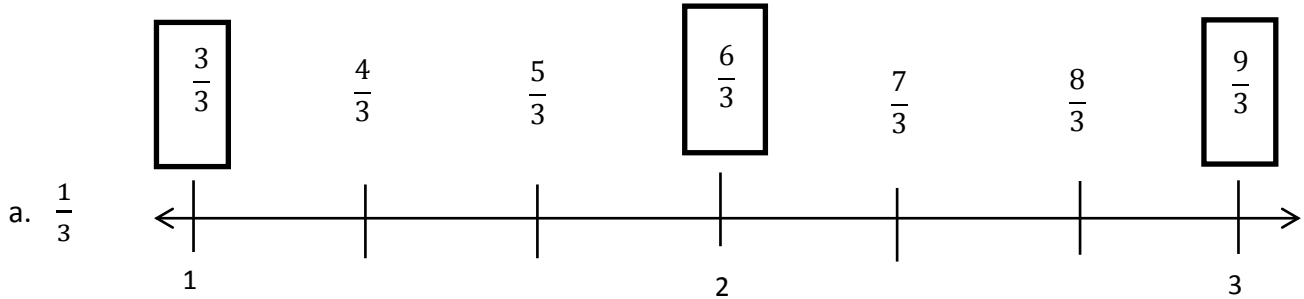


b. Count up from 0 eighths to 8 eighths on your number line. Touch each number with your finger as you count. ~~Write the number bonds that matches the drawing.~~

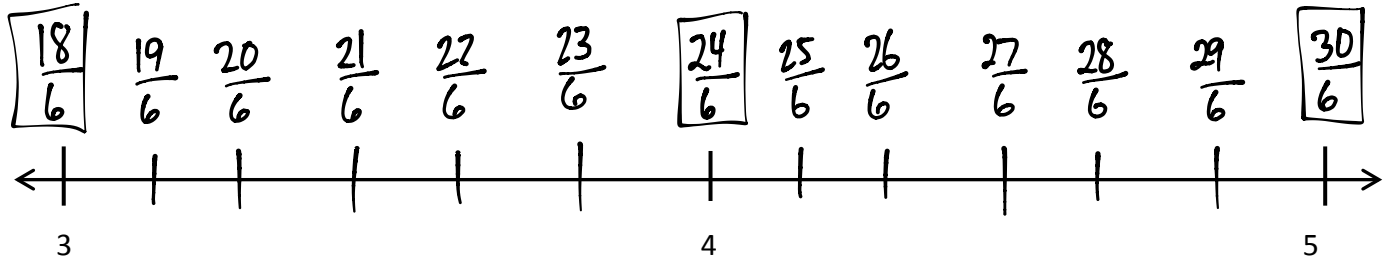
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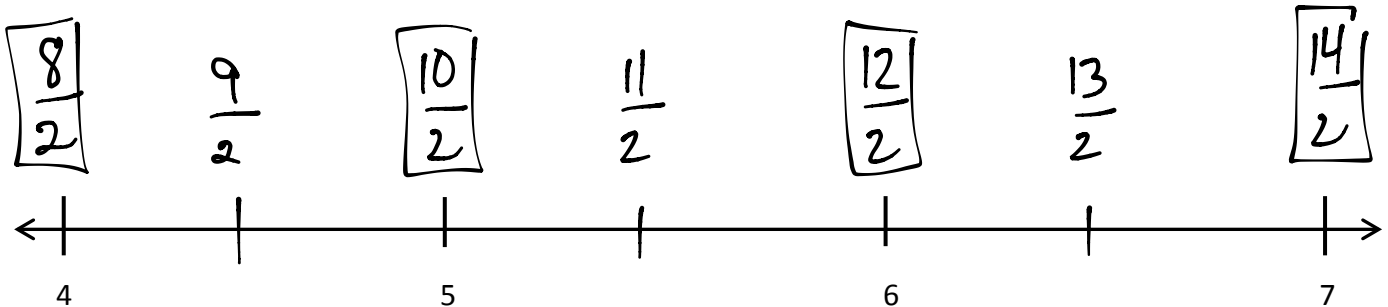
1. Estimate to equally partition and label the fractional units on the number line. Label the wholes as fractions and box them. The first one is done for you.



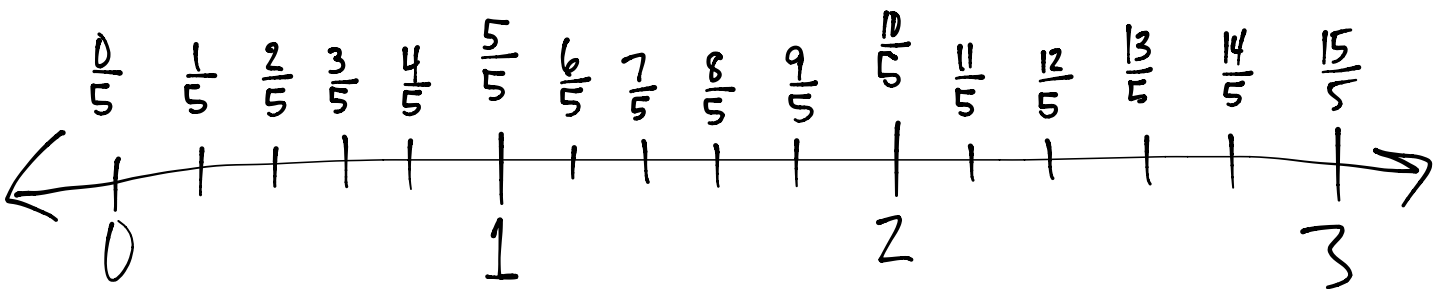
2. Partition each whole into 6 unit fractions. Label each fraction. Count up as you go. Box the whole numbers. Box the fractions that are located at the same points as whole numbers.



3. Partition each whole into 2 unit fractions. Label each fraction. Count up as you go. Box the fractions that are located at the same points as whole numbers.



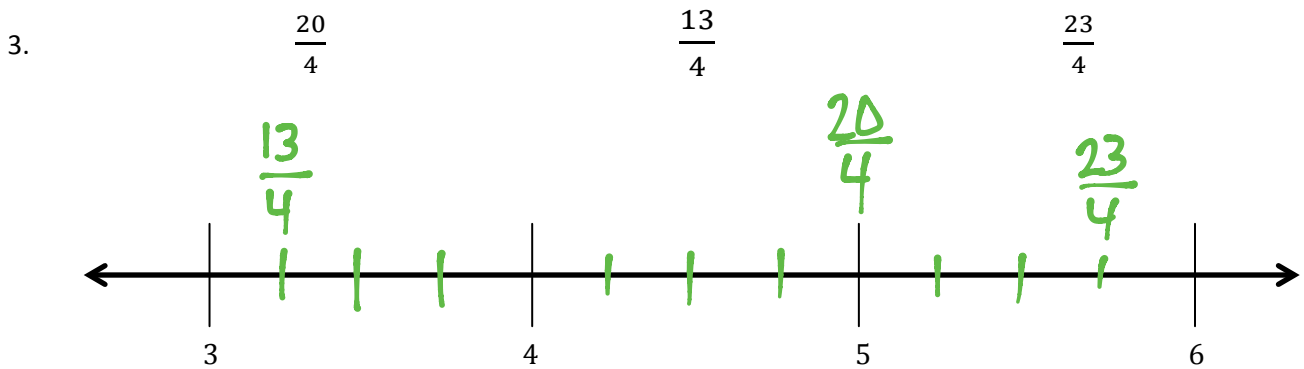
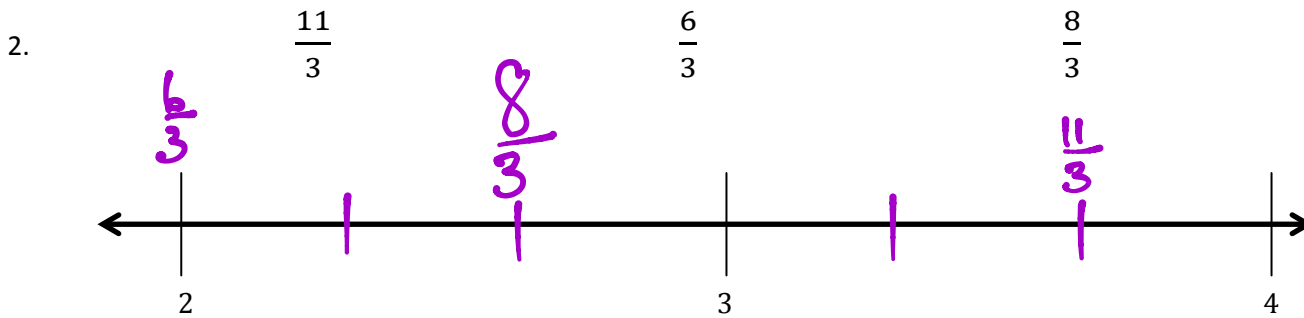
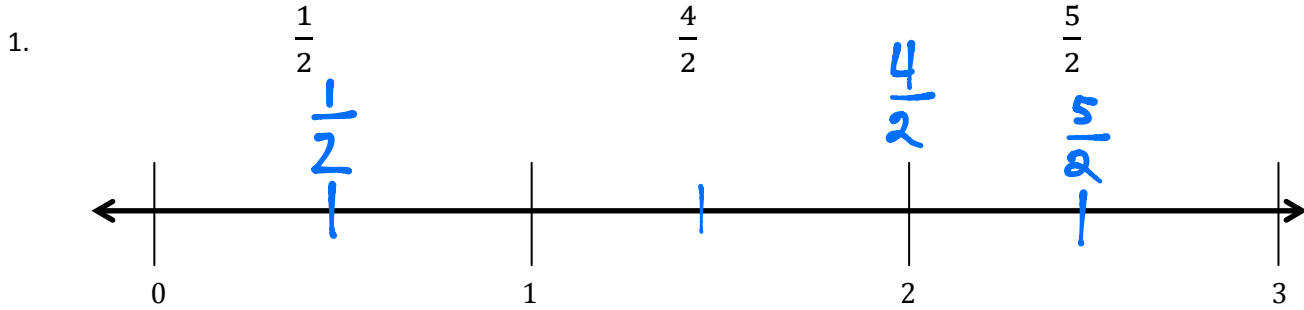
4. Draw a number line with endpoints 0 and 3. Label the wholes. Partition each whole into 5 unit fractions. Label all the fractions from 0 to 3. Use a separate paper if you need more space.



