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4th Grade Mathematics Remote Learning Plan

Caesar Rodney School District May 2020
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<th>MX Student Pages 245-246 (23)</th>
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<td>MX Student Page 258 (25)</td>
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<td></td>
<td>Write and compare decimals in tenths and in hundredths</td>
<td>MX Student Page 259 (26)</td>
</tr>
<tr>
<td></td>
<td>Read, write, and model decimals greater than 1</td>
<td>MX Student Page 262 (27)</td>
</tr>
<tr>
<td></td>
<td>Compare decimals greater than one</td>
<td>MX Student Page 264 (28)</td>
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</tbody>
</table>
Dear Family,

Your child has experience with fractions through measurements and in previous grades. Unit 6 of *Math Expressions* builds on this experience. The main goals of this unit are to:

- understand the meaning of fractions.
- compare unit fractions.
- add and subtract fractions and mixed numbers with like denominators.
- multiply a fraction by a whole number.

Your child will use fraction bars and fraction strips to gain a visual and conceptual understanding of fractions as parts of a whole. Later, your child will use these models to add and subtract fractions and to convert between improper fractions and mixed numbers.

**Examples of Fraction Bar Modeling:**

<table>
<thead>
<tr>
<th>Fraction Comparisons</th>
<th>Fraction Subtraction</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Fraction Bar" /></td>
<td><img src="image" alt="Fraction Bar" /></td>
</tr>
<tr>
<td>( \frac{1}{3} &lt; \frac{1}{2} )</td>
<td>( \frac{5}{5} - \frac{2}{5} = \frac{3}{5} )</td>
</tr>
</tbody>
</table>

In later lessons of this unit, your child will be introduced to the number line model for fractions. Students name fractions corresponding to given lengths on the number line and identify lengths corresponding to given fractions. They also see that there are many equivalent fraction names for any given length.

Your child will apply this knowledge about fractions and fraction operations to solve real world problems.

If you have questions or problems, please contact me.

Sincerely,

Your child's teacher

---

This unit includes the Common Core Standards for Mathematical Content for Numbers and Operations-Fractions, 4.NF.3, 4.NF.3a, 4.NF.3b, 4.NF.3c, 4.NF.3d, 4.NF.4a, 4.NF.4b, and all Mathematical Practices.
Estimada familia:

Su niño ha usado fracciones al hacer mediciones y en los grados previos. La Unidad 6 de Math Expressions amplía esta experiencia. Los objetivos principales de la unidad son:

- comprender el significado de las fracciones.
- comparar fracciones unitarias.
- sumar y restar fracciones y números mixtos con denominadores iguales.
- multiplicar una fracción por un número entero.

Su niño usará barras y tiras de fracciones para comprender y visualizar el concepto de las fracciones como partes de un entero. Luego, usará estos modelos para sumar y restar fracciones y para convertir fracciones impropias y números mixtos.

Ejemplos de modelos con barras de fracciones:

<table>
<thead>
<tr>
<th>Comparaciones de fracciones</th>
<th>Resta de fracciones</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/3 &lt; 1/2</td>
<td>5/5 - 2/5 = 3/5</td>
</tr>
</tbody>
</table>

Más adelante en esta unidad, su niño verá el modelo de la recta numérica para las fracciones. Los estudiantes nombrarán las fracciones que correspondan a determinadas longitudes en la recta numérica e identificarán longitudes que corresponden a fracciones dadas. También observarán que hay muchos nombres de fracciones equivalentes para una longitud determinada.

Su niño aplicará este conocimiento de las fracciones y operaciones con fracciones para resolver problemas cotidianos.

Si tiene alguna duda o algún comentario, por favor comuníquese conmigo.

Atentamente,
El maestro de su niño
Sums of Fractions

A unit fraction represents one equal part of a whole. A unit fraction has a numerator of 1. The unit fraction \( \frac{1}{d} \) is one of \( d \) equal parts.

The fraction bar below is divided into six equal parts, or sixths. Each part is 1 of 6 equal parts, or \( \frac{1}{6} \).

\[
\begin{array}{cccccccc}
\frac{1}{6} & \frac{1}{6} & \frac{1}{6} & \frac{1}{6} & \frac{1}{6} & \frac{1}{6} & \frac{1}{6}
\end{array}
\]

A fraction is the sum of unit fractions. The fraction \( \frac{n}{d} \) is the sum of \( n \) copies of \( \frac{1}{d} \).

- numerator \( n \) is the number of unit fractions in the fraction.
- denominator \( d \) is the number of equal parts in the whole.

The fraction \( \frac{5}{6} \) is the sum of five sixths.

\[
\frac{5}{6} = \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} = 5 \times \frac{1}{6}
\]

Fold your fraction strips to show each sum of unit fractions. Write the fraction each sum represents.

