# ROCKADEMIX™

# Investigation Activities

for

# *Fractions Rock!* and
# *All About Fractions*

**Investigation Activities**

## *Fractions Rock*! – Picture Book

## *Fractions Rock*! – Picture Book & *All About Fractions* – Graphic Novel

## *All About Fractions* – Graphic Novel

Name _____     Date _____

## Fractions – Money

### *Fractions Rock!* – Picture Book

Directions:  Fill in the blanks to make a fraction.

<u>penny</u>

1 penny = $\frac{1}{100}$ dollar

2 pennies = _____ dollar

5 pennies = _____ dollar

10 pennies = _____ dollar

50 pennies = _____ dollar

100 pennies = _____ dollar

<u>nickel</u>

1 nickel = $\frac{1}{20}$ dollar

2 nickels = _____ dollar

5 nickels = _____ dollar

10 nickels = _____ dollar

20 nickels = _____ dollar

<u>dime</u>

1 dime = $\frac{1}{10}$ dollar

2 dimes = _____ dollar

3 dimes = _____ dollar

4 dimes = _____ dollar

5 dimes = _____ dollar

6 dimes = _____ dollar

7 dimes = _____ dollar

8 dimes = _____ dollar

9 dimes = _____ dollar

10 dimes = _____ dollar

<u>quarter</u>

1 quarter = $\frac{1}{4}$ dollar

2 quarters = _____ dollar

3 quarters = _____ dollar

4 quarters = _____ dollar

Name _____          Date _____

## Fraction Number Line #1

Directions:  Put the fractions on the number line.

1.  Place these fractions $\frac{1}{2}, \frac{1}{4}, \frac{1}{8}$ on a number line. Which fraction is the biggest? _____

0                                                                 1
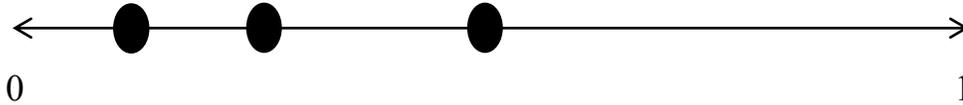
2.  Place these fractions $\frac{1}{3}, \frac{1}{6}, \frac{2}{3}, \frac{3}{6}$ on a number line.  Which fraction is the biggest? _____

0                                                                 1
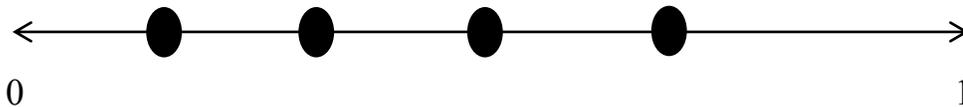
3.  Place these fractions $\frac{1}{1}, \frac{3}{3}, \frac{4}{4}, \frac{2}{2}$ on a number line.

Which fractions are equal to 1?  _____

0                                                                 1
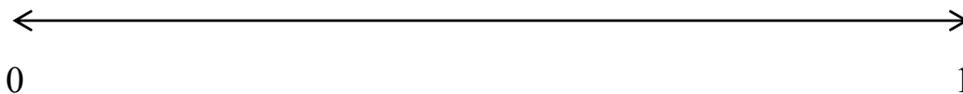
4.  Place these fractions $\frac{1}{2}, \frac{1}{1}, \frac{1}{3}, \frac{3}{2}, \frac{3}{3}, \frac{4}{4}, \frac{2}{2}$ on a number line.

a)  Which fraction is the biggest?  _____

b)  Which fractions are equivalent?  _____

0                                                                 1

Name _____     Date _____

## Fraction Number Line #2

Directions:  Put the numbers on the number line.

1. Place these numbers  $1, \frac{6}{2}, 3, \frac{4}{2}, \frac{5}{5}, 2$  on a number line.

   Which numbers are equivalent?  _____

   $\longleftrightarrow$

2. Place these numbers  $\frac{10}{5}, \frac{15}{5}, \frac{9}{3}, \frac{6}{3}$  on a number line.

   Which numbers are equivalent?  _____

   $\longleftrightarrow$

3. Place these numbers  $2, \frac{4}{4}, \frac{12}{3}, \frac{8}{4}, \frac{1}{1}, 3$  on a number line.

   Which numbers are equivalent?  _____
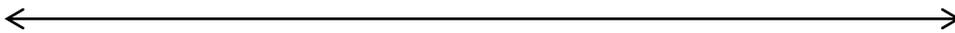
   $\longleftrightarrow$

Name _____          Date _____

**Fraction Number Line #3**

Directions:  Follow the steps below.

1.  Draw a number line marked at 0 and 1.

2.  Place these fractions $\frac{1}{2}, \frac{1}{8}, \frac{1}{4}, \frac{1}{3}, \frac{1}{6}$ on the line.

3.  Circle the largest fraction.

4.  Put a square around the smallest fraction.

Name _____          Date _____

## Fraction Number Line #4

Directions:  Follow the steps below.

1.  Draw a number line marked at 0, 1, 2, 3, 4.

2.  Place these fractions $\frac{4}{2}, \frac{6}{2}, \frac{1}{5}, \frac{5}{5}, \frac{10}{5}, \frac{15}{5}, \frac{3}{3}, \frac{9}{3}, \frac{6}{3}, \frac{8}{4}, \frac{12}{4}$ , and $\frac{4}{4}$ on the line.

3.  Circle the largest fractions.

4.  Put a square around the smallest fraction.

5.  Which fractions are equivalent to 2?  _____

Name _____          Date _____

## Fractions Number Line #5

Example: The number line shows just the section from 0 to 1. That is one whole.

```
0                          1                          2                          1
                           ─                          ─
                           3                          3
◄──────────────────────────┼──────────────────────────┼──────────────────────────►
0                          1                          2                          3
                           ─                          ─                          ─
                           3                          3                          3
```

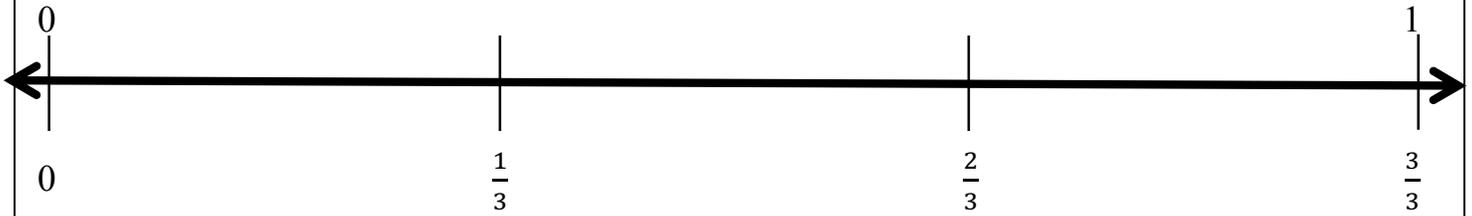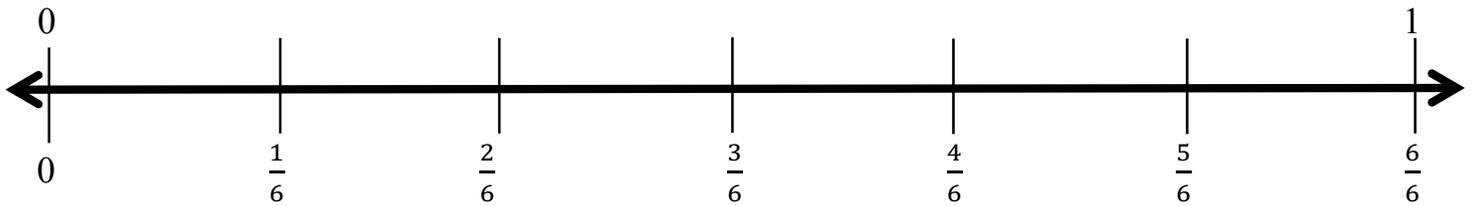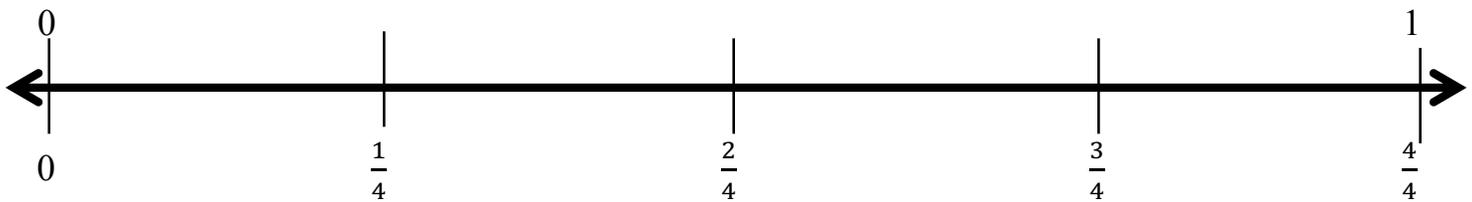There are 3 equal parts in this section. Each part is $\frac{1}{3}$ of the whole. $\frac{3}{3}$ is a fraction for 1.