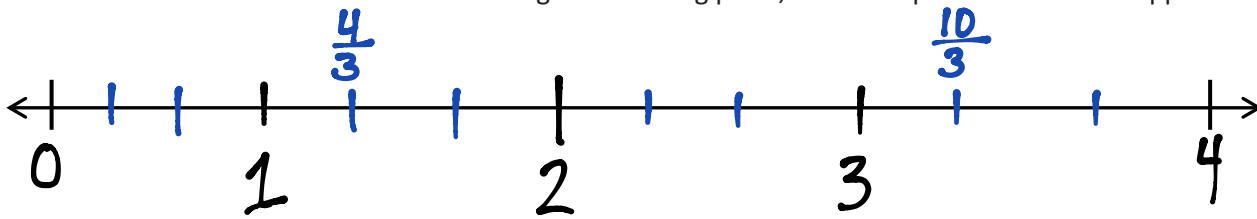
Name _____

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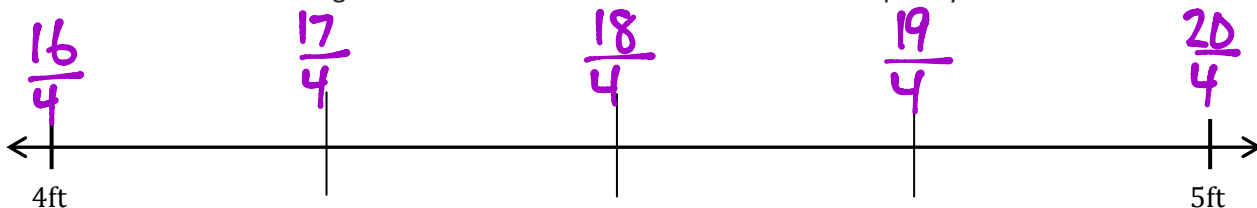
Locate and label the following fractions on the number lines.



4. Wayne went on a 4 km hike. He took a break at $\frac{4}{3}$ km. He took a drink of water at $\frac{10}{3}$ km. Show Wayne's hike on the number line. Include his starting and finishing place, and the 2 points where he stopped.



5. Ali wants to buy a piano. The piano measures $\frac{19}{4}$ ft. long. She has a space 5 ft. long for the piano in her house. Does she have enough room? Draw a number line to show and explain your answer.

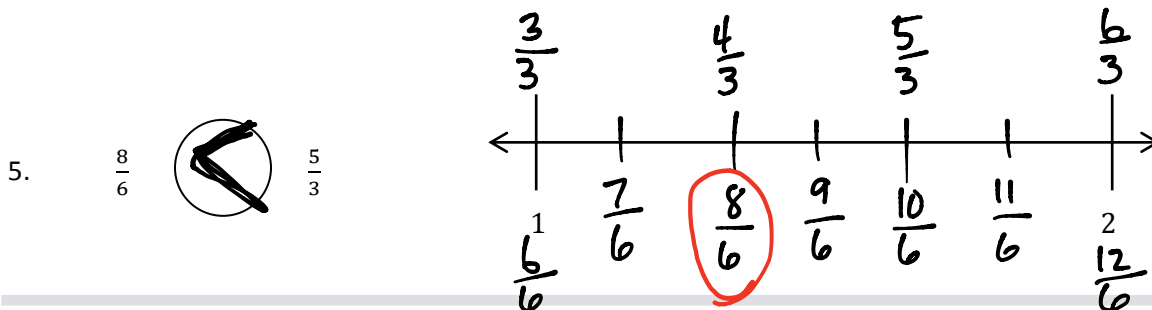
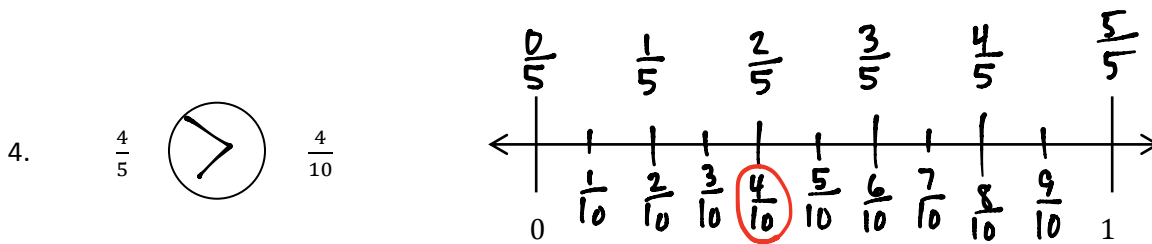
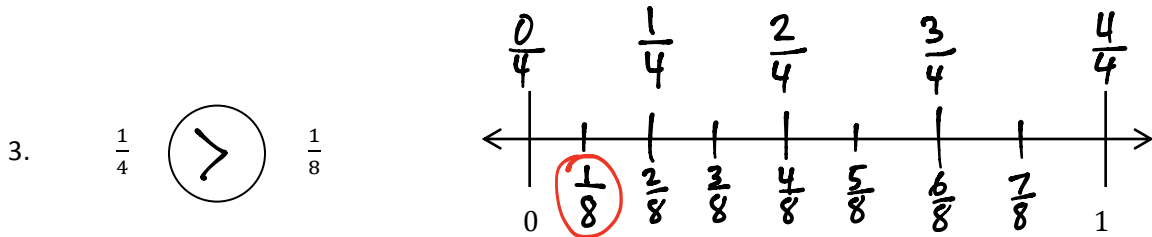
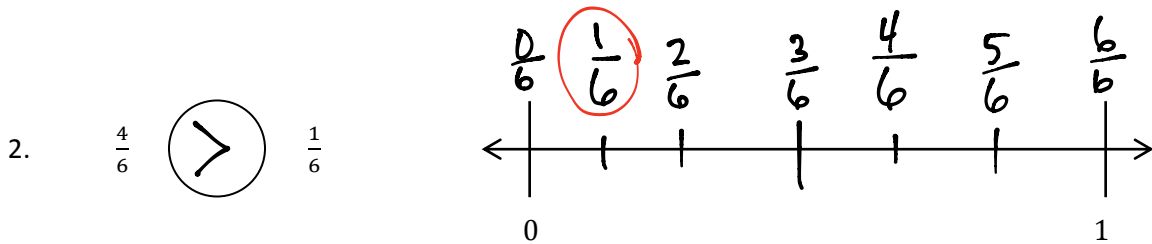
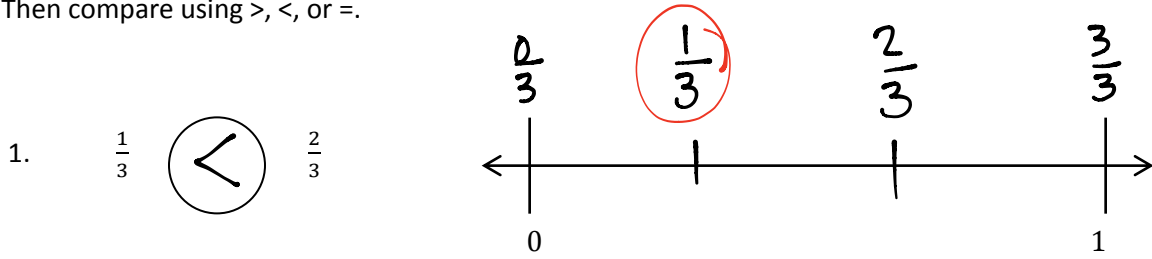


Yes, Ali has enough room. The space available is 5 feet long, which is $\frac{20}{4}$ ft. The piano is only $\frac{19}{4}$ ft long.

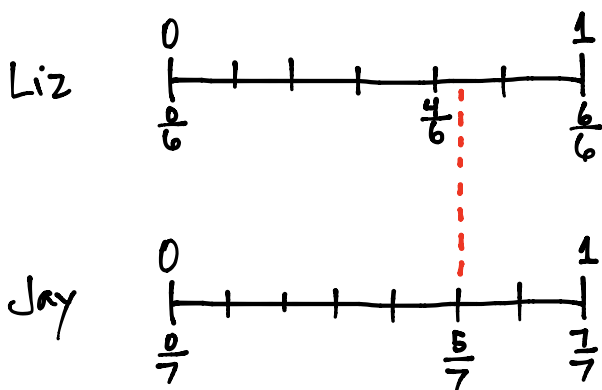
Name _____

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Directions: Place the two fractions on the number line. Circle the fraction with the distance closest to 0. Then compare using $>$, $<$, or $=$.

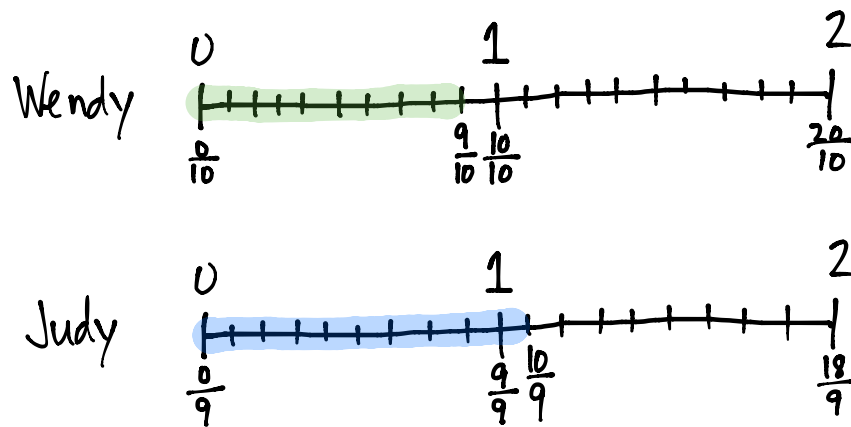


6. Liz and Jay each have a piece of string. Liz’s string is $\frac{4}{6}$ yard long, and Jay’s string is $\frac{5}{7}$ yard long. Whose string is longer? Draw a number line to model the length of both strings. Explain the comparison using pictures, numbers, and words.