1. \( \frac{1}{3} + \frac{1}{3} = \) __________

2. \( \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} = \) __________

3. \( \frac{1}{4} + \frac{1}{4} = \) __________

4. \( \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} = \) __________

5. \( \frac{1}{12} + \frac{1}{12} + \frac{1}{12} + \frac{1}{12} + \frac{1}{12} + \frac{1}{12} = \) __________

6. \( \frac{1}{12} + \frac{1}{12} + \frac{1}{12} + \frac{1}{12} + \frac{1}{12} + \frac{1}{12} + \frac{1}{12} + \frac{1}{12} = \) __________

7. \( \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} = \) __________
Sums of Unit Fractions

Shade the fraction bar to show each fraction. Then write the fraction as a sum of unit fractions and as a product of a whole number and a unit fraction. The first one is done for you.

9. \( \frac{3}{4} = \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = 3 \times \frac{1}{4} \)

10. \( \frac{3}{8} = \quad \quad = \quad \quad \)

11. \( \frac{5}{5} = \quad \quad = \quad \quad \)

12. \( \frac{2}{12} = \quad \quad = \quad \quad \)

13. \( \frac{4}{7} = \quad \quad = \quad \quad \)

14. \( \frac{7}{9} = \quad \quad = \quad \quad \)
Fractions as Parts of a Whole

Jon made a large sandwich for the 6 people in his family. He asked his father to help him cut it into 6 equal pieces. To do this, they made a paper cutting guide that is as long as the sandwich. Jon folded the paper into 6 equal parts, and his father used it to cut the sandwich into equal pieces.

Solve.

15. If each person ate 1 piece of the sandwich, what fraction of the sandwich did each person eat? Fold your 6-part fraction strip to show the fraction of the whole sandwich that each person ate.

15. How many pieces of the whole sandwich did Jon's mother and father eat altogether? Fold your fraction strip to show the fraction of the whole sandwich Jon's mother and father ate in all.

17. After Jon's mother and father got their pieces, what fraction of the sandwich was left?

18. Jon and each of his sisters were each able to have one piece of the remaining sandwiches. How many sisters does Jon have?

19. What ideas about fractions did we use to answer the questions about Jon's sandwich?
Fifths that Add to One

Every afternoon, student volunteers help the school librarian put returned books back on the shelves. The librarian puts the books in equal piles on a cart.

One day, Jean and Maria found 5 equal piles on the return cart. They knew there were different ways they could share the job of reshelving the books. They drew fraction bars to help them find all the possibilities.

1. On each fifths bar, circle two groups of fifths to show one way Jean and Maria could share the work. (Each bar should show a different possibility.) Then complete the equation next to each bar to show their shares.

<table>
<thead>
<tr>
<th>1 whole = all of the books</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/5</td>
</tr>
</tbody>
</table>

1 whole Jean’s share Maria’s share

5/5 = 5/5 + 5/5

5/5 = 5/5 + 5/5

5/5 = 5/5 + 5/5

5/5 = 5/5 + 5/5

5/5 = 5/5 + 5/5
Sixths that Add to One

The librarian put 6 equal piles of returned books on the cart for Liu and Henry to reshelve. They also drew fraction bars.

2. On each sixths bar, circle two groups of sixths to show one way that Liu and Henry could share the work. (Each bar should show a different possibility.) Then complete the equation next to each bar to show their shares.

<table>
<thead>
<tr>
<th>1 whole = all of the books</th>
<th>1 whole share</th>
<th>Liu's share</th>
<th>Henry's share</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \frac{6}{6} = \frac{1}{6} + \frac{5}{6} )</td>
<td>( \frac{6}{6} )</td>
<td>( \frac{1}{6} )</td>
<td>( \frac{5}{6} )</td>
</tr>
<tr>
<td>( \frac{6}{6} = \frac{1}{6} + \frac{5}{6} )</td>
<td>( \frac{6}{6} )</td>
<td>( \frac{1}{6} )</td>
<td>( \frac{5}{6} )</td>
</tr>
<tr>
<td>( \frac{6}{6} = \frac{1}{6} + \frac{5}{6} )</td>
<td>( \frac{6}{6} )</td>
<td>( \frac{1}{6} )</td>
<td>( \frac{5}{6} )</td>
</tr>
<tr>
<td>( \frac{6}{6} = \frac{1}{6} + \frac{5}{6} )</td>
<td>( \frac{6}{6} )</td>
<td>( \frac{1}{6} )</td>
<td>( \frac{5}{6} )</td>
</tr>
</tbody>
</table>

Find the Unknown Addend

Write the fraction that will complete each equation.