Fill in the blanks.

```
0                                                                              1
◄────┼──────────┼──────────┼──────────┼──────────┼──────────┼──────────►
0    1          2          3          4          5          6
     ─          ─          ─          ─          ─          ─
     6          6          6          6          6          6
```

1. There are _____ equal parts in this section.    2. Each part is _____ of the whole.

3. What is a fraction for 1? _____

```
0                                                                              1
◄──────────┼──────────────────┼──────────────────┼──────────────────┼────►
0          1                  2                  3                  4
           ─                  ─                  ─                  ─
           4                  4                  4                  4
```

4. There are _____ equal parts in this section.    5. Each part is _____ of the whole.

6. What is a fraction for 1? _____

```
0                                                                              1
◄────┼──────────┼──────────┼──────────┼──────────┼──────────┼──────────┼──────────┼────►
0    1          2          3          4          5          6          7          8
     ─          ─          ─          ─          ─          ─          ─          ─
     8          8          8          8          8          8          8          8
```

7. There are _____ equal parts in this section.    8. Each part is _____ of the whole.

9. What is a fraction for 1? _____
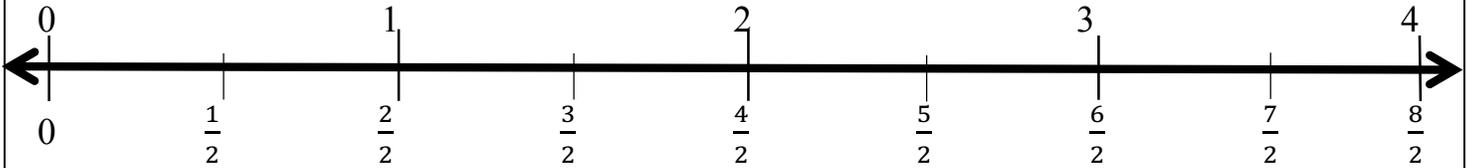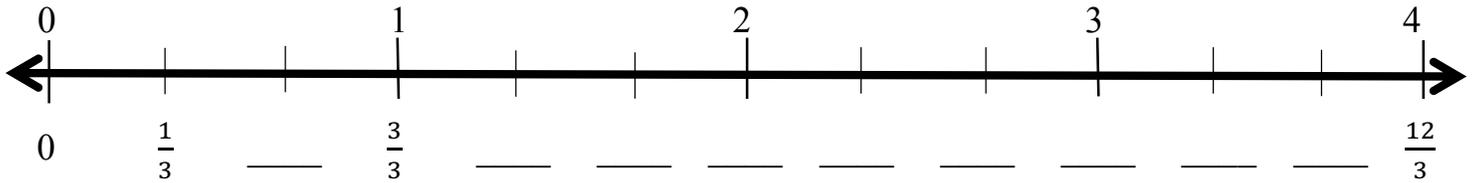
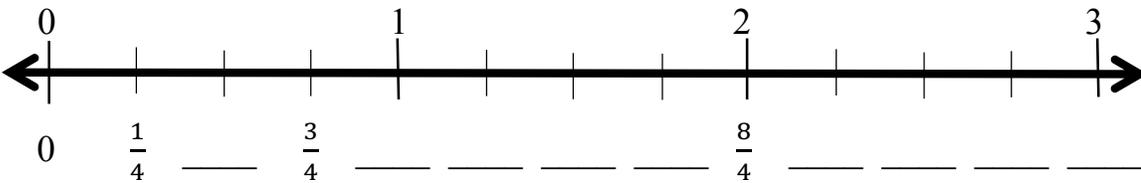## Fractions Number Line #6                    CCSS.MATH.CONTENT.3.NF.A.2-3

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Example:  The number line shows 0 to 4 .  It is marked by half numbers.

$0 \qquad 1 \qquad 2 \qquad 3 \qquad 4$

$0 \quad \frac{1}{2} \quad \frac{2}{2} \quad \frac{3}{2} \quad \frac{4}{2} \quad \frac{5}{2} \quad \frac{6}{2} \quad \frac{7}{2} \quad \frac{8}{2}$

There are <u>8</u> equal parts on this number line.   Each part shows a fraction $\frac{1}{2}$ .  The denominator of each part is <u>2</u>.

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$0 \qquad 1 \qquad 2 \qquad 3 \qquad 4$

$0 \quad \frac{1}{3} \quad \underline{\quad} \quad \frac{3}{3} \quad \underline{\quad} \ \underline{\quad} \ \underline{\quad} \ \underline{\quad} \ \underline{\quad} \ \underline{\quad} \ \underline{\quad} \quad \frac{12}{3}$

1.  How many equal parts on this number line?  _____

2.  What fraction does each part show?  _____

3.  What is the denominator for each part?  _____

4.  Fill in the blanks above.

$0 \qquad 1 \qquad 2 \qquad 3$

$0 \quad \frac{1}{4} \quad \underline{\quad} \quad \frac{3}{4} \quad \underline{\quad} \ \underline{\quad} \ \underline{\quad} \quad \frac{8}{4} \quad \underline{\quad} \ \underline{\quad} \ \underline{\quad} \ \underline{\quad}$

5.  How many equal parts on this number line?  _____

6.  What fraction does each part show?  _____

7.  What is the denominator for each part?  _____
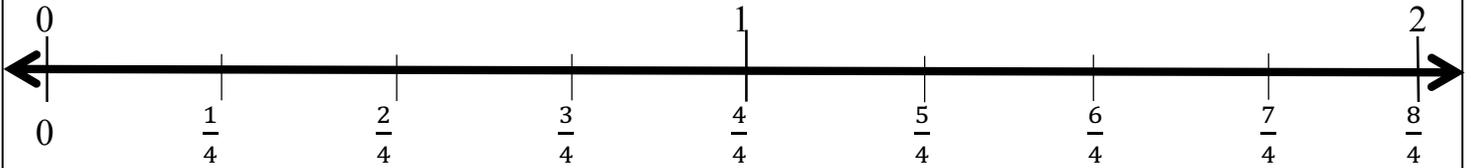
8.  Fill in the blanks above.
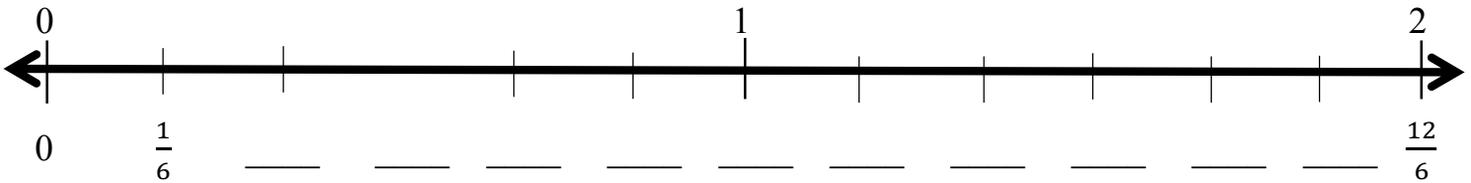
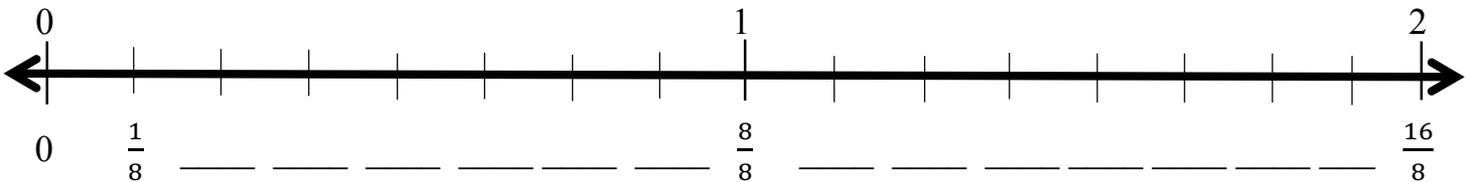Name _____          Date _____

## Fractions Number Line #7

Example:  The number line shows 0 to 2 .  It is marked by $\frac{1}{4}$ numbers.



| 0 | $\frac{1}{4}$ | $\frac{2}{4}$ | $\frac{3}{4}$ | $\frac{4}{4}$ | $\frac{5}{4}$ | $\frac{6}{4}$ | $\frac{7}{4}$ | $\frac{8}{4}$ |

There are <u>8</u> equal parts on this number line.   Each part shows a fraction $\frac{1}{4}$ .  The denominator of each part is <u>4</u>.