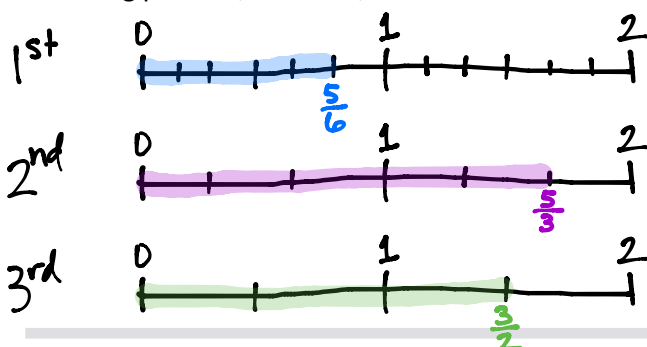
Sixths are larger than sevenths.
 Liz needs two "larger" pieces to complete the whole. Jay needs two "smaller" pieces to complete the whole. Therefore Jay's string is longer.

7. In a long jump competition, Wendy jumped $\frac{9}{10}$ meter and Judy jumped $\frac{10}{9}$ meters. Draw a number line to model the distance of each girl's long jump. Who jumped the shorter distance? Explain how you know using pictures, numbers, and words.



Using 1 as a benchmark, $\frac{9}{10}$ is less than 1 and $\frac{10}{9}$ is more than 1. This means Wendy jumped the shorter distance.

8. Nikki has 3 pieces of yarn. The first piece is $\frac{5}{6}$ feet long, the second piece is $\frac{3}{2}$ feet long, and the third piece is $\frac{3}{2}$ feet long. She wants to arrange them from the shortest to the longest. Draw a number line to model the length of each piece of yarn. Write a number sentence using $<$, $>$, or $=$ to compare the pieces. Explain using pictures, numbers, and words.



Shortest \longleftrightarrow Longest
 $\frac{5}{6}$, $\frac{3}{2}$, $\frac{5}{3}$

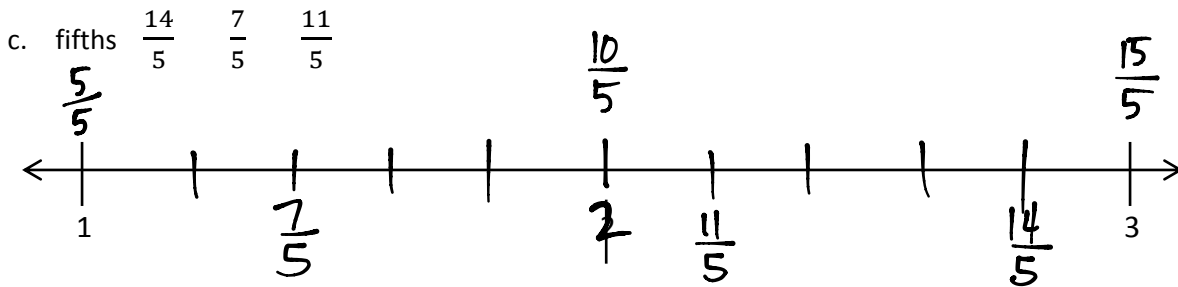
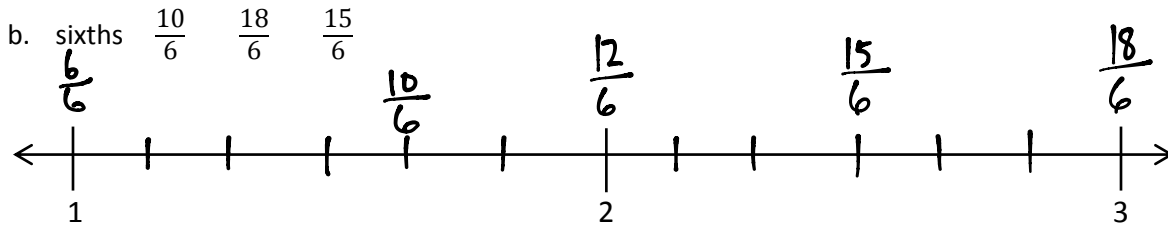
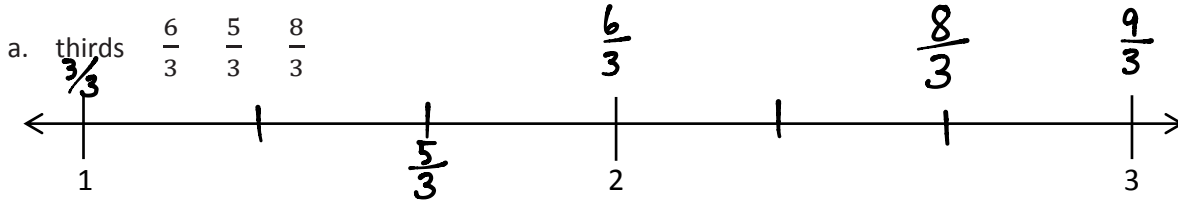
$\frac{5}{6} < \frac{3}{2}$ and $\frac{3}{2} < \frac{5}{3}$

Others are also possible.

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1. Divide each number line into the given unit fractions. Then place the fractions. Write each whole as a fraction.



2. Use the number lines above to compare the following fractions using $>$, $<$, or $=$.

$$\frac{17}{6} > \frac{15}{6}$$

$$\frac{7}{3} < \frac{9}{3}$$

$$\frac{11}{5} > \frac{8}{5}$$

$$\frac{4}{3} = \frac{8}{6}$$

$$\frac{13}{6} < \frac{8}{3}$$

$$\frac{11}{6} > \frac{5}{3}$$

$$\frac{10}{6} > \frac{3}{3}$$

$$\frac{6}{3} = \frac{12}{6}$$

$$\frac{15}{5} > \frac{5}{3}$$

Answers will vary for #3, #4, and #5.

3. Use fractions from the number lines in Problem 1. Complete the sentence. Use a words, pictures, or numbers to explain how you made that comparison.

$\frac{8}{3}$ is greater than $\frac{5}{3}$.

$\frac{8}{3}$ is greater than $\frac{5}{3}$ because it is further to the right on the number line.

4. Use fractions from the number lines in Problem 1. Complete the sentence. Use a words, pictures, or numbers to explain how you made that comparison.

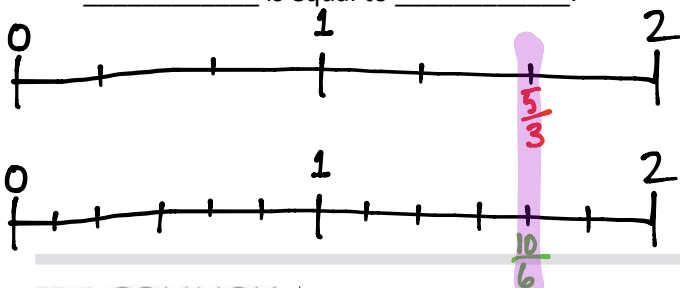
$\frac{10}{6}$ is less than $\frac{15}{6}$.

Since $\frac{12}{6} = 2$, we know that $\frac{10}{6}$ is less than 2 and $\frac{15}{6}$ is greater than 2. So, $\frac{10}{6}$ must be less than $\frac{15}{6}$.

5. Use fractions from the number lines in Problem 1. Complete the sentence. Use a words, pictures, or numbers to explain how you made that comparison.

$\frac{5}{3}$ is equal to $\frac{10}{6}$.

$\frac{5}{3}$ is equal to $\frac{10}{6}$ because they occupy the same location on the number line.



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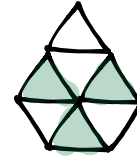
1. What fraction of the figure is shaded? Draw 2 different representations of the same fractional amount.



$\frac{3}{7}$ is shaded



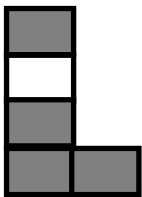
$\frac{3}{7}$



$\frac{3}{7}$

2.

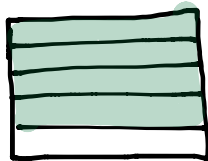
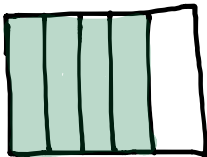
a. These two shapes both show $\frac{4}{5}$. Are they equivalent? Why or why not?



Although each figure is $\frac{4}{5}$ shaded, they are not equivalent because their

"1 whole" is different from each other.

b. Draw two different representations of $\frac{4}{5}$ that are equivalent.



Note: The important thing is that the two figures representing 1 whole must be identical.

Answers will vary

3. Diana ran a quarter mile straight down the street. Becky ran a quarter mile on a track. Who ran more? Explain your thinking.

Diana _____

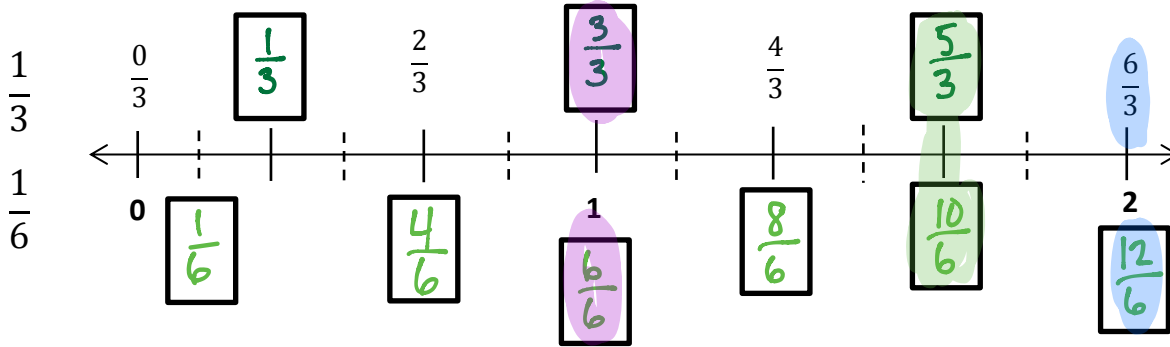
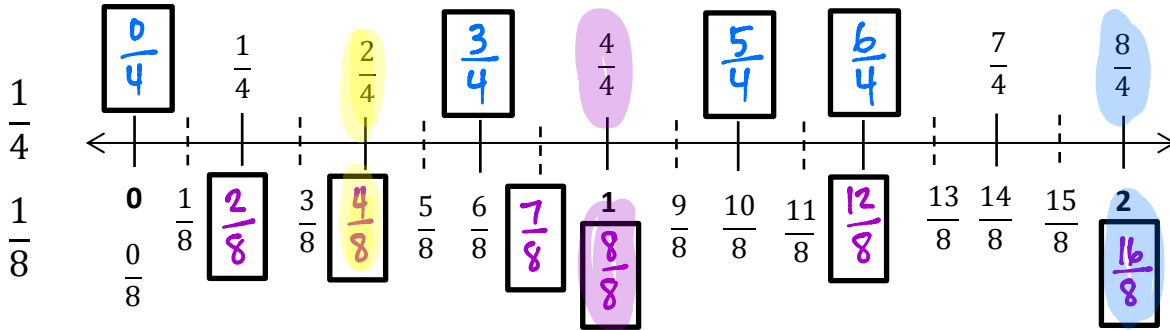
Becky 

They ran the same distance. IF we straightened Becky's path, it would be the same length as Diana's.

