MATH | GRADES 3 TO 5 | STUDENT PACKET

Equivalent Fractions and Number Lines

Unit fractions, equivalent fractions, and comparing fractions with models and number lines

IN THIS PACKET YOU WILL LEARN TO

- ✓ Place a fraction on a number line between 0 and 1, and beyond 1
- ✓ Find equivalent fractions with models and by multiplying
- ✓ Simplify a fraction to lowest terms
- ✓ Compare two fractions with <, >, or =

Name _____

Teacher _____

Class _____

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What a Fraction Means

LEARN

Read this page with your teacher or a partner, and look at each model before you read the steps next to it.

EQUAL PARTS OF A WHOLE



This bar is cut into 4 equal parts, and 3 parts are shaded.

1. The denominator tells how many equal parts make the whole, so the denominator is 4.
2. The numerator tells how many parts are shaded, so the numerator is 3.
3. The fraction is $\frac{3}{4}$.

$\frac{3}{4}$ of the bar is shaded

A POINT ON A NUMBER LINE

A number line from 0 to 1 can be cut into equal parts too.

1. Cut the distance from 0 to 1 into 4 equal parts.
2. Each hop is $\frac{1}{4}$.
3. Three hops from 0 land on $\frac{3}{4}$.

$\frac{3}{4}$ is three hops of $\frac{1}{4}$ from 0

WORDS TO KNOW

numerator	The top number of a fraction. It tells how many parts you have.
denominator	The bottom number of a fraction. It tells how many equal parts make one whole.
unit fraction	A fraction with a numerator of 1, such as $\frac{1}{2}$, $\frac{1}{3}$, or $\frac{1}{4}$.
equivalent fractions	Fractions that name the same amount, such as $\frac{1}{2}$ and $\frac{2}{4}$.

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Finding Equivalent Fractions

LEARN

Each box shows a way to find an equivalent fraction. Read the steps and try the two practice items at the bottom.

MULTIPLY TO FIND AN EQUIVALENT FRACTION

Find a fraction equivalent to $\frac{1}{2}$ with a denominator of 8.

1. Ask what you multiply 2 by to get 8, and the answer is 4.
2. Multiply the numerator by the same number: 1 × 4 = 4.
3. So $\frac{1}{2} = \frac{4}{8}$.

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

DIVIDE TO SIMPLIFY

Simplify $\frac{6}{8}$.

1. Find a number that divides both 6 and 8, and that number is 2.
2. Divide the numerator and the denominator by 2.
3. 6 ÷ 2 = 3 and 8 ÷ 2 = 4, so $\frac{6}{8} = \frac{3}{4}$.

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

Try it

1. $\frac{1}{3} =$ _____ /9

2. $\frac{8}{12} =$ _____ /3

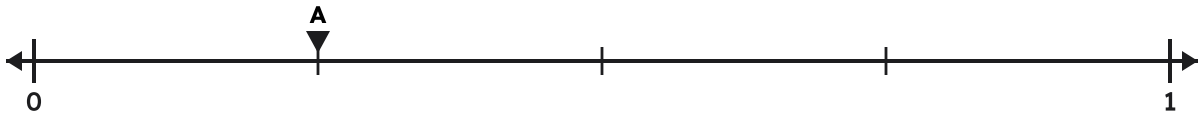
Name _____ Date _____

Fractions on a Number Line

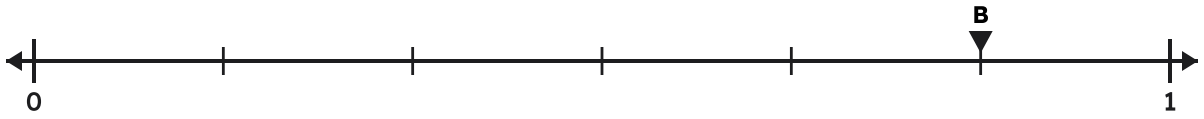
GUIDED PRACTICE

Look at each number line. Write the fraction for each marked point, or mark the point named in the question.

1. Point A is at which fraction?



2. Point B is at which fraction?



3. Mark $\frac{2}{3}$ on this number line.



4. Point A is _____

5. Point B is _____

Name _____ Date _____

Equivalent Fractions Practice

PRACTICE ★

Write the missing number that makes each pair of fractions equivalent. Then simplify each fraction to lowest terms.