1. \( \frac{7}{7} = \frac{1}{7} + \frac{\text{___}}{7} \)
2. \( \frac{6}{8} = \frac{3}{8} + \frac{\text{___}}{8} \)
3. \( \frac{3}{3} = \frac{2}{3} + \frac{\text{___}}{3} \)
4. \( \frac{4}{4} = \frac{3}{4} + \frac{\text{___}}{4} \)
5. \( \frac{5}{5} = \frac{2}{5} + \frac{\text{___}}{5} \)
6. \( \frac{10}{10} = \frac{6}{10} + \frac{\text{___}}{10} \)
7. \( \frac{6}{6} = \frac{2}{6} + \frac{\text{___}}{6} \)
8. \( \frac{8}{8} = \frac{5}{8} + \frac{\text{___}}{8} \)
Discuss and Compare Unit Fractions

Use these fraction bars to help you compare the unit fractions. Write $>$ or $<$. 

1. $\frac{1}{1}$
2. $\frac{1}{2}$
3. $\frac{1}{3}$
4. $\frac{1}{4}$
5. $\frac{1}{5}$
6. $\frac{1}{6}$
7. $\frac{1}{7}$
8. $\frac{1}{8}$
9. $\frac{1}{9}$
10. $\frac{1}{10}$
11. $\frac{1}{11}$
12. $\frac{1}{12}$
13. $\frac{1}{13}$
14. $\frac{1}{14}$
15. $\frac{1}{15}$
16. $\frac{1}{16}$
17. $\frac{1}{17}$
18. $\frac{1}{18}$
19. $\frac{1}{19}$
20. $\frac{1}{20}$
21. $\frac{1}{21}$
22. $\frac{1}{22}$
23. $\frac{1}{23}$
24. $\frac{1}{24}$
25. $\frac{1}{25}$
26. $\frac{1}{26}$
27. $\frac{1}{27}$
28. $\frac{1}{28}$
29. $\frac{1}{29}$
30. $\frac{1}{30}$
31. $\frac{1}{31}$
32. $\frac{1}{32}$
33. $\frac{1}{33}$
34. $\frac{1}{34}$
35. $\frac{1}{35}$
36. $\frac{1}{36}$
37. $\frac{1}{37}$
38. $\frac{1}{38}$
39. $\frac{1}{39}$
40. $\frac{1}{40}$
41. $\frac{1}{41}$
42. $\frac{1}{42}$
43. $\frac{1}{43}$
44. $\frac{1}{44}$
45. $\frac{1}{45}$
46. $\frac{1}{46}$
47. $\frac{1}{47}$
48. $\frac{1}{48}$
49. $\frac{1}{49}$
50. $\frac{1}{50}$

17. Complete this statement:

When comparing two unit fractions, the fraction with the smaller denominator is ________.
Compare and Order Unit Fractions

Write the unit fractions in order from least to greatest.

18. \( \frac{1}{6}, \frac{1}{8}, \frac{1}{5} \)  
19. \( \frac{1}{11}, \frac{1}{4}, \frac{1}{8} \)

20. \( \frac{1}{3}, \frac{1}{10}, \frac{1}{7} \)  
21. \( \frac{1}{4}, \frac{1}{7}, \frac{1}{9} \)

Solve

22. Andi and Paolo both ordered small pizzas. Andi ate \( \frac{1}{4} \) of her pizza. Paolo ate \( \frac{1}{6} \) of his pizza. Who ate more pizza?

23. Elena ordered a small pizza. Max ordered a large pizza. Elena ate \( \frac{1}{3} \) of her pizza. Max ate \( \frac{1}{4} \) of his pizza. Elena said she ate more pizza because \( \frac{1}{3} > \frac{1}{4} \). Do you agree? Explain.

What’s the Error?

Dear Math Students,

I had to compare \( \frac{1}{4} \) and \( \frac{1}{2} \) on my math homework. I reasoned that \( \frac{1}{4} \) is greater than \( \frac{1}{2} \) because 4 is greater than 2. My friend told me this isn’t right. Can you help me understand why my reasoning is wrong?

Your friend,
Puzzled Penguin

24. Write a response to Puzzled Penguin.
► Add Fractions

The circled parts of this fraction bar show an addition problem.

\[
\begin{array}{ccccccccc}
\frac{1}{7} & \frac{1}{7} & \frac{1}{7} & \frac{1}{7} & \frac{1}{7} & \frac{1}{7} & \frac{1}{7} & \frac{1}{7} \\
\end{array}
\]

1. Write the numerators that will complete the addition equation.

\[
\frac{7}{7} + \frac{7}{7} = \frac{14}{7} = \frac{2}{1}
\]

Solve each problem. Write the correct numerator to complete each equation.