Name _____

Date _____

1. Use the unit fractions on the right to count up on the number line. Label the missing fractions.



2. Use the number lines above to:
- Color fractions equal to 1 purple.
 - Color fractions equal to 2 fourths yellow.
 - Color fractions equal to 2 blue.
 - Color fractions equal to 5 thirds green.
 - Write a pair of fractions that are equivalent.

Answers will vary

$$\frac{3}{4} = \frac{6}{8}$$

3. Use the number lines on the previous page to make the number sentences true.

$$\frac{1}{4} = \frac{2}{8}$$

$$\frac{6}{4} = \frac{12}{8}$$

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

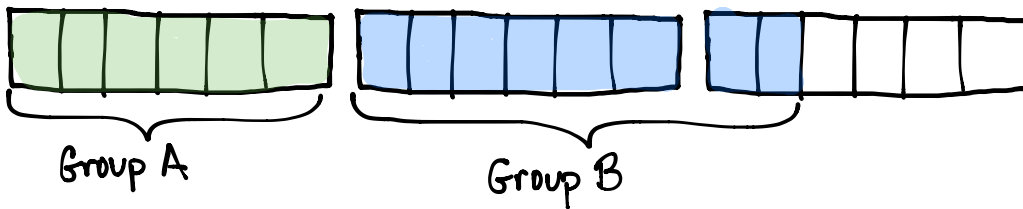
$$\frac{6}{3} = \frac{12}{6}$$

$$\frac{3}{3} = \frac{6}{6}$$

$$2 = \frac{8}{4} = \frac{16}{8}$$

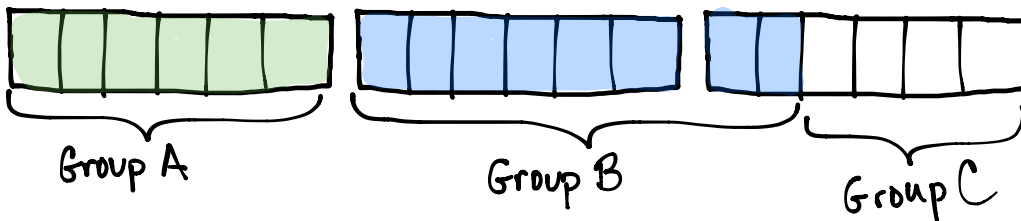
4. Mr. Fairfax ordered 3 large pizzas for a class party. Group A ate $\frac{6}{6}$ of the first pizza, and Group B ate $\frac{8}{6}$ of the second pizza. During the party, the class discussed which group ate more pizzas.

a. Did group A or B eat more pizza? Use words and pictures to explain your answer to the class.



Group B ate $\frac{2}{6}$ more pizza than Group A.

b. Later Group C ate all remaining slices of pizza. What fraction of the pizza did group C eat? Use words and pictures to explain your answer.

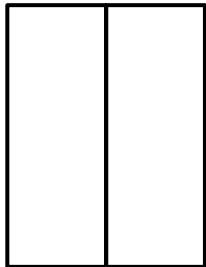
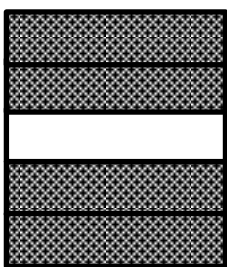
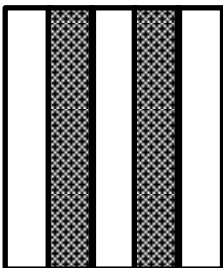
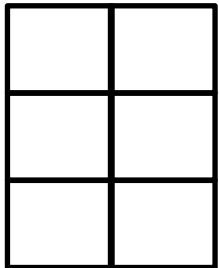
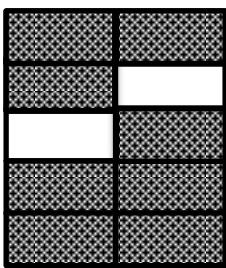
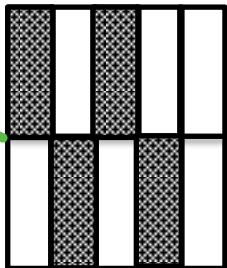
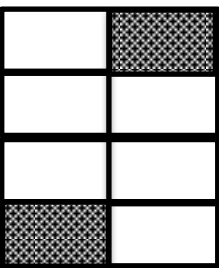
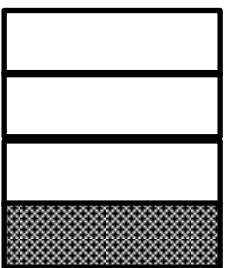


Group C ate the remaining $\frac{4}{6}$ of a pizza.

Name _____

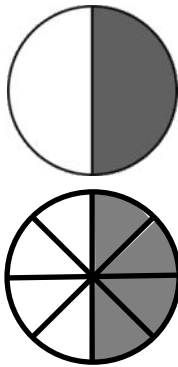
Date _____

1. Write what fraction of the figure is shaded in the blanks then match the equivalent fractions.

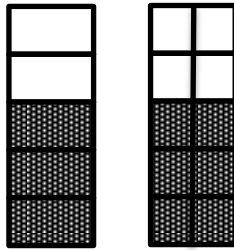
| | | | |
|----------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------|
| $\frac{1}{2}$ |  |  | $\frac{4}{5}$ |
| $\frac{2}{5}$ |  |  | $\frac{3}{6}$ |
| $\frac{8}{10}$ |  |  | $\frac{4}{10}$ |
| $\frac{2}{8}$ |  |  | $\frac{1}{4}$ |

Handwritten connections: A red line connects $\frac{1}{2}$ to $\frac{4}{10}$. A blue line connects $\frac{4}{5}$ to $\frac{8}{10}$. A green line connects $\frac{2}{5}$ to $\frac{4}{10}$. A purple line connects $\frac{2}{8}$ to $\frac{1}{4}$.

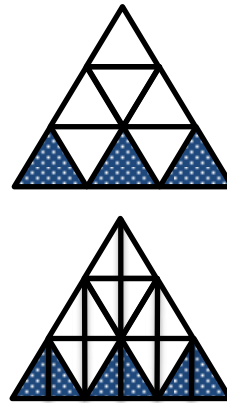
2. Complete the fractions to make true statements.



$$\frac{1}{2} = \frac{4}{8}$$

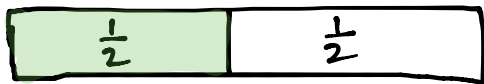
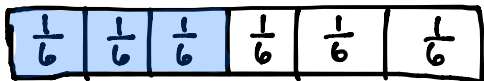


$$\frac{3}{5} = \frac{6}{10}$$



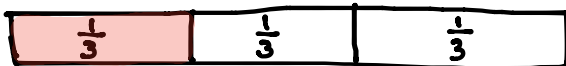
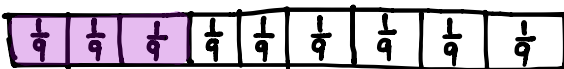
$$\frac{3}{9} = \frac{12}{36}$$

3. Why does it take 3 copies of $\frac{1}{6}$ to show the same amount as 1 copy of $\frac{1}{2}$? Explain your answer in words and pictures.



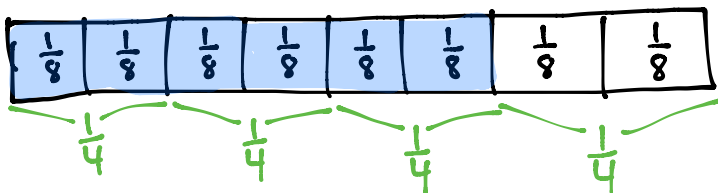
The two tape diagrams show that 3 copies of $\frac{1}{6}$ is the same length as 1 copy of $\frac{1}{2}$.

4. How many ninths does it take to make the same amount as $\frac{1}{3}$? Explain your answer in words and pictures.



The tape diagrams show that 3 ninths is the same amount as 1 third.

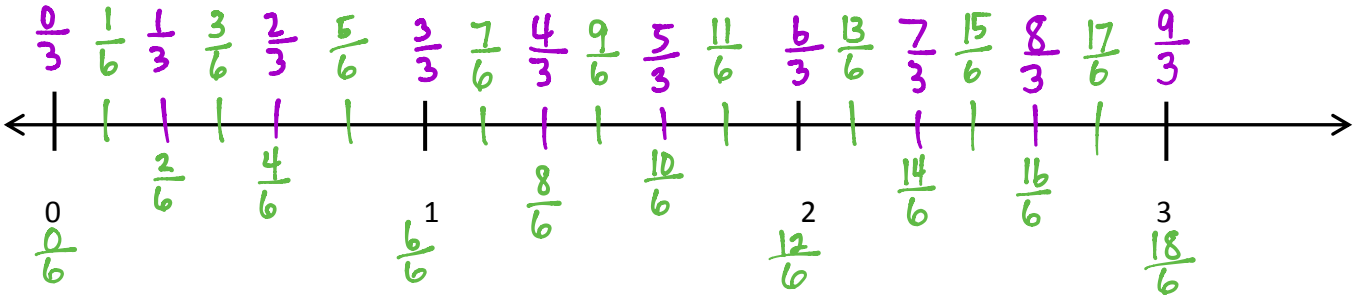
5. A pie was cut into 8 slices equally. If Ruben ate $\frac{3}{4}$ of the pie, how many slices did he eat? Write the answer in eighths. Explain your answer using a number line and words.