1. $\frac{1}{2} = \{____/4\}$
2. $\frac{1}{3} = \{____/6\}$
3. $\frac{2}{5} = \{____/10\}$
4. $\frac{3}{4} = \{6/____\}$
5. $\frac{2}{3} = \{8/____\}$
6. $\frac{1}{4} = \{3/____\}$
7. $\frac{5}{6} = \{____/12\}$
8. $\frac{3}{5} = \{6/____\}$
9. $\frac{1}{5} = \{____/15\}$

Simplify to lowest terms

10. $\frac{4}{8} = ____$
11. $\frac{6}{9} = ____$
12. $\frac{4}{6} = ____$
13. $\frac{5}{10} = ____$
14. $\frac{8}{12} = ____$
15. $\frac{9}{12} = ____$

Name _____ Date _____

Compare Fractions

PRACTICE ★★

Write <, >, or = between each pair. Use a benchmark such as one half, or write both fractions with the same denominator.

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

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

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

4. $\frac{5}{8}$ _____ $\frac{1}{2}$

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

6. $\frac{4}{5}$ _____ $\frac{3}{4}$

7. $\frac{2}{8}$ _____ $\frac{1}{4}$

8. $\frac{5}{6}$ _____ $\frac{7}{8}$

Fractions greater than one

9. $\frac{5}{4}$ _____ $1\frac{1}{4}$

10. $\frac{7}{3}$ _____ 2

11. $\frac{11}{6}$ _____ $1\frac{2}{3}$

12. $\frac{9}{4}$ _____ $2\frac{1}{4}$

REMEMBER

When two fractions have the same denominator, the one with the greater numerator is greater. When two fractions have the same numerator, the one with the smaller denominator is greater.

Name _____ Date _____

Sort the Fractions

CUT AND PASTE

Cut out the twelve fraction cards at the bottom of the page. Glue each card in the column that tells how it compares to $\frac{1}{2}$.

Less than $\frac{1}{2}$	Equal to $\frac{1}{2}$	Greater than $\frac{1}{2}$

1. Look at the fractions greater than $\frac{1}{2}$. What do you notice about the numerator and the denominator?

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

Name _____ Date _____

Match the Model to the Fraction

MATCH

Read each description on the left and find the fraction on the right that names it. Write the letter of the fraction on the line.

MODEL		FRACTION
1. A bar cut into 4 equal parts with 1 part shaded	_____	**A** $\frac{1}{4}$
2. A bar cut into 4 equal parts with 2 parts shaded	_____	**B** $2\frac{1}{2}$
3. A number line from 0 to 1 with a point 3 hops of $\frac{1}{8}$ from 0	_____	**C** 1
4. A bar cut into 6 equal parts with 5 parts shaded	_____	**D** $\frac{2}{4}$
5. Two wholes and one more half of a third whole	_____	**E** $\frac{5}{6}$
6. A bar cut into 3 equal parts with every part shaded	_____	**F** $\frac{5}{6}$
7. A number line from 0 to 1 with a point at the fifth of six equal hops	_____	**G** $\frac{6}{8}$
8. A bar cut into 8 equal parts with 6 parts shaded	_____	**H** $\frac{3}{8}$

9. Name two equivalent fractions from the list above, and explain how you know they are equivalent.

Name _____ Date _____

Mystery Picture

COLOR BY FRACTION

Find the answer in each square, then color the square with the color from the key that matches that answer. When you finish, a picture will appear.

☐ **Light blue**: The answer is 2 or $\frac{1}{3}$.

☐ **Red**: The answer is 4 or $\frac{2}{3}$.

☐ **Gray**: The answer is 3 or $\frac{1}{2}$.

☐ **Orange**: The answer is 6 or $\frac{3}{4}$.