0    $\frac{1}{6}$  ___  ___  ___  ___  ___  ___  ___  ___  ___  ___  $\frac{12}{6}$

1.  Fill in the blanks above.

2. How many equal parts on this number line?  _____

3.  What fraction does each part show?  _____

4.  What is the denominator for each part?  _____



0    $\frac{1}{8}$  ___  ___  ___  ___  ___  ___  $\frac{8}{8}$  ___  ___  ___  ___  ___  ___  ___  $\frac{16}{8}$

5.  Fill in the blanks above.

6. How many equal parts on this number line?  _____

7.  What fraction does each part show?  _____

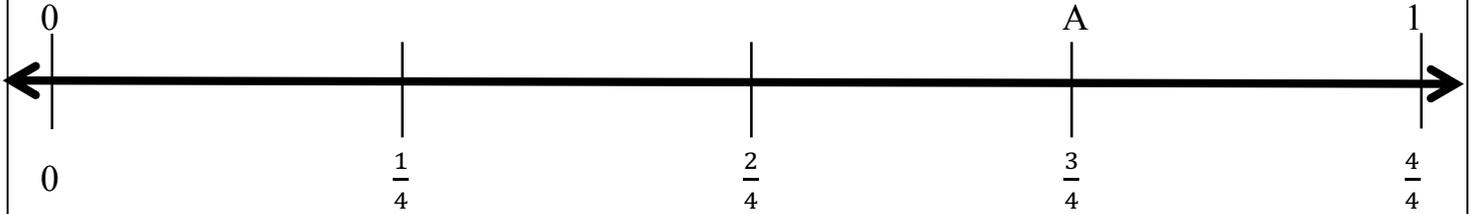8.  What is the denominator for each part?  _____

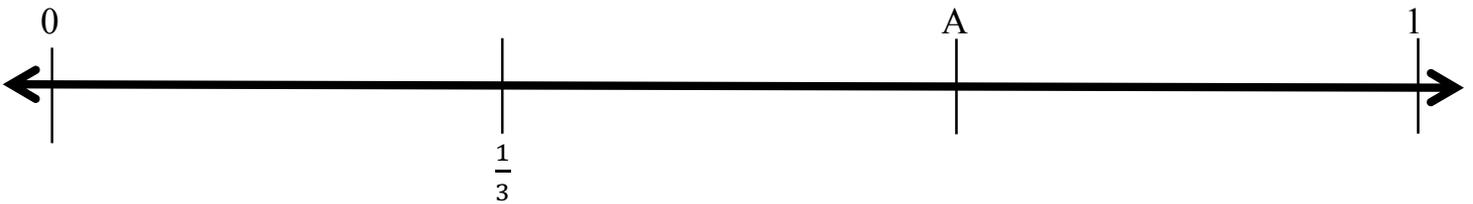**ROCKADEMIX**

## What fraction is at the different points? #1

CCSS.MATH.CONTENT.3.NF.A.2-3

Example:  The number line shows just the section from 0 to 1.

| 0 | | | A | 1 |
|---|---|---|---|---|

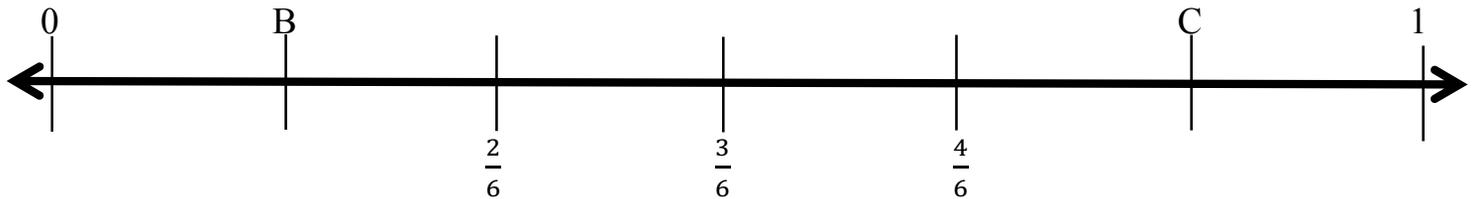| 0 | $\frac{1}{4}$ | $\frac{2}{4}$ | $\frac{3}{4}$ | $\frac{4}{4}$ |
|---|---|---|---|---|

There are 4 equal parts in this section.  Point A is at $\frac{3}{4}$

Look at the number lines below.  Fill in the blanks with fractions.

| 0 | | A | 1 |
|---|---|---|---|

$\frac{1}{3}$

1.  Point A is at _____

| 0 | B | | | | C | 1 |
|---|---|---|---|---|---|---|

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

2.  Point B is at _____          3.  Point C is at _____

| 0 | D | | E | | F | | G | 1 |
|---|---|---|---|---|---|---|---|---|

$\frac{2}{8}$    $\frac{4}{8}$    $\frac{6}{8}$

4.  Point D is at _____     5.  Point E is at _____     6.  Point F is at _____

7.  Point G is at _____

Name _____     Date _____

# What fraction is at the different points? #2     <span style="font-size:small">CCSS.MATH.CONTENT.3.NF.A.2-3</span>

Example: The number line shows 0 to 4 . There are 2 equal parts between each whole number.

0   A   1   B   2   C   3   D   4

$\frac{1}{2}$        $1\frac{1}{2}$        $2\frac{1}{2}$        $3\frac{1}{2}$

Point A is at $\frac{1}{2}$     Point B is at $1\frac{1}{2}$     Point C is at $2\frac{1}{2}$     Point D is at $3\frac{1}{2}$

Look at the number lines below. Fill in the blanks.