$\frac{3}{4}$ is the same amount as $\frac{6}{8}$.
Ruben ate 6 slices, which is $\frac{6}{8}$.

Name _____

Date _____



- On the number line above, use a colored pencil to divide each whole into 3 unit fractions and label each one above the line.
- On the number line above, use a different colored pencil to divide each whole into 6 unit fractions and label each one.
- Write the fractions that name the same place on the number line below.

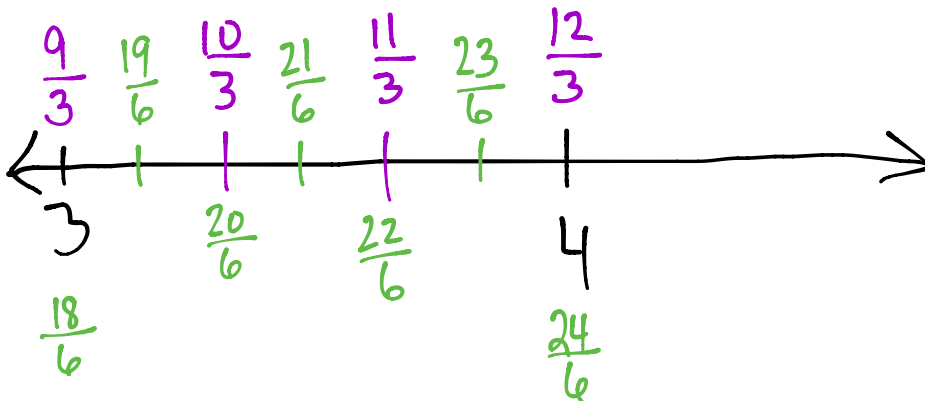
$$\frac{0}{3} = \frac{0}{6}, \frac{1}{3} = \frac{2}{6}, \frac{2}{3} = \frac{4}{6}, \frac{3}{3} = \frac{6}{6}, \frac{4}{3} = \frac{8}{6}, \frac{5}{3} = \frac{10}{6}, \frac{6}{3} = \frac{12}{6}, \frac{7}{3} = \frac{14}{6}$$

$$\frac{8}{3} = \frac{16}{6}, \frac{9}{3} = \frac{18}{6}$$

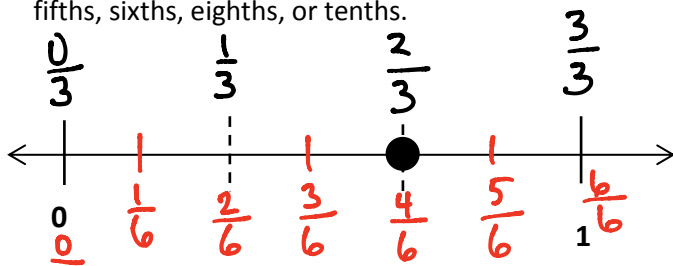
- Using your number line to help, name the fraction equivalent to $\frac{20}{6}$. Name the fraction equivalent to $\frac{12}{3}$. Draw the part of the number line that would include these fractions below and label it.

$$\frac{20}{6} = \frac{10}{3}$$

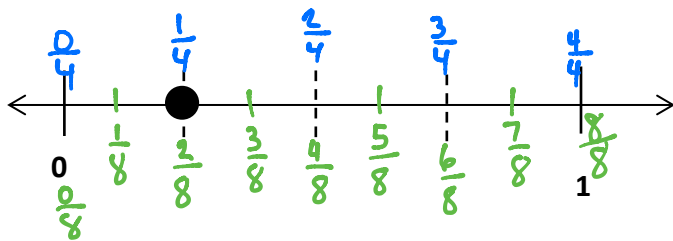
$$\frac{12}{3} = \frac{24}{6}$$



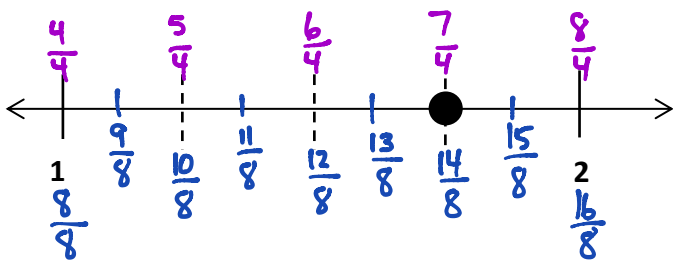
5. Write two different fraction names for the dot on the number line. You may use halves, thirds, fourths, fifths, sixths, eighths, or tenths.



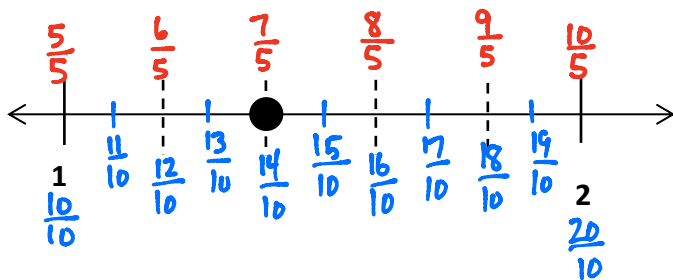
$$\frac{2}{3} = \frac{4}{6}$$



$$\frac{1}{2} = \frac{2}{4}$$



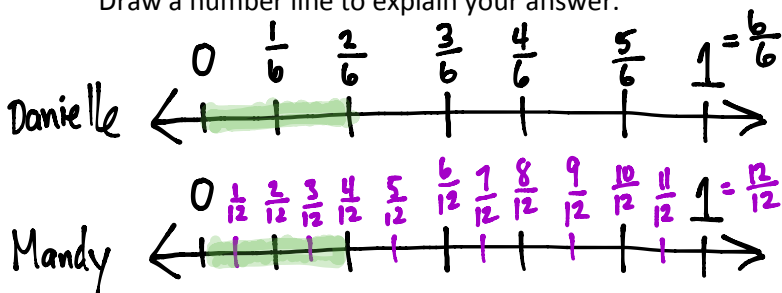
$$\frac{7}{4} = \frac{14}{8}$$



$$\frac{7}{5} = \frac{14}{10}$$

6. Danielle and Mandy each ordered a large pizza for dinner. Danielle's pizza was cut into sixths, and Mandy's pizza was cut into twelfths. Danielle ate 2 sixths of her pizza. If Mandy wants to eat the same amount of pizza as Danielle, how many slices of pizza will she have to eat? Write the answer as a fraction.

Draw a number line to explain your answer.

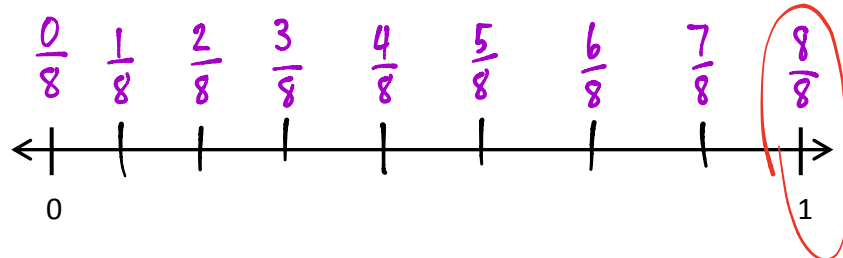
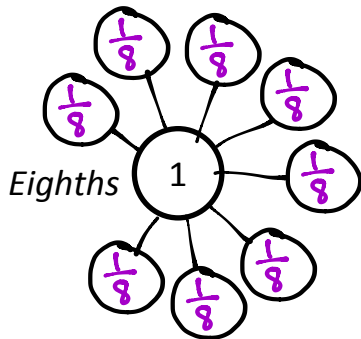
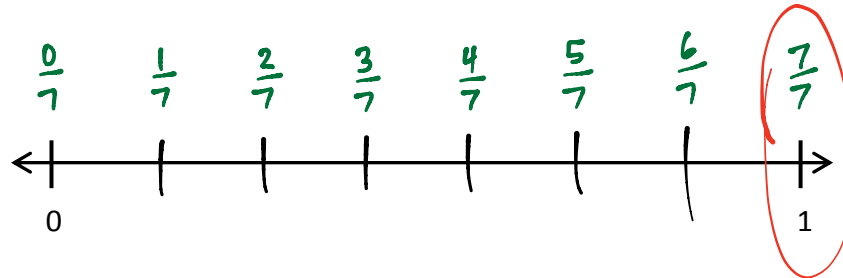
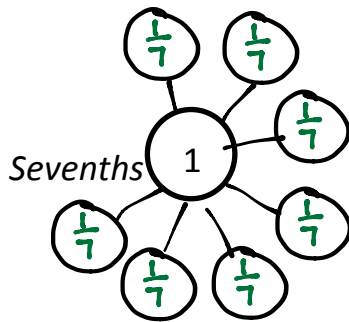
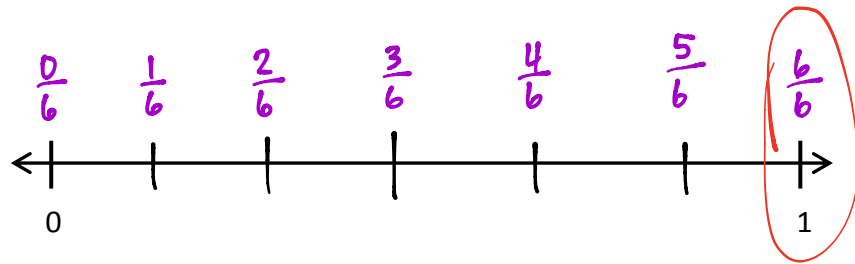
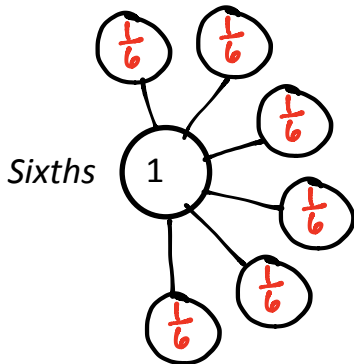
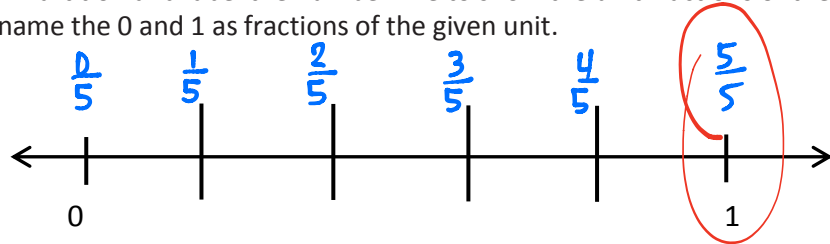
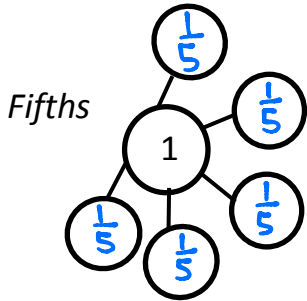


The number lines show that $\frac{2}{6} = \frac{4}{12}$. Mandy would need to eat 4 slices, which is $\frac{4}{12}$ of a pizza.