2. \(\frac{3}{9} + \frac{4}{9} = \frac{7}{9}\)

3. \(\frac{1}{5} + \frac{3}{5} = \frac{4}{5}\)

4. \(\frac{2}{8} + \frac{5}{8} = \frac{7}{8}\)

5. What happens to the numerators in each problem?

6. What happens to the denominators in each problem?

► Subtract Fractions

The circled and crossed-out parts of this fraction bar show a subtraction problem.

\[
\begin{array}{ccccccccc}
\frac{7}{7} & \frac{1}{7} & \frac{1}{7} & \frac{1}{7} & \frac{1}{7} & \frac{1}{7} & \frac{1}{7} & \frac{1}{7} \\
\end{array}
\]

7. Write the numerators that will complete the subtraction equation.

\[
\frac{7}{7} - \frac{7}{7} = \frac{0}{7} = 0
\]
Subtract Fractions (continued)

Solve each problem. Write the correct numerators to complete each sentence.

8. \( \frac{5}{6} - \frac{4}{6} = \frac{-1}{6} = \frac{5}{6} \)
9. \( \frac{9}{10} - \frac{5}{10} = \frac{4}{10} = \frac{2}{5} \)
10. \( \frac{14}{16} - \frac{9}{16} = \frac{5}{16} = \frac{5}{16} \)

11. What happens to the numerators in each problem?

12. How is subtracting fractions with like denominators similar to adding fractions with like denominators?

Mixed Practice with Addition and Subtraction

Solve each problem. Include the “circled” step in Exercises 16–21.

13. \( \frac{1}{4} + \frac{2}{4} = \frac{3}{4} \)
14. \( \frac{3}{9} + \frac{5}{9} = \frac{8}{9} \)
15. \( \frac{6}{6} - \frac{2}{6} = \frac{4}{6} = \frac{2}{3} \)
16. \( \frac{4}{10} + \frac{5}{10} = \frac{9}{10} \)
17. \( \frac{2}{5} + \frac{4}{5} = \frac{6}{5} \)
18. \( \frac{8}{12} - \frac{3}{12} = \frac{5}{12} \)
19. \( \frac{5}{7} + \frac{2}{7} = \frac{7}{7} = 1 \)
20. \( \frac{7}{11} - \frac{4}{11} = \frac{3}{11} \)
21. \( \frac{8}{8} - \frac{5}{8} = \frac{3}{8} \)

Solve.

22. \( \frac{7}{9} - \frac{5}{9} = \frac{2}{9} \)
23. \( \frac{4}{5} - \frac{3}{5} = \frac{1}{5} \)
24. \( \frac{1}{3} + \frac{2}{3} = \frac{3}{3} = 1 \)

25. \( \frac{2}{11} + \frac{7}{11} = \frac{9}{11} \)
26. \( \frac{5}{6} - \frac{1}{6} = \frac{4}{6} = \frac{2}{3} \)
27. \( \frac{1}{8} + \frac{1}{8} = \frac{2}{8} = \frac{1}{4} \)

204 UNIT 6 LESSON 3 Add and Subtract Fractions with Like Denominators
Mixed Numbers in the Real World

A mixed number is a number that consists of a whole number and a fraction.

A fraction greater than 1 has a numerator greater than its denominator.

\[ \frac{14}{6}, \frac{34}{5}, \frac{10}{6}, \frac{19}{5} \]

Mellie’s Deli makes sandwiches. This is the price list.

<table>
<thead>
<tr>
<th>Sandwich</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular</td>
<td>serves 2</td>
<td>$3.00</td>
</tr>
<tr>
<td>Friendship</td>
<td>serves 4</td>
<td>$5.00</td>
</tr>
<tr>
<td>Super</td>
<td>serves 10</td>
<td>$12.00</td>
</tr>
<tr>
<td>Magna</td>
<td>serves 18</td>
<td>$20.00</td>
</tr>
</tbody>
</table>

Nineteen friends decide to camp in the park. They order two Super sandwiches. Each camper eats 1 serving.

Solve.

1. How many campers does one Super sandwich serve?

2. What fraction of the second sandwich is needed to serve the rest of the campers?

3. What fraction of the second sandwich is left over?

4. What number tells how many Super sandwiches the campers ate in all?
Convert Between Mixed Numbers and Fractions Greater Than 1

Change each mixed number to a fraction and each fraction to a mixed number.