0   A   B   1   C   D   2

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

1. Point A is at _____          2. Point B is at _____

3. Point C is at _____          4. Point D is at _____

0   A   B   1   C   D   E   F   2

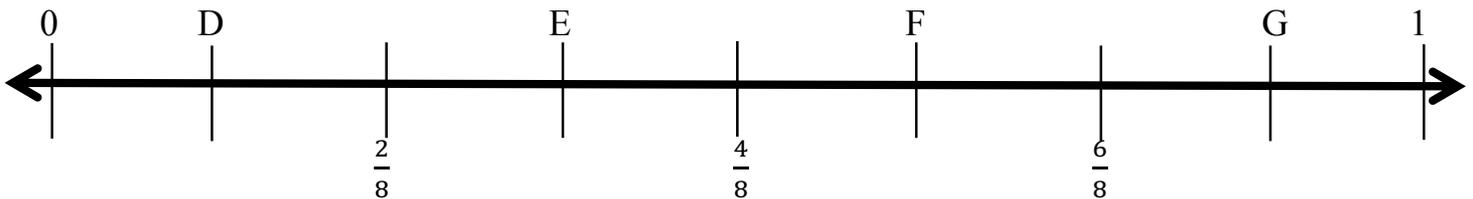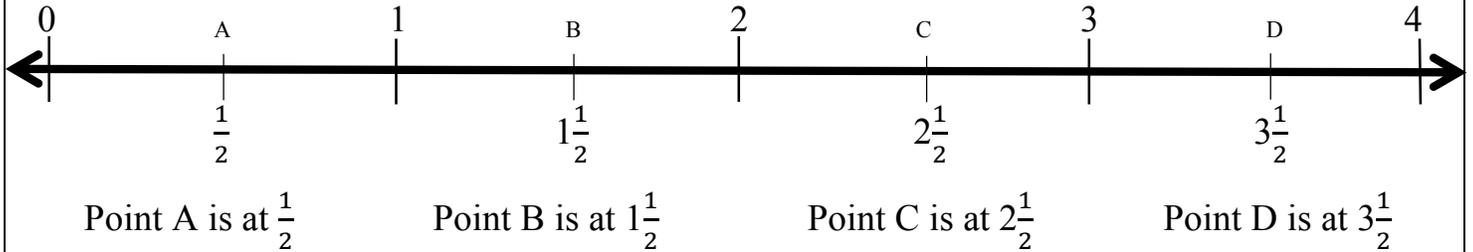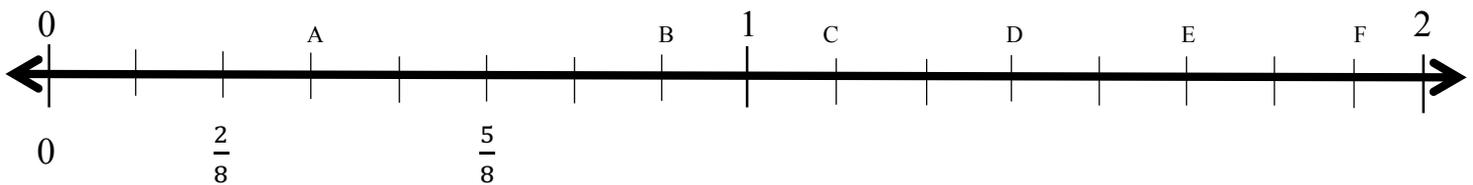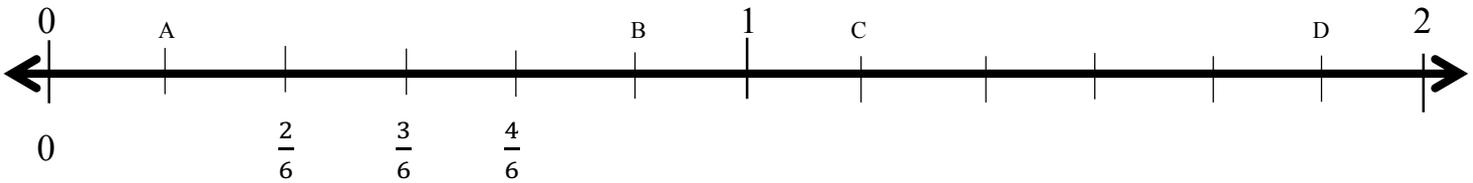0        $\frac{2}{8}$        $\frac{5}{8}$

5. Point A is at _____          6. Point B is at _____

7. Point C is at _____          8. Point D is at _____

9. Point E is at _____          10. Point F is at _____

*Fractions Rock* – Picture Book & *All About Fractions* – Graphic Novel
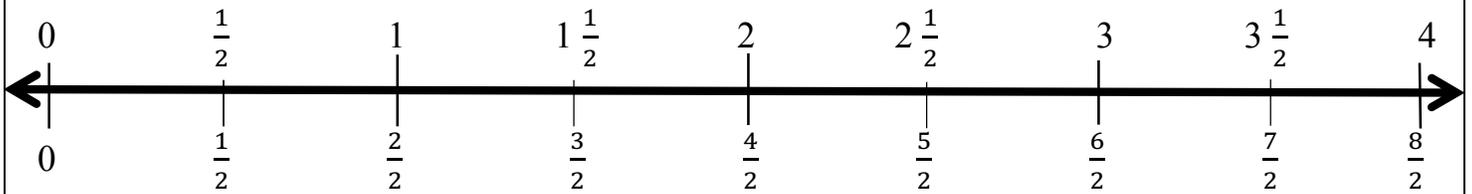
Name _____          Date _____

## Equivalent Fractions on Number Lines                    CCSS.MATH.CONTENT.3.NF.A.2-3

Example:  The number line shows 0 to 4 .  It is marked by half numbers.

| 0 | $\frac{1}{2}$ | 1 | $1\frac{1}{2}$ | 2 | $2\frac{1}{2}$ | 3 | $3\frac{1}{2}$ | 4 |

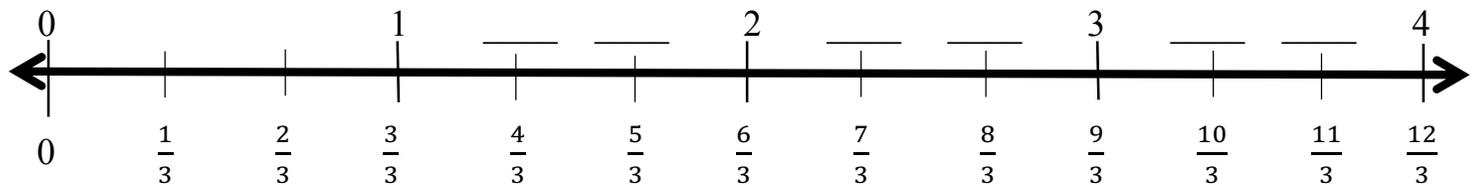| 0 | $\frac{1}{2}$ | $\frac{2}{2}$ | $\frac{3}{2}$ | $\frac{4}{2}$ | $\frac{5}{2}$ | $\frac{6}{2}$ | $\frac{7}{2}$ | $\frac{8}{2}$ |

There are <u>8</u> equal parts on this number line.   Each part shows a fraction $\frac{1}{2}$ .  The denominator of each part is <u>2</u>.
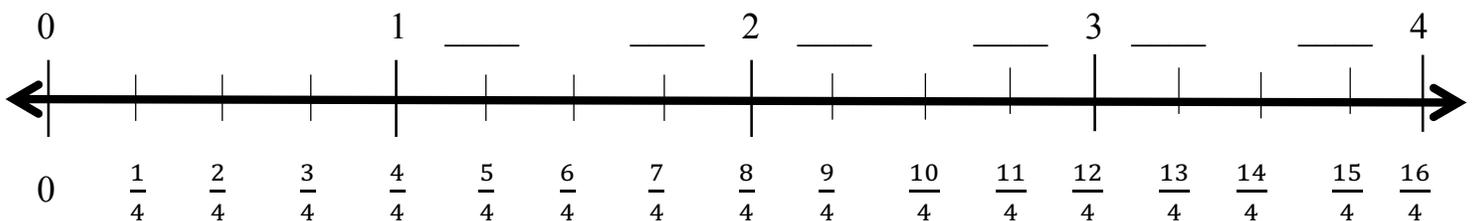
Notice that $\frac{2}{2}$ is 1,  $\frac{4}{2}$ is 2, $\frac{6}{2}$ is 3, and  $\frac{8}{2}$ is 4.

Also notice that $\frac{3}{2}$ is $1\frac{1}{2}$ ("one and a half"), $\frac{5}{2}$ is $2\frac{1}{2}$ ("two and a half"), and $\frac{7}{2}$ is $3\frac{1}{2}$ ("three and a half").

Look at the number lines below.  Answer the questions.

| 0 | | | 1 | ___ ___ | 2 | ___ ___ | 3 | ___ ___ | 4 |

| 0 | $\frac{1}{3}$ | $\frac{2}{3}$ | $\frac{3}{3}$ | $\frac{4}{3}$ | $\frac{5}{3}$ | $\frac{6}{3}$ | $\frac{7}{3}$ | $\frac{8}{3}$ | $\frac{9}{3}$ | $\frac{10}{3}$ | $\frac{11}{3}$ | $\frac{12}{3}$ |

    1.  How many equal parts on this number line?  _____

    2.  Fill in the blanks above.

| 0 | | | 1 | ___ | | ___ | 2 | ___ | | ___ | 3 | ___ | | ___ | 4 |

| 0 | $\frac{1}{4}$ | $\frac{2}{4}$ | $\frac{3}{4}$ | $\frac{4}{4}$ | $\frac{5}{4}$ | $\frac{6}{4}$ | $\frac{7}{4}$ | $\frac{8}{4}$ | $\frac{9}{4}$ | $\frac{10}{4}$ | $\frac{11}{4}$ | $\frac{12}{4}$ | $\frac{13}{4}$ | $\frac{14}{4}$ | $\frac{15}{4}$ | $\frac{16}{4}$ |

    3.  How many equal parts on this number line? ____

    4.  Fill in the blanks above.

Name _____

Date _____

## How Are Fractions Used with Clocks? #1

CCSS.MATH.CONTENT.E.MD.A.1/3.NF.A.1

You use a clock to tell time. There are 60 minutes in an hour.

You use fractions to help you tell time.

If it is 11:30, you can say $\frac{1}{2}$ (half) past 11:00.

If it is 9:15, you can say $\frac{1}{4}$ (quarter) past 9.

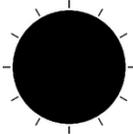If it is 6:45, you can say it is $\frac{1}{4}$ (quarter) to 7.