Name _____

Date _____

1. Write number bonds as indicated. Partition and label the number line to show the unit fractions of the number bond. Don't forget to rename the 0 and 1 as fractions of the given unit.



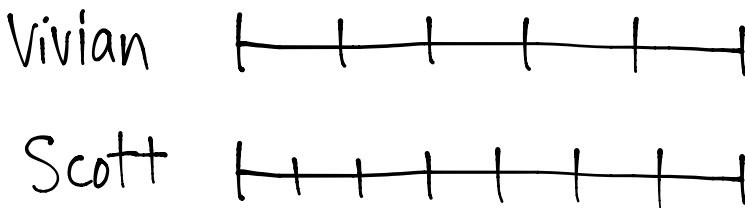
2. Circle all the fractions above that are equal to 1. Write them in a number sentence below.

$$\frac{5}{5} = \frac{6}{6} = \frac{7}{7} = \frac{8}{8}$$

3. What pattern do you notice in the fractions that are equivalent to 1? Following this pattern, how would you write the next whole as a fraction?

Fractions that are equivalent to 1 have a numerator that is equal to the denominator. The next whole as a fraction would be $\frac{9}{9}$ then $\frac{10}{10}$ and so on.

4. In an Art class, Mr. Joselyn gave everyone a 1 foot skewer to measure and cut. Vivian broke hers into 5 equal pieces, and Scott broke his into 7 equal pieces. Scott said to Vivian, "The total length of my stick must be longer than yours because I have 7 pieces and you only have 5." Is Scott correct? Use words, pictures, or a number line to help you explain.



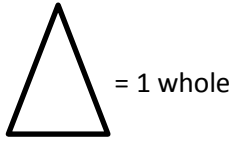
Scott is wrong. Even though he has more pieces than Vivian, both skewer lengths are 1 foot. Scott's pieces are

smaller because his skewer was broken into more pieces.

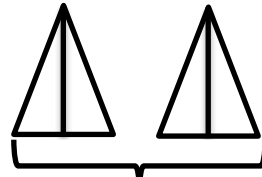
Name _____

Date _____

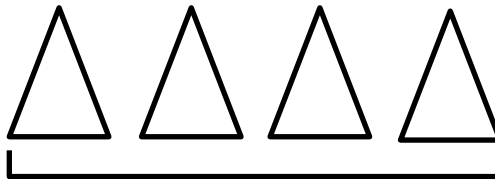
1. Label the following models as a fraction inside the boxes.



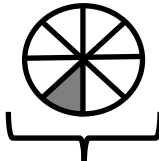
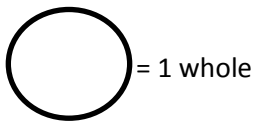
$\frac{3}{4}$



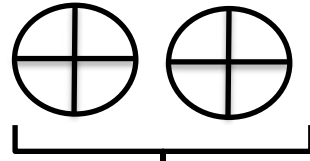
$\frac{2}{1}$



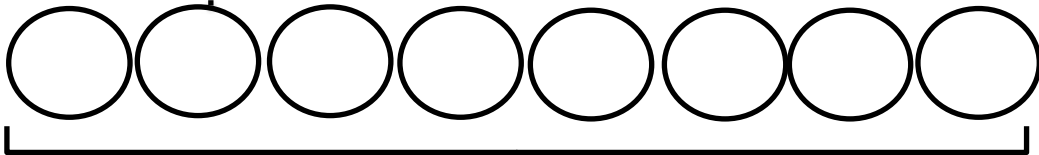
$\frac{4}{1}$



$\frac{1}{8}$

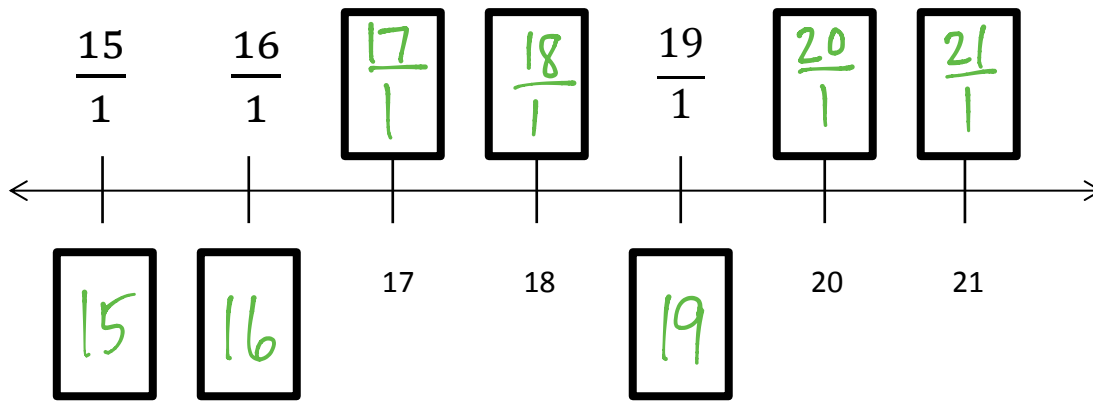
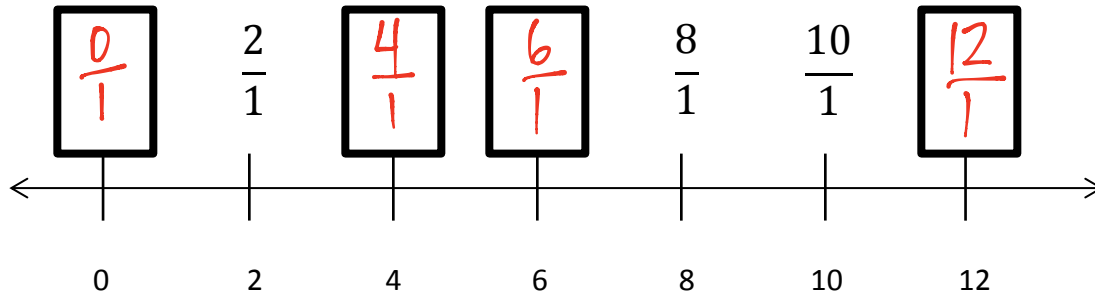


$\frac{2}{4}$

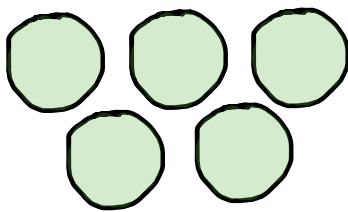


$\frac{8}{1}$

2. Fill in missing whole numbers. Then rename the wholes in the boxes.

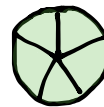


3. Explain the difference between these fractions using a number line, pictorial model, or words.



$$\frac{5}{1}$$

$$\frac{5}{5}$$



$\frac{5}{1}$ means you have 5 wholes.

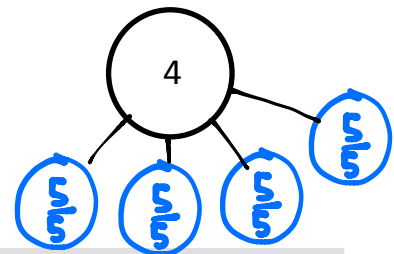
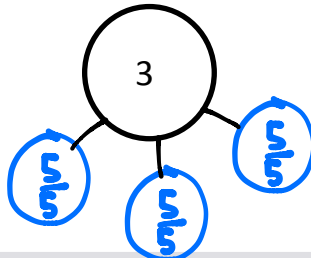
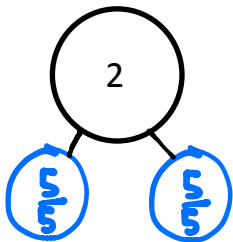
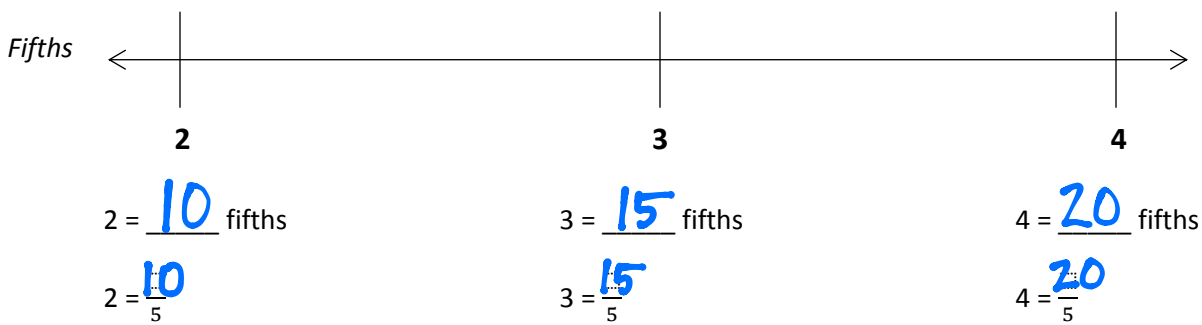
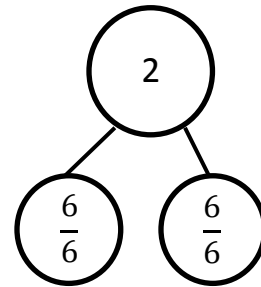
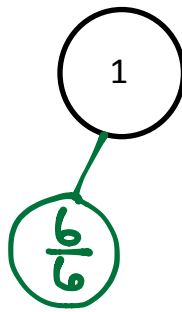
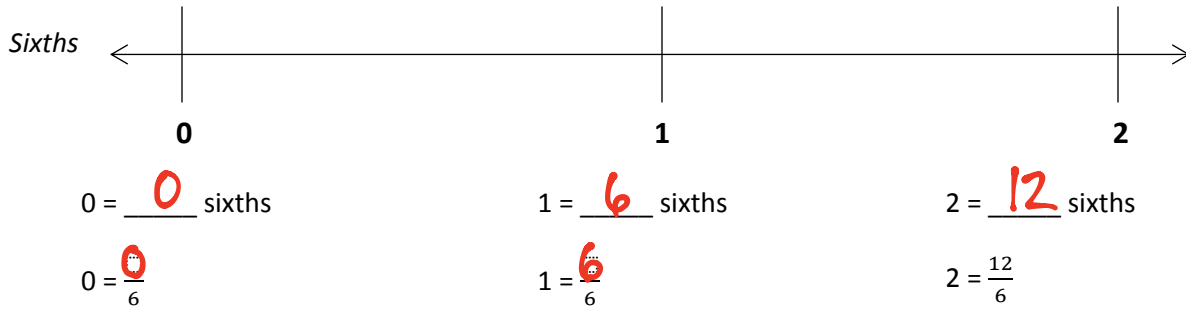
$\frac{5}{5}$ means you have 1 whole.
(You have 5 copies of $\frac{1}{5}$.)