5. \(5\frac{2}{3} = \) 
6. \(3\frac{3}{7} = \)

7. \(6\frac{6}{10} = \)
8. \(9\frac{1}{4} = \)

9. \(2\frac{7}{8} = \)
10. \(4\frac{5}{9} = \)

11. \(8\frac{3}{5} = \)
12. \(7\frac{4}{6} = \)

13. \(\frac{40}{6} = \)
14. \(\frac{11}{2} = \)

15. \(\frac{23}{7} = \)
16. \(\frac{28}{3} = \)

17. \(\frac{22}{4} = \)
18. \(\frac{25}{8} = \)

19. \(\frac{29}{7} = \)
20. \(\frac{6\frac{4}{8}}{} = \)

21. \(\frac{4\frac{6}{9}}{} = \)
22. \(\frac{16}{3} = \)
Practice Addition and Subtraction with Fractions Greater Than 1

Add or subtract.
1. \( \frac{8}{5} + \frac{3}{5} = \) \[
\]
2. \( \frac{6}{9} + \frac{12}{9} = \) \[
\]
3. \( \frac{10}{7} - \frac{3}{7} = \) \[
\]
4. \( \frac{10}{8} + \frac{7}{8} = \) \[
\]
5. \( \frac{9}{6} - \frac{4}{6} = \) \[
\]
6. \( \frac{19}{10} - \frac{7}{10} = \) \[
\]

Add Mixed Numbers with Like Denominators

Add.
7. \( 2\frac{3}{5} + 1\frac{1}{5} = \) \[
\]
8. \( 1\frac{2}{5} + 3\frac{4}{5} = \) \[
\]
9. \( 3\frac{5}{8} + 1\frac{3}{8} = \) \[
\]
10. \( 5\frac{2}{3} + 2\frac{2}{3} = \) \[
\]

Subtract Mixed Numbers with Like Denominators

Subtract.
11. \( \frac{5}{8} - 3\frac{3}{8} = \) \[
\]
12. \( \frac{6}{8} - 4\frac{5}{8} = \) \[
\]
13. \( \frac{4}{5} - 1\frac{3}{5} = \) \[
\]
14. \( \frac{5}{6} - 3\frac{4}{6} = \) \[
\]

Explain each solution.
15. \( 6\frac{2}{7} = 5\frac{9}{7} \)
16. \( 6\frac{2}{6} = 5\frac{8}{6} \)
17. \( 6\frac{2}{11} = 5\frac{13}{11} \)

- \( 1\frac{5}{7} = 1\frac{5}{7} \)
- \( 1\frac{5}{6} = 1\frac{5}{6} \)
- \( 1\frac{5}{11} = 1\frac{5}{11} \)

\( \frac{4}{7} \)
\( \frac{4}{6} \)
\( \frac{4}{11} \)
What’s the Error?

Dear Math Students,

Here is a subtraction problem that I tried to solve.

Is my answer correct? If not, please help me understand why it is wrong.

Your friend,
Puzzled Penguin

18. Write a response to Puzzled Penguin.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Compare and Subtract

Compare each pair of mixed numbers using > or <. Then subtract the lesser mixed number from the greater mixed number.

19. $3\frac{2}{5}; 1\frac{4}{5}$

20. $8\frac{8}{9}; 2\frac{2}{9}$

21. $\frac{14}{11}; 1\frac{6}{11}$

22. $4\frac{1}{8}; 2\frac{7}{8}$

23. $3\frac{2}{6}; 4\frac{3}{6}$

24. $10\frac{1}{3}; 7\frac{2}{3}$

Add and Subtract Mixed Numbers with Like Denominators
Practice with Fractions and Mixed Numbers

Write the fraction that will complete each equation.

1. $\frac{1}{4} = \frac{4}{4} + \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_}
Practice with Fractions and Mixed Numbers (continued)

Add or subtract.

23. $\frac{31}{4} + \frac{52}{4}$

24. $\frac{46}{8}$

25. $\frac{13}{5}$

26. $\frac{41}{3} - \frac{12}{3}$

27. $\frac{25}{10}$

28. $\frac{49}{10}$

29. $\frac{105}{8}$

What’s the Error?

Dear Math Students,

This is a problem from my math homework. My friend says my answer is not correct, but I can’t figure out what I did wrong. Can you help me find and fix my mistake?

Your friend,
Puzzled Penguin

29. Write a response to Puzzled Penguin.
Real World Problems

Write an equation. Then solve.

30. Daniel spent $1\frac{1}{4}$ hours playing soccer on Saturday and $\frac{3}{4}$ hour playing soccer on Sunday. How much time did he spend playing soccer over the weekend?

31. A pitcher contains $4\frac{3}{8}$ cups of juice. Antonio pours $\frac{5}{8}$ cup into a glass. How much juice is left in the pitcher?