11:30    9:15    6:45

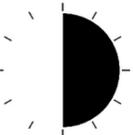Fill in the blanks. Use the numbers:  $1, \frac{1}{6}, \frac{1}{2}, \frac{1}{3}$ .

1.  60 minutes = ____1____ hour.

3.  20 minutes = _____ hour.

2.  30 minutes = _____ hour.

4.  10 minutes = _____ hour.

Fill in the blanks. Use the numbers: 15, 20, 1, 30.

5.  $\frac{1}{4}$ hour = ____15____ minutes.

7.  $\frac{1}{3}$ hour = _____ minutes.

6.  $\frac{1}{2}$ hour = _____ minutes.

8.  $\frac{1}{60}$ hour = _____ minute.

Write the correct time using these words: half and quarter.

_____ past ____12____

_____ past ____12____

_____ to ____12____

Name _____     Date _____

## How Are Fractions Used with Clocks? #2     <span>CCSS.MATH.CONTENT.E.MD.A.1/3.NF.A.1</span>

You use a clock to tell time. There are 60 minutes in an hour.
You use fractions to help you tell time.

If it is 11:30, you can say $\frac{1}{2}$ (half) past 11:00.

If it is 9:15, you can say $\frac{1}{4}$ (quarter) past 9.

If it is 6:45, you can say it is $\frac{1}{4}$ (quarter) to 7.

11:30     9:15     6:45

You can also use fractions to talk about time. For example, you could say that you have about $\frac{1}{2}$ of the time left until the pizza is baked. Or you might say you have about $\frac{1}{3}$ remaining of math class. Or you might have completed $\frac{3}{4}$ of your piano practicing.

Fill in the blanks with the words: half or quarter. Then draw the time on the clock.

**1.** 12:30

12:30 is ____half____ past 12:00

**3.** 8:15

8:15 is _____ past 8:00

**2.** 3:30

3:30 is _____ past 3:00

**4.** 5:45

5:45 is _____ to 6:00

Solve the problems.  Put an X in front of the correct answer.

5. If it takes 2 hours to read a book, and you have read for 1 hour, how much time do you have left?

☐ a. $\frac{1}{4}$          ☐ b. $\frac{1}{2}$          ☐ c. $\frac{3}{4}$          ☐ d. $\frac{1}{3}$

6. If it takes 3 hours to drive to your grandmother's house, and you drove for 1 hour, how much time did you drive?

☐ a. $\frac{1}{4}$          ☐ b. $\frac{1}{2}$          ☐ c. $\frac{3}{4}$          ☐ d. $\frac{1}{3}$

7. If you studied your math facts for 15 minutes and you need to spend 1 hour, how much time do you have left to study?

☐ a. $\frac{1}{4}$          ☐ b. $\frac{1}{2}$          ☐ c. $\frac{3}{4}$          ☐ d. $\frac{1}{3}$

ROCKADEMIX™

Name _____     Date _____

# How Are Fractions Used with Clocks? #3     CCSS.MATH.CONTENT.E.MD.A.1/3.NF.A.1

You use a clock to tell time. There are 60 minutes in an hour.

You use fractions to help you tell time.

If it is 11:30, you can say $\frac{1}{2}$ (half) past 11:00. If it is 9:15, you can say $\frac{1}{4}$ (quarter) past 9. If it is 6:45, you can say it is $\frac{1}{4}$ (quarter) to 7.

11:30          9:15          6:45

You can also use fractions to talk about time that has passed. This is called elapsed time. For example, if you sleep 8 hours in a day, that is the same as sleeping $\frac{1}{3}$ of the day; since 8 hours + 8 hours + 8 hours = 24 hours, which equals one day. So 8 hours is $\frac{1}{3}$ of the day.

Fill in the blanks with the correct fraction of how much time you spend in 1 day. Show your work.

1.  If you spend 3 hours on your computer. _____

2.  If you spend 1 hour on your phone. _____

3.  If you spend 8 hours at school. _____

4.  If you spend 2 hours doing homework. _____

5.  If you spend 4 hours on Saturday at a track meet. _____

6.  Fill in the blank with the correct fraction of how much time you spend in 1 week.

    If you spend 1 hour practicing your trumpet each day (for 7 days). _____

7.  Fill in the blank with the correct fraction of how much time you spend in 1 month (4 weeks).

    If you run for 30 minutes each day (for 7 days a week for 4 weeks). _____

Name _____          Date _____

# How Do You Add Fractions?

> Fractions are a part of a whole number. When you add fractions with the same bottom number (denominator), the denominator stays the same. Then you add the top numbers (numerators) together. For example, $\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$.

Find the answer to these problems. Show your work.

1. Sally bikes $\frac{1}{5}$ mile to the park and $\frac{2}{5}$ mile to her grandmother's house.  Find the total miles that Sally bikes.

    $\frac{1}{5} + \frac{2}{5} = \frac{3}{5}$          Answer: $\frac{3}{5}$ mile

2. Jay spent $1\frac{1}{3}$ hours playing a video game before dinner.  He spent another $\frac{1}{3}$ hour playing a video game before his bedtime.  How many hours did Jay spend playing video games?

    Answer: _____ hours

3. Mr. Lee takes $10\frac{2}{5}$ minutes to eat breakfast.  He takes $15\frac{1}{5}$ minutes to eat lunch.  How much time does Mr. Lee take to eat breakfast and lunch?

    Answer: _____ minutes

4. Mrs. McFarland picks $\frac{1}{3}$ of the apples from the tree on Monday.  She picks another $\frac{1}{3}$ on Tuesday.  How many apples does Mrs. McFarland pick from the tree?

    Answer: _____ apples from the tree

Name _____          Date _____

## How Do You Add and Subtract Fractions?

Fractions are parts of whole numbers. To add and subtract fractions, you need to find the common denominator. You can multiply the denominators to get the common denominator. Remember to reduce your answer. For example, if your answer is $\frac{6}{18}$, you divide the numerator (6) and the denominator (18) by 6. Your answer is $\frac{1}{3}$.

Find the answer to these problems. Show your work.

1. Myra eats $\frac{1}{3}$ of the brownies. Susie eats $\frac{1}{4}$ of the brownies. How much of the brownies were eaten?

2. Pedro walks $\frac{7}{8}$ of a mile to school. Pat walks $\frac{1}{5}$ of a mile. How much more does Pedro walk than Pat?

3. You run to the park. First, you run $\frac{5}{8}$ mile and then you rest. Then you run $\frac{3}{4}$ of a mile more. How far do you run in all?

4. Jackie wants to bake cookies. She uses $\frac{1}{2}$ cup of sugar for one recipe. And, she uses $\frac{2}{9}$ cup of sugar for the other recipe. How much more sugar does she use in the first recipe for cookies?

Name _____                    Date _____

## How Do You Multiply and Divide Fractions?

CCSS Number & Operations – Fractions gr. 4+
CCSS Operations & Algebraic Thinking gr. 4+

Fractions are parts of whole numbers. To multiply and divide fractions, you do not need to find the common denominator. When you multiply two fractions, you multiply straight across: $\frac{2}{3} \times \frac{1}{5} = \frac{2 \times 1}{3 \times 5} = \frac{2}{15}$

When you divide two fractions, you change the division sign to a multiplication sign and then you use the reciprocal number of what you are dividing by. You multiply straight across: $\frac{1}{5} \div \frac{2}{3} = \frac{1}{5} \times \frac{3}{2} = \frac{3}{10}$

Find the answer to these problems. Show your work.

1. You buy 6 donuts and want to give $\frac{1}{3}$ of them to a friend. How many donuts would your friend get?

2. Five boys buy a package of cookies. They want to share the 12 cookies equally. Each boy gets $\frac{1}{5}$ of the cookies. How many cookies does each boy get?

3. Mr. Jackson picked 8 flowers. He wants to give you $\frac{1}{4}$ of them. How many flowers do you get?

4. The ribbon is $\frac{1}{2}$ inch wide. You have 6 pieces. How wide is the ribbon if you put the pieces together?

5. Joe has $\frac{1}{2}$ of a pizza for lunch. He wants to share it equally with his brother. How much pizza do the two boys get?

6. Teri uses $\frac{1}{4}$ cup of oil to make one batch of pancakes. How much oil does she use to make 3 batches of pancakes?

7. LeAnn eats $\frac{3}{4}$ cup of cereal for breakfast. The box holds 10 cups in all. After she eats cereal for 3 mornings, how much cereal is left? How much cereal has she eaten?