$\frac{1}{2}$ = ☐/4	$\frac{2}{6}$	$\frac{1}{3}$ = ☐/6	$\frac{4}{12}$	$\frac{1}{2}$ = ☐/8	$\frac{4}{6}$	$\frac{3}{6}$ = ☐/4	$\frac{2}{3}$ = ☐/3	$\frac{1}{2}$ = ☐/4	$\frac{2}{6}$
$\frac{1}{3}$ = ☐/6	$\frac{4}{12}$	$\frac{3}{6}$ = ☐/4	$\frac{2}{5}$ = ☐/10	$\frac{8}{12}$	$\frac{2}{3}$ = ☐/6	$\frac{1}{3}$ = ☐/12	$\frac{2}{3}$ = ☐/3	$\frac{1}{2}$ = ☐/4	$\frac{2}{6}$
$\frac{1}{3}$ = ☐/6	$\frac{4}{12}$	$\frac{1}{2}$ = ☐/8	$\frac{4}{6}$	$\frac{2}{5}$ = ☐/10	$\frac{8}{12}$	$\frac{2}{3}$ = ☐/6	$\frac{1}{3}$ = ☐/12	$\frac{3}{6}$ = ☐/4	$\frac{2}{3}$ = ☐/3
$\frac{1}{2}$ = ☐/4	$\frac{1}{2}$ = ☐/8	$\frac{4}{6}$	$\frac{2}{5}$ = ☐/10	$\frac{8}{12}$	$\frac{2}{3}$ = ☐/6	$\frac{1}{3}$ = ☐/12	$\frac{1}{2}$ = ☐/8	$\frac{4}{6}$	$\frac{2}{6}$
$\frac{1}{3}$ = ☐/6	$\frac{4}{12}$	$\frac{3}{6}$ = ☐/4	$\frac{2}{3}$ = ☐/3	$\frac{1}{4}$ = ☐/12	$\frac{4}{8}$	$\frac{1}{2}$ = ☐/4	$\frac{2}{6}$	$\frac{1}{3}$ = ☐/6	$\frac{4}{12}$
$\frac{3}{6}$ = ☐/4	$\frac{2}{3}$ = ☐/3	$\frac{1}{2}$ = ☐/4	$\frac{2}{6}$	$\frac{3}{6}$	$\frac{1}{3}$ = ☐/9	$\frac{1}{3}$ = ☐/6	$\frac{4}{12}$	$\frac{3}{6}$ = ☐/4	$\frac{2}{3}$ = ☐/3
$\frac{1}{2}$ = ☐/4	$\frac{2}{6}$	$\frac{1}{3}$ = ☐/6	$\frac{2}{4}$	$\frac{5}{10}$	$\frac{1}{4}$ = ☐/12	$\frac{4}{8}$	$\frac{4}{12}$	$\frac{3}{6}$ = ☐/4	$\frac{2}{3}$ = ☐/3
$\frac{1}{2}$ = ☐/4	$\frac{2}{6}$	$\frac{3}{6}$	$\frac{1}{3}$ = ☐/9	$\frac{2}{4}$	$\frac{5}{10}$	$\frac{1}{4}$ = ☐/12	$\frac{4}{8}$	$\frac{1}{3}$ = ☐/6	$\frac{4}{12}$
$\frac{3}{6}$ = ☐/4	$\frac{2}{3}$ = ☐/3	$\frac{1}{2}$ = ☐/4	$\frac{2}{6}$	$\frac{1}{2}$ = ☐/12	$\frac{6}{8}$	$\frac{1}{3}$ = ☐/6	$\frac{4}{12}$	$\frac{3}{6}$ = ☐/4	$\frac{2}{3}$ = ☐/3
$\frac{1}{2}$ = ☐/4	$\frac{2}{6}$	$\frac{1}{3}$ = ☐/6	$\frac{3}{4}$ = ☐/8	$\frac{4}{12}$	$\frac{3}{6}$ = ☐/4	$\frac{9}{12}$	$\frac{2}{3}$ = ☐/3	$\frac{1}{2}$ = ☐/4	$\frac{2}{6}$

Name _____ Date _____

Fraction Riddle

RIDDLE

Find the missing number in each pair. Look it up in the code table and write the letter on the line with the same number to answer the riddle.

What do you call two fractions that name the same amount?

_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
1	2	3	4	5	6	7	8	9	10

CODE TABLE

2	3	4	5	6	7	8	9	10	11	12	15
Q	A	E	N	U	B	I	L	V	D	T	P

1. $\frac{1}{2} = ____/8$ **2.** $\frac{1}{3} = ____/6$ **3.** $\frac{1}{2} = ____/12$ **4.** $\frac{2}{3} = ____/12$

5. $\frac{5}{6} = ____/12$ **6.** $\frac{1}{4} = ____/12$ **7.** $\frac{3}{4} = ____/12$ **8.** $\frac{2}{5} = ____/10$

9. $\frac{1}{2} = ____/10$ **10.** $\frac{3}{4} = ____/16$

Name _____ Date _____

Fraction Word Problems

APPLY

Read each problem twice and show your work in the box. Write your answer with the label on the line.