(You have 5 copies of 1 whole.)

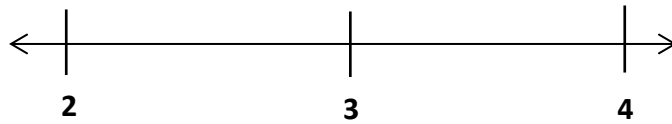
Name _____

Date _____

1. Partition the number line to show the unit fractions. Then draw number bonds with copies of 1 whole for the circled whole numbers.

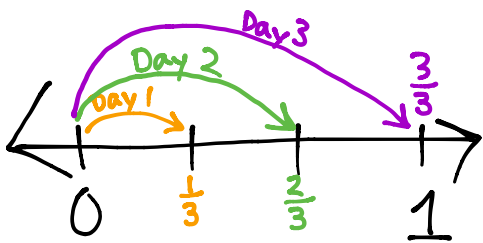


2. Write the fraction that names the whole numbers for each unit fraction. The first one has been done for you.



| | | | |
|----------|-----------------|-----------------|-----------------|
| thirds | $\frac{6}{3}$ | $\frac{9}{3}$ | $\frac{12}{3}$ |
| sevenths | $\frac{14}{7}$ | $\frac{21}{7}$ | $\frac{28}{7}$ |
| eighths | $\frac{16}{8}$ | $\frac{24}{8}$ | $\frac{32}{8}$ |
| tenths | $\frac{20}{10}$ | $\frac{30}{10}$ | $\frac{40}{10}$ |

3. Rider dribbles the ball down $\frac{1}{3}$ of the basketball court on the first day of practice. Each day after that he dribbles $\frac{1}{3}$ of the way more than he did the day before.
- a. Draw a number line to represent the court. Partition the number line to represent how far Rider dribbles on Day 1, Day 2, and Day 3 of practice. What fraction of the way does he dribble on Day 3?



Day 1 is $\frac{1}{3}$ of the court.

Day 2 is $\frac{2}{3}$ of the court.

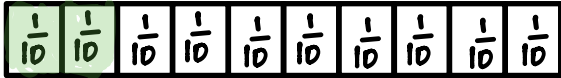
Day 3 is $\frac{3}{3}$ of the court.

On Day 3, Rider dribbles $\frac{3}{3}$ of the way. In other words, he dribbles the entire way.

Name _____

Date _____

1. Use the tape diagram to model equivalent fractions. Fill in the blanks and answer the following questions.



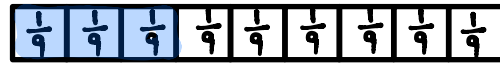
2 tenths is equal to 1 fifths.

$$\frac{2}{10} = \frac{1}{5}$$

The whole stays the same.

What happened to the size of the equal parts when there were less equal parts?

When there are fewer parts, the parts are bigger.



1 third is equal to 3 ninths.

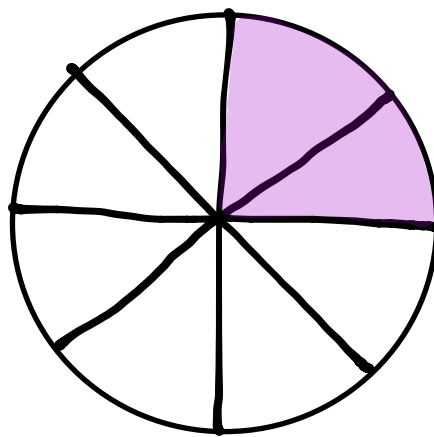
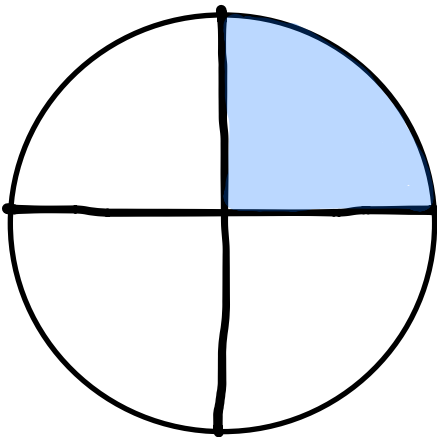
$$\frac{1}{3} = \frac{3}{9}$$

The whole stays the same.

What happened to the size of the equal parts when there were more equal parts?

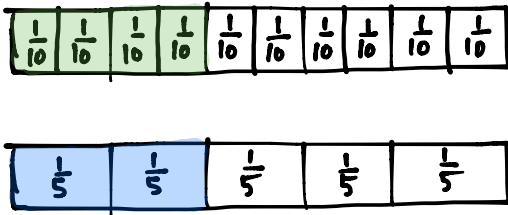
When there are more parts, the parts get smaller.

2. 8 students want to share 2 pizzas that are the same size, represented by the 2 circles below. They notice that the first pizza is cut into 4 equal slices, and the second is cut into 8 equal slices. How can the 8 students share the pizzas equally, without breaking any of the pieces?



Each student would get the equivalent of 1/4 (or 2/8) of a pizza. 4 students would each get 1/4 and the other 4 would each get 2/8.

3. When the whole is the same, why does it take 4 copies of 1 tenth to show 2 copies of 1 fifth? Draw a model to support your answer.

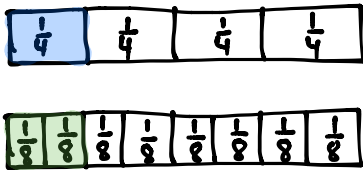


The drawing shows that

$$\frac{4}{10} = \frac{2}{5}$$

Each fifth is equivalent to two tenths.

4. When the whole is the same, how many eighths does it take to make 1 fourth? Draw a model to support your answer.

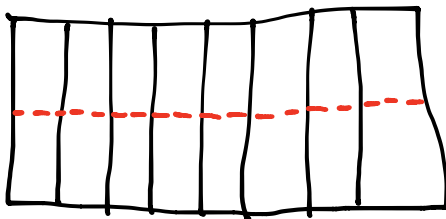


The model shows that it takes 2 eighths to equal 1 fourth.

$$\frac{1}{4} = \frac{2}{8}$$

5. Mr. Pham cuts a cake into 8 equal slices. Then he cuts every slice in half. How many of the small slices does he have? Use words and numbers to explain your answer.

Note: Does a cake have to be a circle? NO! Let students use any shape they prefer.

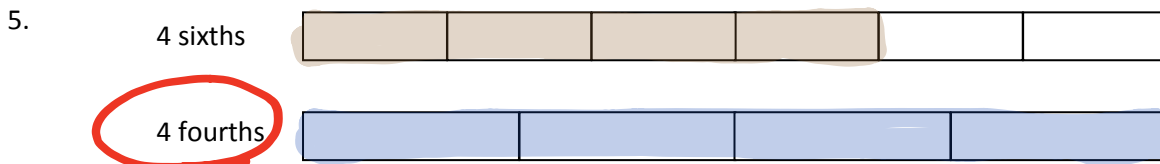
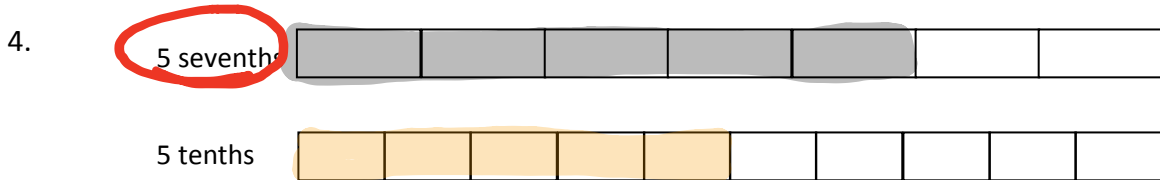
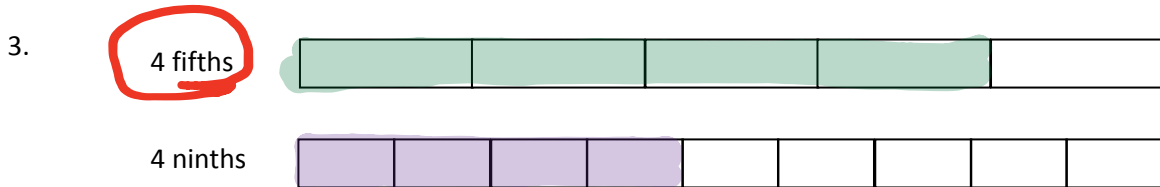
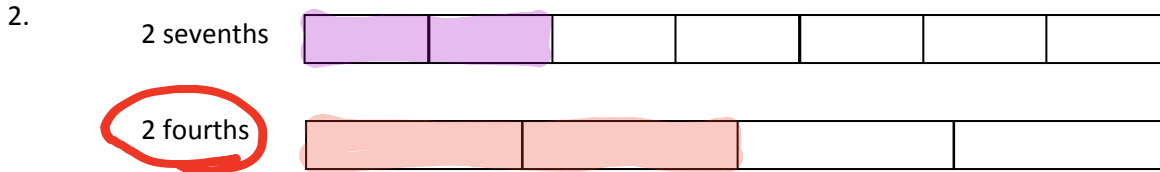
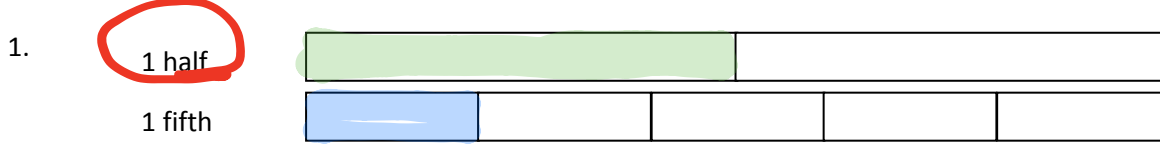


The model shows a cake with 8 slices. The red dotted line cuts every slice in half, creating 16 small slices.