*Fractions Rock* – Picture Book & *All About Fractions* – Graphic Novel   17

Name _____          Date _____

# How Do You Subtract Fractions?

> Fractions are a part of a whole number.   When you subtract a fraction from the number 1, you make the number 1 into a fraction.
>
> Any number over itself is 1 ($\frac{2}{2}$, $\frac{3}{3}$, $\frac{4}{4}$, and so on).
>
> To subtract the fraction: $1 - \frac{1}{4} = \frac{4}{4} - \frac{1}{4} = \frac{3}{4}$

Find the answer to these problems. Show your work.

1. Diana cleaned $\frac{2}{5}$ of her room.  What fraction of the room is left to clean?

   Her room is 1.  So $1 - \frac{2}{5} = \frac{5}{5} - \frac{2}{5} = \frac{3}{5}$   Answer: $\frac{3}{5}$ of the room is left to clean

2. Sammy did $\frac{3}{4}$ of his homework.  What fraction of homework does he have left to do?

   Answer:  _____

3. Bill read $\frac{3}{8}$ of his book at school.  How much of the book does he have left to read?

   Answer:  _____

4. A robin made $\frac{1}{3}$ of its nest today.  How much of the nest is left to make?

   Answer:  _____

*Fractions Rock* – Picture Book & *All About Fractions* – Graphic Novel

# How Do You Add Fractions with Unlike Denominators?

Fractions are a part of a whole number. First you need to find the common denominator. Then you can add the fractions. To find the common denominator you multiply the two denominators. The common denominator of $\frac{1}{3}$ and $\frac{2}{5}$ is 15, because $3\times5=15$. So $\frac{1}{3}=\frac{5}{15}$ and $\frac{2}{5}=\frac{6}{15}$. Now you can add the fractions $\frac{5}{15}+\frac{6}{15}=\frac{11}{15}$.

Find the answer to these problems. Show your work.

1.  Peter measures a piece of wood that is $1\frac{1}{4}$ feet long. He measures another piece of wood that is $1\frac{3}{8}$ feet long. How long are both pieces of wood all together?

    $1\frac{1}{4}+1\frac{3}{8}=1\frac{2}{8}+1\frac{3}{8}=2\frac{5}{8}$   Answer: $2\frac{5}{8}$ feet

2.  The large dog drinks $2\frac{1}{6}$ liters of water each morning. It drinks $1\frac{1}{4}$ liters of water in the afternoon. How many liters of water does the dog drink in all?

    Answer: _____ liters

3.  The Jackson family enjoys bike trips. They bike $5\frac{3}{4}$ miles on Saturday. They bike $2\frac{1}{8}$ miles on Sunday. How many miles do they bike in all?

    Answer: _____ miles

4.  Hillary reads for $1\frac{1}{5}$ hours on Monday. She reads for $2\frac{3}{4}$ hours on Wednesday. How much time does she spend reading in all?

    Answer: _____ hours

Name _____     Date _____

# How Do You Subtract Fractions with Unlike Denominators?

Fractions are a part of a whole number. First you find the common denominator. Then you can subtract the fractions. To find the common denominator you can multiply the two denominators. The common denominator of $\frac{7}{8}$ and $\frac{1}{3}$ is 24, because $8\times3=24$. $\frac{7}{8}=\frac{21}{24}$ and $\frac{1}{3}=\frac{8}{24}$. Now you can subtract the fractions $\frac{21}{24}-\frac{8}{24}=\frac{13}{24}$.

Find the answer to these problems. Show your work.

1. Tony cut a piece of rope that was $4\frac{1}{2}$ feet into 2 pieces. One piece was $2\frac{1}{3}$ feet long. How long is the other piece of rope?

$4\frac{1}{2}-2\frac{1}{3}=4\frac{3}{6}-2\frac{2}{6}=2\frac{1}{6}$    Answer: $2\frac{1}{6}$ feet

2. The football game was $2\frac{3}{5}$ hours long. It rained for $1\frac{1}{6}$ hours during the game. How many hours didn't it rain?

Answer: _____ hours

3. Dad drove the car to my friend's house. My friend lives $4\frac{5}{9}$ miles from our house. We needed to stop for gas after $1\frac{3}{7}$ miles. How many miles were left to reach my friend's house?

Answer: _____ miles

4. Holly played a movie on her computer. The movie was $2\frac{1}{2}$ hours long. She stopped the movie at $1\frac{1}{4}$ hours to make popcorn. How much time was left of the movie?

Answer: _____ hours

Name _____     Date _____

# Fractions Rock Math #1

Use the "*All About Fractions*" Graphic Novel to solve the equations.

---

① On p.5 of the graphic novel, the boy wants a smaller slice of pizza Which fraction is the smallest?

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

② Circle the <u>numerators</u> in these fractions.

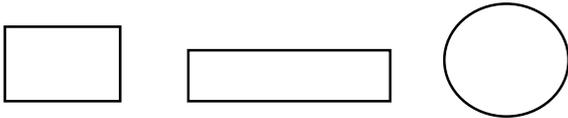$$\frac{1}{2} \qquad \frac{1}{4} \qquad \frac{1}{8} \qquad \frac{2}{3} \qquad \frac{5}{8}$$

---

③ Make these fractions equal to 1.



1    2    3    4    5

④ Divide these shapes into thirds.



---

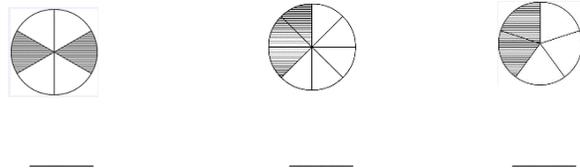⑤ Divide these shapes into fourths.



⑥ Label these fractions.



___   ___   ___   ___   ___

---
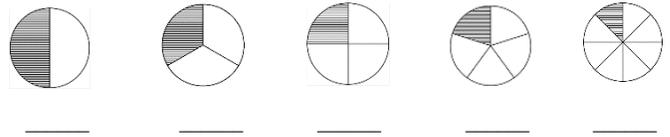
⑦ Put the > or < sign between the fractions to compare them.

$$\frac{1}{1} \qquad \frac{1}{3} \qquad \frac{1}{6}$$

⑧ Write these fractions.



___      ___      ___

---

⑨ What do you call ….

dividing into 4 pieces     _____

dividing into 9 pieces     _____

⑩ Make these fractions equivalent.

$$\frac{1}{2} = \frac{}{6} = \frac{}{8}$$

---

*Fractions Rock* – Picture Book & *All About Fractions* – Graphic Novel

Name _____

Date _____

# Fractions Rock Math #2

CCSS.MATH.CONTENT.3.NF.A.1-A.3/3.MD.A.1

Use the "*All About Fractions*" Graphic Novel to solve the equations.

---

① Make these fractions equivalent.

$$\frac{1}{3} = \frac{\phantom{xx}}{12}$$

② Make these fractions equivalent.

$$\frac{1}{4} = \frac{\phantom{xx}}{8} = \frac{\phantom{xx}}{12}$$

---

③ Which fraction is bigger? Circle the answer.

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

④ Which fraction is bigger? Circle the answer.

 $\frac{1}{4}$    $\frac{6}{9}$

---

⑤ Shade in these fractions.

$\frac{1}{1}$  [  ]

$\frac{2}{2}$  [  ]

$\frac{1}{2}$  [  ]

$\frac{5}{5}$  [  ]

⑥ If a dollar is a whole, then two quarters is a _____

What fraction of a dollar is a nickel? _____

What fraction of a dollar is a penny? _____

---

⑦ Match the time.

1 hr. = 60 min.

$\frac{1}{2}$ hr. = _____ min.

$\frac{1}{4}$ hr. = _____ min.

$\frac{2}{3}$ hr. = _____ min.

⑧ What time is it?

8:15 is _____ minutes past _____.

8:45 is _____ minutes past _____.

---

⑨ Explain how $\frac{3}{4}$ of an hour is equal to 45 minutes.

⑩ Name 3 ways the graphic novel shows fractions used in real life.

1.

2.

3.