32. Shayna walked from school to the library. Then she walked $1\frac{3}{10}$ miles from the library to her apartment. If she walked $2\frac{1}{10}$ miles in all, how far did she walk from school to the library?

33. The vet said Lucy’s cat Mittens weighs $7\frac{1}{4}$ pounds. This is $1\frac{2}{4}$ pounds more than Mittens weighed last year. How much did Mittens weigh last year?

34. The width of a rectangle is $3\frac{5}{6}$ inches. The length of the rectangle is $1\frac{4}{6}$ inches longer than the width. What is the length of the rectangle?

35. Choose one of the problems on this page. Draw a model to show that your answer is correct.
A Whole Number Multiplied by a Unit Fraction

The lunchroom at Mandy’s school serves pizza every Friday. Each slice is \( \frac{1}{4} \) of a pizza. Mandy eats one slice every week.

To find the fraction of a pizza she eats in three weeks, you can add or multiply.

\[
\frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{3}{4} \quad \text{or} \quad 3 \cdot \frac{1}{4} = \frac{3}{4}
\]

Solve each problem, first by adding and then by multiplying. Show your work.

1. What fraction of a pizza does she eat in five weeks?

2. What fraction of a pizza does she eat in eleven weeks?

Draw a model for each problem. Then solve.

3. \( 2 \cdot \frac{1}{3} = \)

4. \( 6 \cdot \frac{1}{5} = \)

5. \( 10 \cdot \frac{1}{8} = \)

Draw a model for each fraction. Then write each fraction as the product of a whole number and a unit fraction.

6. \( \frac{3}{5} = \__ \cdot \__ \)

7. \( \frac{8}{3} = \__ \cdot \__ \)

8. \( \frac{12}{7} = \__ \cdot \__ \)
A Whole Number Multiplied by a Non-Unit Fraction

The lunchroom at Joe's school serves sub sandwiches every Thursday. Each slice is \(\frac{1}{6}\) of a sub. Joe eats two pieces, or \(\frac{2}{6}\) of a sandwich, every week.

Solve each problem, first by adding and then by multiplying. Write your answer as a fraction. Show your work.

9. What fraction of a sandwich does Joe eat in three weeks?

10. What fraction of a sandwich does Joe eat in five weeks?

Draw a model for each problem. Then solve.

11. \(4 \cdot \frac{3}{8} =\)  
12. \(2 \cdot \frac{4}{5} =\)  
13. \(5 \cdot \frac{2}{3} =\)

Solve. Write your answer as a fraction.

14. \(8 \cdot \frac{3}{4} =\)  
15. \(18 \cdot \frac{2}{3} =\)  
16. \(10 \cdot \frac{5}{6} =\)

17. \(4 \cdot \frac{5}{7} =\)  
18. \(15 \cdot \frac{3}{10} =\)  
19. \(7 \cdot \frac{8}{9} =\)
Real World Problems

Draw a model for each problem. Then solve.

20. The five members of the Sanchez family each drank \( \frac{3}{4} \) cup orange juice for breakfast. How much juice did the family drink for breakfast altogether?

21. Stella ran \( \frac{1}{2} \) mile. Brian ran 7 times as far as Stella.
   How far did Brian run?

Write an equation. Then solve.

22. A banner has a length of 3 yards and a width of \( \frac{2}{3} \) yard. What is the area of the banner?

23. The 12 members of a volleyball team had a pizza party. Each pizza was divided into 8 equal slices and each player ate 3 slices. What fraction of a pizza did the team eat altogether?

24. It took Eli’s mother \( \frac{1}{6} \) hour to drive him to school. It took Alex 4 times as long as this to walk to school. How long did it take Alex to walk to school?
Real World Problems (continued)

Write an equation. Then solve.

25. Ami has building bricks that are \( \frac{5}{8} \) inch thick. She makes a stack of 15 bricks. How tall is the stack?

26. A crepe recipe calls for \( \frac{3}{4} \) cups of flour. A bread recipe calls for four times this much flour. How much flour is in the bread recipe?

27. The path around a park is \( \frac{7}{12} \) mile long. Nicolas ran around the park 6 times along the path. How far did he run?

What's the Error?

Dear Math Students,

I have so much homework! I have assignments in math, science, and reading. I think each subject will take \( \frac{1}{2} \) hour. I tried to multiply to find the total time.

\[ 3 \times \frac{1}{2} = \frac{3}{6} \]

That can't be right! I know \( \frac{3}{6} \) is the same as \( \frac{1}{2} \), so that is only \( \frac{1}{2} \) hour.

What did I do wrong? How long will my homework really take?

Your friend,

Puzzled Penguin

Multiplication Practice

Write each fraction as a sum of unit fractions and as the product of a whole number and a unit fraction.