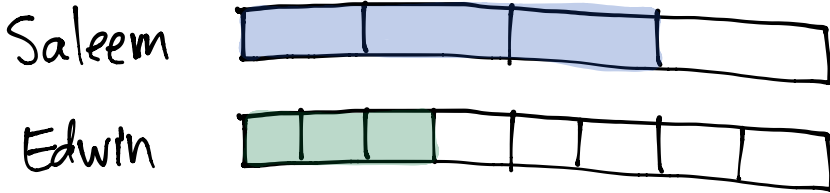
Name _____

Date _____

Directions: Shade the models to compare the following fractions. Circle the larger fraction for each problem.



6. In science Saleem and Edwin used an inch ruler to measure the length of each of their small caterpillars. Saleem’s caterpillar measured 3 fourths of an inch, and Edwin’s caterpillar measured 3 eighths of an inch. Whose caterpillar is longer? Use a tape diagram to show your work.

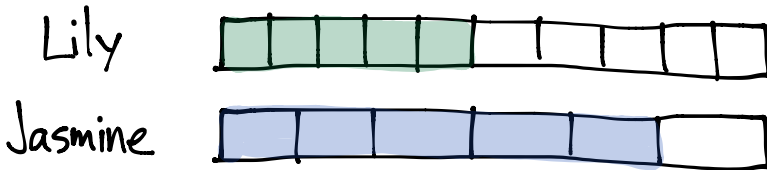


Saleem's caterpillar is longer.

$\frac{3}{4}$ is longer than $\frac{3}{8}$.

Think: 3 big pieces compared with 3 small pieces.

7. Lily and Jasmine are baking the same size chocolate cake. Lily put $\frac{5}{10}$ of a cup of sugar into her cake, and Jasmine put $\frac{5}{6}$ of a cup of sugar into her cake. Who used less sugar? Use a tape diagram to show your work.



Lily used less sugar.

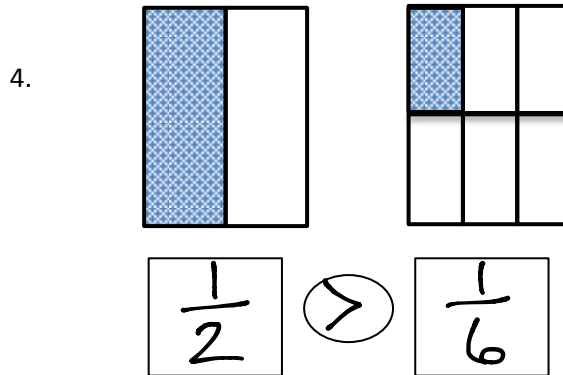
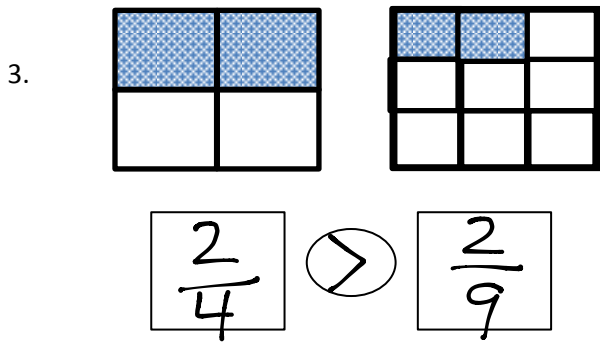
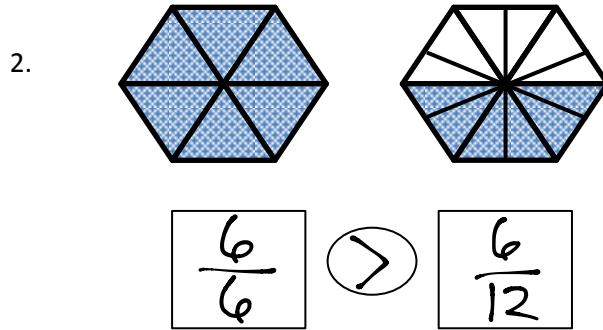
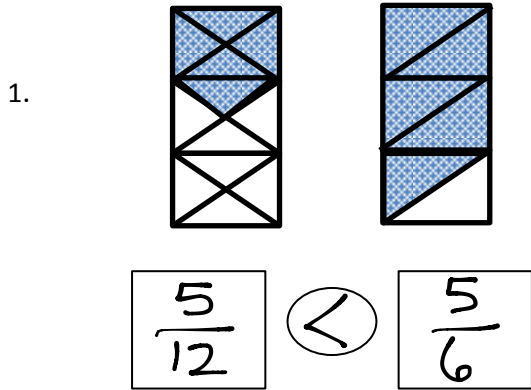
$\frac{5}{10}$ is less than $\frac{5}{6}$

Think: 5 small pieces compared with 5 big pieces.

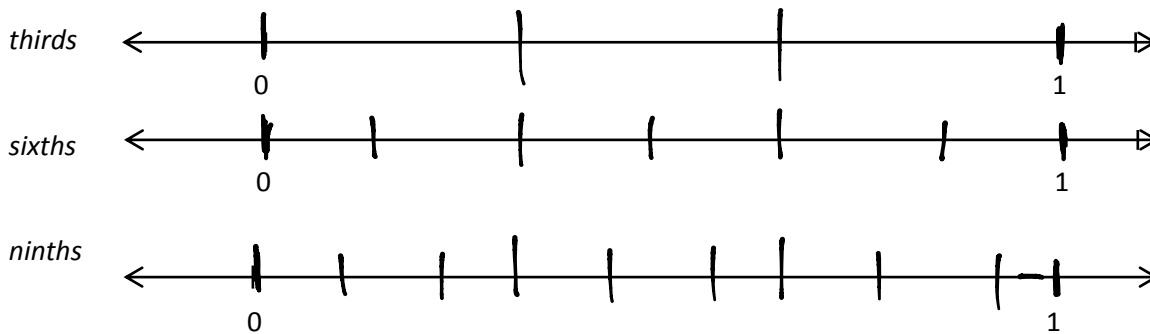
Name _____

Date _____

Directions: Label each shaded fraction. Use $>$, $<$, or $=$ to compare.



5. Directions: Partition each number line into the units labeled on the left. Then, use the number lines to compare the fractions.



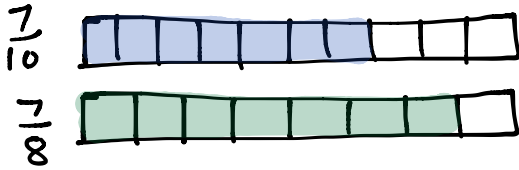
a. $\frac{2}{6} < \frac{2}{3}$

b. $\frac{5}{9} < \frac{5}{6}$

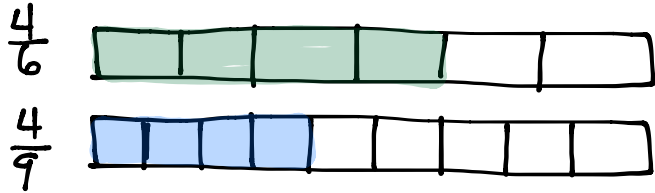
c. $\frac{3}{3} > \frac{3}{9}$

Draw your own models to compare the following fractions.

6. $\frac{7}{10}$ $\frac{7}{8}$



7. $\frac{4}{6}$ $\frac{4}{9}$



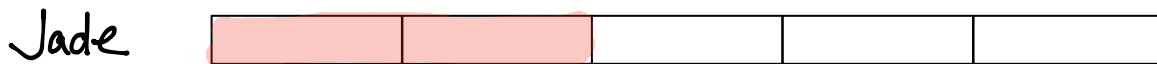
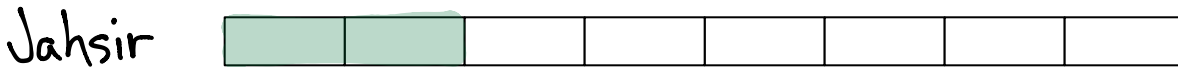
8. For an art project, Michello used $\frac{3}{4}$ of a glue stick. Yamin used $\frac{3}{6}$ of an identical glue stick. Who used more of the glue stick? Use the model below to support your answer. Be sure to label 1 whole as 1 glue stick.



Michello used more of the glue stick.

Think: 3 big pieces compared with 3 small pieces.

9. After gym class, Jahsir drank 2 eighths of a bottle of water. Jade drank 2 fifths of an identical bottle of water. Who drank less water? Use the model below to support your answer.



Jahsir drank less water.

Think: 2 small pieces compared with 2 big pieces.

Name _____

Date _____

Describe step by step the experience you had of partitioning a length into equal units by simply using a piece of notebook paper and a straight edge. Illustrate the process.

Answer will vary.