---

*Fractions Rock* – Picture Book & *All About Fractions* – Graphic Novel
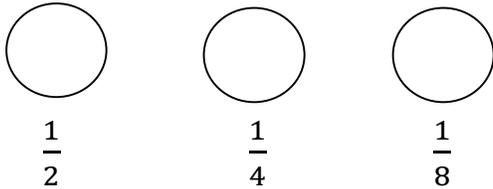
Name _____     Date _____

# Fractions Rock Math #3

CCSS.MATH.CONTENT.3.NF.A.1/A.3

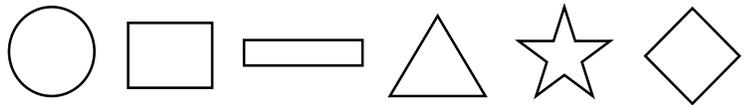Use the "*All About Fractions*" Graphic Novel to solve the equations.

---

① Draw these fractions.  Circle the largest one.

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

② Circle the <u>denominators</u> in these fractions.

$\frac{1}{2}$     $\frac{1}{8}$     $\frac{2}{3}$     $\frac{5}{8}$     $\frac{3}{4}$

---

③ Circle the equivalent fractions.

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

④ Shade $\frac{1}{2}$ of each shape.

---

⑤ Matching.  Draw a line between the fraction and the word that shows what it is divided into.
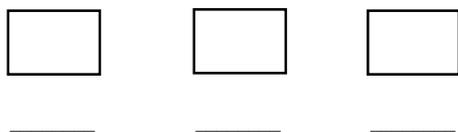
$\frac{1}{2}$          fourths

$\frac{1}{3}$          halves

$\frac{1}{4}$          eighths

$\frac{1}{8}$          thirds

⑥ If 5 people share a pizza, how much pizza do they each get.  Draw a picture to show your answer.  Write the answer on the blank.
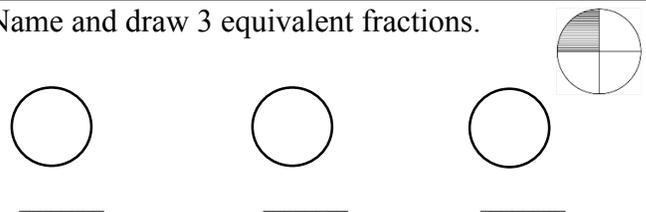
_____

---

⑦ Shade the fractions to show they are equivalent.

◯  =  ◯  =  ◯

$\frac{1}{2}$        $\frac{3}{6}$        $\frac{4}{8}$
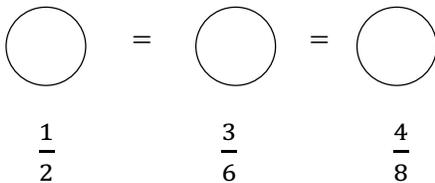
⑧ Are these fractions with the same denominator equal?  First, shade in the rectangles.  Then circle the answer **Yes** or **No**.

$\frac{2}{9}$              $\frac{8}{9}$

---
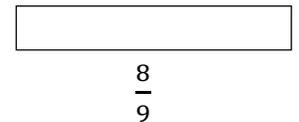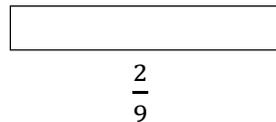
⑨ Name and draw 3 equivalent fractions.

_____   _____   _____

⑩ Name and draw 3 equivalent fractions.

_____   _____   _____

---

*Fractions Rock* – Picture Book & *All About Fractions* – Graphic Novel

Name _____          Date _____

## Fraction Story Problems

### *All About Fractions* – Graphic Novel

1. Toni goes to the library.  There are 10 science fiction books.  She checks out 4 of these books.

   What fraction of the science fiction books does Toni check out?

   What fraction of the science fiction books is left?

2. Robbie helps his mother make dinner.  He bakes a pizza and cuts it into 7 pieces.  Then Robbie eats 3 pieces.

   What fraction of the pizza does Robbie eat?

   What fraction of the pizza is left?

3. Sandra wants to walk one mile every day this month.  She has walked every day for 14 days. There are 31 days in the month.

   What fraction of the days this month has Sandra walked?

   What fraction of the days is left to walk?

4. Sam wants to read 100 books this year.  So far, he has read 56 books.

   What fraction of the books has Sam read?

   What fraction of the books is left?

5. Mother made a dozen cupcakes for Jackie's birthday party.  After her party, there were 2 cupcakes left.

   What fraction of the cupcakes were eaten?

   What fraction of the cupcakes is left?

6. John read for $\frac{1}{4}$ of an hour.  Mother read for $\frac{1}{2}$ an hour.  How many minutes did they read all together? Explain your anwer.

7. Jill is always late for school.  The bell rings at 9:00 a.m.  What time should she get up if it takes $\frac{1}{4}$ of an hour to get dressed, $\frac{1}{4}$ of an hour to eat breakfast, and $\frac{1}{2}$ an hour to walk to school?  Explain your answer.

*Fractions Rock* – Picture Book & *All About Fractions* – Graphic Novel

Name _____ Date _____

**Money Fractions**

*All About Fractions* – Graphic Novel

Directions: What fraction of a dollar are these coins?

1. 1 penny + 1 nickel $\qquad \frac{1}{100} + \frac{5}{100} = \frac{6}{100}$

2. 1 nickel + 1 dime

3. 1 penny + 1 quarter

4. 1 nickel + 1 quarter

5. 1 dime + 1 quarter

6. 2 quarters + 1 dime

7. 3 dimes + 2 nickels

8. 1 half dollar + 3 nickels

9. 1 half dollar + 1 quarter

10. 1 penny + 1 nickel + 1 dime + 1 quarter

Bonus: 1 penny + 1 nickel + 1 dime + 1 quarter + 1 half dollar

Name _____     Date _____

## Time Fractions

### *All About Fractions* – Graphic Novel

Directions:  What fraction of an hour are these times?

1. 1 minute?        $\frac{1}{60}$

2. 5 minutes?

3. 7 minutes?

4. 15 minutes?

5. 20 minutes?

6. 30 minutes?

7. 36 minutes?

8. 45 minutes?

9. 57 minutes?

10. 60 minutes?

11. How many minutes is $\frac{1}{2}$ an hour?

12. How many minutes is $\frac{1}{4}$ of an hour?

13. How many minutes is $\frac{3}{4}$ of an hour?

14. How many minutes is 1 hour?

Name _____

Date _____

## Understanding Fractions

*All About Fractions* – Graphic Novel

Directions: Answer the questions with complete sentences. Use a drawing to explain.

1. Explain what it means by the "D" goes south and the "N" goes north?

2. Do fractions always have the same number for the numerator and the denominator?

3. Why is $\frac{1}{1}$ the same as $\frac{3}{3}$ ?

4. Compare the fractions $\frac{1}{3}$ , $\frac{2}{3}$ , and $\frac{3}{3}$ .

# Answer Key – *Fractions Rock*! – Picture Book

## 1) Fractions – Money

<u>Penny</u>    1/100; 2/100 = 1/50; 5/100 = 1/20; 10/100 = 1/10; 50/100 = ½; 100/100 = 1/1 = 1
<u>Nickel</u>   1/20; 10/100 = 1/10; 25/100 = ¼; 50/100 = ½; 100/100 = 1/1 = 1
<u>Dime</u>    1/10; 20/100 = 1/5; 30/100 = 3/10; 40/100 = 2/5; 50/100 = ½; 60/100 = 3/5; 70/100 = 7/10;
            80/100 = 4/5; 90/100 = 9/10; 100/100 = 1/1 = 1
<u>Quarter</u> ¼; 50/100 = ½; 75/100 = ¾; 100/100 = 1/1 = 1

# Answer Key – *Fractions Rock*! – Picture Book & *All About Fractions* – Graphic Novel

## 2) Fraction Number Line #1

1. ½ is the biggest.
2. 2/3 is the biggest.
3. All of the fractions (1/1, 3/3, 4/4, 2/2) equal one.
4. **a)** 3/2 is the biggest.    **b)** 1/1, 3/3, 4/4, 2/2 are equivalent fractions.

## 3) Fraction Number Line #2

1. 1, 5/5; 2, 4/2; 3, 6/2
2. 10/5, 6/3; 15/3, 9/3
3. 1/1, 4/4; 2, 8/4

## 4) Fraction Number Line #3

3. ½ is the largest fraction. (circle)
4. 1/8 is the smallest fraction. (square)

## 5) Fraction Number Line #4

1. 6/2, 15/5, 9/3, 12/4 are the largest fractions. (circle) They are all equal to 3.
2. 1/5 is the smallest fraction. (square)
3. 4/2, 10/5, 6/3, 8/4.