1. A pizza is cut into 8 equal slices, and 4 slices are eaten. What fraction of the pizza is eaten, in lowest terms?

SHOW YOUR WORK

Answer: _____

2. Maya walks $\frac{3}{4}$ of a mile and Theo walks $\frac{2}{3}$ of a mile. Who walks farther, and how do you know?

SHOW YOUR WORK

Answer: _____

3. A ribbon is 1 yard long. Kia uses $\frac{2}{6}$ of the ribbon. What fraction of the ribbon is left, in lowest terms?

SHOW YOUR WORK

Answer: _____

4. A class reads $\frac{5}{8}$ of a chapter on Monday and the rest on Tuesday. What fraction do they read on Tuesday?

SHOW YOUR WORK

Answer: _____

Name _____ Date _____

Find the Mistake

ERROR ANALYSIS ★★

Each box shows work from a student who made a mistake. Read the work carefully, explain what went wrong, and then answer the question below it.

Sofia's work

I want a fraction equivalent to $\frac{2}{3}$.

I add 2 to the numerator and 2 to the denominator.

So I think $\frac{2}{3} = \frac{4}{5}$.

1. What mistake did Sofia make? Explain it in a complete sentence.

2. Find a fraction equivalent to $\frac{2}{3}$ with a denominator of 12.

YOUR WORK

Leo's work

I compared $\frac{3}{8}$ and $\frac{1}{2}$.

3 is greater than 1, so $\frac{3}{8}$ is greater than $\frac{1}{2}$.

I wrote $\frac{3}{8} > \frac{1}{2}$.

3. What mistake did Leo make? Explain it in a complete sentence.

4. Compare $\frac{5}{8}$ and $\frac{1}{2}$ using <, >, or =, and show how you know.

YOUR WORK

Name _____ Date _____

Explain Your Strategy

WRITE ABOUT MATH

Answer each question in complete sentences. Use the sentence starters if they help, and use the words numerator and denominator in your writing.

1. How do you find a fraction equivalent to $\frac{3}{4}$ with a denominator of 12, and what is that fraction?

   I multiply the numerator and the denominator by _____, because _____. The equivalent fraction is _____.

DRAW TWO FRACTION BARS OR A NUMBER LINE THAT SHOWS YOUR EQUIVALENT PAIR

2. How can you tell that $\frac{2}{5}$ is less than $\frac{1}{2}$ without finding a common denominator?

Name _____ Date _____

Mixed Review

REVIEW

Solve each problem and check your work when you finish. Use any strategy from this packet that helps you.

1. $\frac{1}{2}$ = {_____/10}

2. $\frac{2}{3}$ = {6/_____}

3. $\frac{3}{5}$ = {_____/15}

Simplify

4. $\frac{6}{8}$ = _____

5. $\frac{9}{12}$ = _____

6. $\frac{4}{10}$ = _____

Compare with <, >, or =

7. $\frac{5}{8}$ _____ $\frac{1}{2}$

8. $\frac{3}{4}$ _____ $\frac{5}{6}$

9. A garden is planted in 6 equal rows, and 4 rows have carrots. What fraction of the garden has carrots, in lowest terms?

SHOW YOUR WORK

Answer: _____

10. Jon drinks $\frac{3}{8}$ of a bottle of water and Lia drinks $\frac{1}{2}$ of a bottle. Who drinks more, and how do you know?

SHOW YOUR WORK

Answer: _____

Name _____ Date _____

Exit Tickets

CHECK

Your teacher will cut this page on the dotted line so each student gets one ticket. Solve all four problems on your own and show your work.

Fractions Exit Ticket

Name _____

1. $\frac{1}{3} = \{____/9\}$

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

3. A pan of brownies is cut into 8 equal pieces, and 6 pieces are eaten. What fraction is eaten, in lowest terms?

SHOW YOUR WORK

Answer: _____

Fractions Exit Ticket

Name _____

1. $\frac{1}{3} = \{____/9\}$

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

3. A pan of brownies is cut into 8 equal pieces, and 6 pieces are eaten. What fraction is eaten, in lowest terms?

SHOW YOUR WORK

Answer: _____

Name _____ Date _____

How Did I Do?

SELF-CHECK

Read each skill and put a check in the box that fits you best. Then answer the two questions at the bottom of the page.

Skill	I can do this on my own.	I can do this with a little help.	I am still learning this.
I can place a fraction on a number line.	☐	☐	☐
I can find an equivalent fraction by multiplying.	☐	☐	☐
I can simplify a fraction to lowest terms.	☐	☐	☐
I can compare two fractions with <, >, or =.	☐	☐	☐
I can use one half as a benchmark when I compare.	☐	☐	☐
I can solve word problems that use fractions.	☐	☐	☐

1. Which skill do you want to practice more, and why?

2. Which strategy from this packet helps you the most? Show how it works with one pair of fractions.