1. \( \frac{4}{7} = \) ________________________________
   \( \frac{5}{2} = \) ________________________________

   \( \frac{4}{7} = \) ________________________________
   \( \frac{5}{2} = \) ________________________________

   \( \frac{2}{3} = \) ________________________________
   \( \frac{6}{4} = \) ________________________________

   \( \frac{2}{3} = \) ________________________________
   \( \frac{6}{4} = \) ________________________________

Draw a model for each problem. Then solve.

5. \( 6 \cdot \frac{1}{4} = \) ________________________________
   \( 8 \cdot \frac{2}{3} = \) ________________________________

7. \( 3 \cdot \frac{2}{9} = \) ________________________________
   \( 8 \cdot \frac{4}{5} = \) ________________________________

Multiply. Write your answer as a mixed number or a whole number, when possible.

9. \( 20 \cdot \frac{3}{10} = \) ________________________________
   \( 10 \cdot \frac{5}{9} = \) ________________________________

11. \( 2 \cdot \frac{2}{12} = \) ________________________________
    \( 12 \cdot \frac{1}{3} = \) ________________________________

13. \( 16 \cdot \frac{3}{8} = \) ________________________________
    \( 14 \cdot \frac{7}{10} = \) ________________________________
> Real Word Problems

Draw a model for each problem. Then solve. Write your answer as a mixed number or a whole number, when possible.

15. Michelle has three textbooks. Each weighs \( \frac{5}{8} \) pound. What is the total weight of her textbooks?

16. Mark lived in a house in the suburbs with \( \frac{2}{3} \) acre of land. Then he moved to a farm in the country that had 6 times this much land. How much land is on Mark’s farm?

Write an equation. Then solve. Write your answer as a mixed number or a whole number, when possible.

17. A restaurant served quiche for lunch today. Each quiche was cut into six pieces. The restaurant sold 59 pieces. How many quiches is this?

18. Zahra’s dog Brutus weighed \( \frac{7}{8} \) pound when he was born. Now he weighs 60 times this much. How much does Brutus weigh now?

19. Calvin made posters to advertise the school play. The posters are 2 feet long and \( \frac{11}{12} \) foot wide. What is the area of each poster?
Practice Fraction Operations

Write each fraction as a sum of fractions in two different ways.

1. \( \frac{3}{10} = \) 

2. \( \frac{7}{7} = \)

3. \( \frac{4}{5} = \)

4. \( \frac{5}{12} = \)

Add or subtract.

5. \( \frac{5}{8} + \frac{3}{8} = \)

6. \( \frac{2}{10} + \frac{1}{10} = \)

7. \( \frac{7}{9} - \frac{3}{9} = \)

8. \( \frac{6}{10} - \frac{1\frac{4}{10}}{} \)

9. \( \frac{5\frac{2}{3}}{} + \frac{4\frac{1}{3}}{} \)

10. \( \frac{7\frac{1}{6}}{} - \frac{3\frac{2}{6}}{} \)

11. \( \frac{12\frac{4}{9}}{} + \frac{10\frac{5}{9}}{} \)

12. \( \frac{1\frac{4}{5}}{} + \frac{1\frac{3}{5}}{} \)

13. \( \frac{7}{\ } - \frac{1\frac{1}{4}}{} \)

Multiply. Write your answer as a mixed number or a whole number, when possible.

14. \( 7 \cdot \frac{1}{10} = \)

15. \( 4 \cdot \frac{2}{9} = \)

16. \( 5 \cdot \frac{3}{5} = \)

17. \( 12 \cdot \frac{3}{4} = \)

18. \( 7 \cdot \frac{5}{8} = \)

19. \( 10 \cdot \frac{5}{6} = \)
Real World Problems

Write an equation. Then solve.

20. Dimitri rode his bike 32 miles yesterday. He rode $12\frac{4}{5}$ miles before lunch and the rest of the distance after lunch. How far did he ride after lunch?

21. Ms. Washington is taking an accounting class. Each class is $3\frac{3}{4}$ hour long. If there are 22 classes in all, how many hours will Ms. Washington spend in class?

22. Elin bought a large watermelon at the farmer’s market. She cut off a $5\frac{5}{8}$-pound piece and gave it to her neighbor. She has $11\frac{5}{8}$ pounds of watermelon left. How much did the whole watermelon weigh?

23. A recipe calls for $\frac{3}{4}$ cup of whole wheat flour, $1\frac{2}{4}$ cups of white flour, and $\frac{3}{4}$ cup of rye flour. How much flour is this in all?

24. Henri spent a total of $3\frac{2}{6}$ hours working on his science project. Kali spent $1\frac{5}{6}$ hours working on her science project. How much longer did Henri work on his project?