## 6) Fraction Number Line #5

1. 6
2. 1/6
3. 6/6
4. 4
5. ¼
6. 4/4
7. 8
8. 1/8
9. 8/8

## 7) Fraction Number Line #6

1. 12
2. 1/3
3. 3
4. 2/3, 4/3, 5/3, 6/3, 7/3, 8/3, 9/3, 10/3, 11/3
5. 12
6. 1/4
7. 4
8. 2/4, 4/4, 5/4, 6/4, 7/4, 9/4, 10/4, 11/4, 12/4

## 8) Fraction Number Line #7

1. 2/6, 3/6, 4/6, 5/6, 6/6, 7/6, 8/6, 9/6, 10/6, 11/6
2. 12
3. 1/6
4. 6

5. 2/8, 3/8, 4/8, 5/8, 6/8, 7/8, 9/8, 10/8, 11/8, 12/8, 13/8, 14/8, 15/8
6. 16
7. 1/8
8. 8

## 9) What fraction is at the different points? #1
1. 2/3
2. 1/6
3. 5/6
4. 1/8
5. 3/8
6. 5/8
7. 7/8

## 10) What fraction is at the different points? #2
1. 1/6
2. 5/6
3. 1 1/6 (or 7/6)
4. 1 5/6 (or 11/6)
5. 3/8
6. 7/8
7. 1 1/8 (or 9/8)
8. 1 3/8 (or 11/8)
9. 1 5/8 (or 13/8)
10. 1 7/8 (or 15/8)

## 11) Equivalent Fractions on Number Lines
1. 12
2. 1 1/3, 1 2/3, 2 1/3, 2 2/3, 3 1/3, 2 2/3
3. 16
4. 1 ¼, 1 ¾, 2 ¼, 2 ¾, 3 ¼, 3 ¾

## 12) How Are Fractions Used with Clocks? #1
1. 1 hour
2. ½ hour
3. 1/3 hour
4. 1/6 hour
5. 15 minutes
6. 30 minutes
7. 20 minutes
8. 1 minute

**Bottom row:** half past 12; quarter past 12; quarter to 12

## 13) How Are Fractions Used with Clocks? #2
1. half (draw the correct time on the clock)
2. half (draw the correct time on the clock)
3. quarter (draw the cor Type equation here. rect time on the clock)
4. quarter (draw the correct time on the clock)
5. b
6. d
7. c

## 14) How Are Fractions Used with Clocks? #3
1. 1/8
2. 1/24
3. 8/24 = 1/3
4. 2/24 = 1/12
5. 4/24 = 1/6
6. 1 hour of practicing /24 hours for one day = 7 hours of practicing/168 hours (for the 7 days)
7. 30 minutes of running/1 day = 210 minutes of running/1 week = 840 minutes of running /4 weeks

## 15) How Do You Add Fractions?
1. 3/5 mile
2. 1 2/3 hours
3. 25 3/5 minutes
4. 2/3 of the apples

## 16) How Do You Add and Subtract Fractions?
1. 7/12 of the brownies
2. 27/40 of a mile
3. 1 3/8 miles
4. 5/18 cup

**17) How Do You Multiply and Divide Fractions?**

1. 2 doughnuts
2. 2 2/5 cookies
3. 2 flowers
4. 3 inches

5. ¼ of a pizza
6. ¾ cup
7. 7 ¾ cups

**18) How Do You Subtract Fractions?**

1. 3/5 of her room left to clean
2. ¼ of his homework left to do

3. 5/8 of the book left to read
4. 2/3 of the next left to make

**19) How Do You Add Fractions with Unlike Denominators?**

1. 2 5/8 feet
2. 3 5/12 liters

3. 7 7/8 miles
4. 3 19/20 hours

**20) How Do You Subtract Fractions with Unlike Denominators?**

1. 2 1/6 feet
2. 1 13/30 hours

3. 3 8/63 miles
4. 1 ¼ hours

# Answer Key – *All About Fractions* – Graphic Novel

**21) Fractions Rock Math #1**

1. 1/8
2. (You would circle the top numbers.)
3. 1/1, 2/2, 3/3, 4/4, 5/5
4. (Divide the shapes into thirds.)
5. (Divide the shapes into fourths.)

6. ½, 1/3, ¼, 1/5, 1/8
7. 1/1 > 1/3 > 1/6
8. 2/6 or 1/3; 3/8; 2/5
9. fourths, ninths
10. 1/2 = 3/6 = 4/8

**22) Fractions Rock Math #2**

1. 1/3 = 4/12
2. ¼ = 2/8 = 3/12
3. ½ is bigger (circle it)
4. 6/9 is bigger (circle it)

5. Shade the fractions accordingly.
6. a half; 1/20; 1/100
7. 30 min.; 15 min.; 40 min.
8. 15 min. past 8:00; 45 min. past 8:00

9. ¾ of an hour is equal to 45 minutes because ¼ of an hour is 15 min.
So you take 15 min. and add it three times: 15 + 15 + 15 = 45 minutes
10. (Accept reasonable answers of how the graphic novel shows fractions in real life.)
    Some examples would be dividing food to eat or share it, showing time, and understanding money.

**23) Fractions Rock Math #3**

1. (The student draws the fractions.) ½ is the largest (circle it)
2. (You would circle the bottom numbers.)
3. 1/1, 2/2, 3/3, 4/4 (These are equivalent fractions that should be circled.)
4. (Shade the circles into halves.)
5. ½ halves, 1/3 thirds, ¼ fourths, 1/8 eighths
6. 1/5 of a pizza (draw a picture)
7. (Shade the circles to show equivalent – they would all be ½.)
8. No (Shade in 2/9 and 8/9.)
9. (The student draws and names any 3 equivalent fractions of 1/3.)
10. (The student draws and names any 3 equivalent fractions of ¼.)

*Fractions Rock* – Picture Book & *All About Fractions* – Graphic Novel

**24) Fraction Story Problems**
1. 4/10 or 2/5 of the books; 6/10 or 3/5 of the books are left
2. 3/7 of the pizza; 4/7 of the pizza
3. 14/31 days; 17/31 days
4. 56/100 or 28/50 or 14/25 of the books; 44/100 or 22/50 or 11/25 books
5. 10/12 or 5/6 cupcakes eaten; 2/12 or 1/6 cupcakes left
6. John read for 15 minutes (¼ of an hour). Mother read for 30 minutes (½ an hour). Together they read 15 minutes + 30 minutes = 45 minutes or ¾ of an hour.
7. ¼ of an hour to get dressed = 15 minutes;
   ¼ of an hour to eat breakfast = 15 minutes;
   ½ an hour to walk to school = 30 minutes;
   The total time it takes Jill to get ready for school: 15 min. + 15 min. + 30 min. = 60 min. = 1 hour.
   So if Jill needs to be at school at 9:00 a.m., she needs to leave no later than 8:00 a.m.

**25) Money Fractions:** Accept other equivalent fractions.
1. 6/100 = 3/50
2. 15/100 = 3/20
3. 26/100 = 13/50
4. 30/100 = 3/10
5. 35/100 = 7/20
6. 60/100 = 6/10 = 3/5
7. 40/100 = 4/10 = 2/5
8. 65/100 = 13/20
9. 75/100 = 3/4
10. 41/100
Bonus: 91/100

**26) Time Fractions:** Accept other equivalent fractions.
1. 1/60
2. 5/60 = 1/12
3. 7/60
4. 15/60 = ¼
5. 20/60 = 1/3
6. 30/60 = ½
7. 36/60 = 3/5
8. 45/60 = 3/4
9. 57/60
10. 60/60 = 1/1 = 1 hour
11. 30 minutes
12. 15 minutes
13. 45 minutes
14. 60 minutes

**27) Understanding Fractions**
1. "D" stands for denominator. South means the denominator is on the bottom of the fraction since south is a direction that points downward. "N" stands for numerator. North means the numerator is on the top of a fraction since north is a direction that points upward. This phrase helps you to remember what the parts of a fraction are called.
2. No, fractions can have different numbers for the numerator and the denominator. If the number is the same for both, the fraction is equivalent to 1.
3. 1/1 and 3/3 are the same because each of these fractions is a whole one = 1.
4. When you compare the three fractions, you see that they all have the same number for the denominator. So then you look at the numerators: 1, 2, and 3. Therefore, 1/3 < 2/3 < 3/3 since the whole numbers are 1 < 2 < 3.

*Fractions Rock* – Picture Book & *All About Fractions* – Graphic Novel