25. Mr. Friedman’s baby daughter is $\frac{5}{9}$ yard long. Mr. Friedman’s height is 4 times this much. How tall is Mr. Friedman?

26. A track is $\frac{1}{4}$ mile long. Kenny ran around the track 21 times. How far did Kenny run in all?
Dear Family,

In Lessons 1 through 7 of Unit 7 of *Math Expressions*, your child will build on previous experience with fractions. Your child will use both physical models and numerical methods to recognize and to find fractions equivalent to a given fraction. Your child will also compare fractions and mixed numbers, including those with like and unlike numerators and denominators.

By using fraction strips students determine how to model and compare fractions, and to find equivalent fractions. Your child will also learn how to use multiplication and division to find equivalent fractions.

**Examples of Fraction Bar Modeling:**

![Fraction Comparison Diagram]

\[
\begin{array}{c}
\frac{1}{3} < \frac{1}{2} \\
\end{array}
\]

![Equivalent Fractions Diagram]

\[
\begin{array}{c}
\frac{2}{8} = \frac{1}{4} \\
\end{array}
\]

Your child will be introduced to the number-line model for fractions. Students name fractions corresponding to given lengths on the number line and identify lengths corresponding to given fractions. They also see that there are many equivalent fraction names for any given length.

Your child will apply this knowledge of fractions to word problems and in data displays.

If you have questions or problems, please contact me.

Thank you.

Sincerely,

Your child's teacher
Estimada familia:

En las lecciones 1 a 7 de la Unidad 7 de Math Expressions, el niño ampliará sus conocimientos previos acerca de las fracciones. Su niño usará modelos físicos y métodos numéricos para reconocer y hallar fracciones equivalentes para una fracción dada. También comparará fracciones y números mixtos, incluyendo aquellos que tengan numeradores y denominadores iguales o diferentes.

Usando tiras de fracciones, los estudiantes determinarán cómo hacer modelos y comparar fracciones y cómo hallar fracciones equivalentes. Además, aprenderán cómo usar la multiplicación y división para hallar fracciones equivalentes.

Ejemplos de modelos con barras de fracciones:

<table>
<thead>
<tr>
<th>Fracciones equivalentes</th>
</tr>
</thead>
</table>
| \[
\begin{array}{|c|c|c|}
\hline
\hline
& & \\
\hline
& & \\
\hline
& & \\
\hline
\end{array}
\] \quad \frac{2}{8} = \frac{1}{4}

Su niño estudiará por primera vez el modelo de recta numérica para las fracciones. Los estudiantes nombrarán las fracciones que correspondan a determinadas longitudes en la recta numérica e identificarán longitudes que correspondan a fracciones dadas. También observarán que hay muchos nombres de fracciones equivalentes para una longitud determinada.

Su niño aplicará este conocimiento de las fracciones en problemas y en presentaciones de datos.

Si tiene alguna duda o algún comentario, por favor comuníquese conmigo.

Atentamente,

El maestro de su niño.
Practice Comparing Fractions

Circle the greater fraction. Use fraction strips if you need to.

1. \( \frac{1}{12} \) or \( \frac{1}{2} \)
2. \( \frac{3}{8} \) or \( \frac{1}{8} \)
3. \( \frac{2}{5} \) or \( \frac{2}{6} \)
4. \( \frac{1}{3} \) or \( \frac{1}{5} \)
5. \( \frac{4}{12} \) or \( \frac{5}{12} \)
6. \( \frac{7}{10} \) or \( \frac{5}{10} \)
7. \( \frac{1}{3} \) or \( \frac{2}{3} \)
8. \( \frac{3}{6} \) or \( \frac{3}{8} \)

Write > or < to make each statement true.

9. \( \frac{3}{10} \) \( \bigcirc \) \( \frac{3}{8} \)
10. \( \frac{3}{6} \) \( \bigcirc \) \( \frac{3}{5} \)
11. \( \frac{8}{10} \) \( \bigcirc \) \( \frac{8}{12} \)
12. \( \frac{2}{6} \) \( \bigcirc \) \( \frac{3}{6} \)
13. \( \frac{7}{10} \) \( \bigcirc \) \( \frac{7}{8} \)
14. \( \frac{5}{100} \) \( \bigcirc \) \( \frac{4}{100} \)

What's the Error?

Dear Math Students,

Yesterday, my family caught a large fish. We ate \( \frac{2}{6} \) of the fish. Today, we ate \( \frac{2}{4} \) of the fish. I told my mother that we ate more fish yesterday than today because 6 is greater than 4, so \( \frac{2}{6} \) is greater than \( \frac{2}{4} \). My mother told me I made a mistake.

Can you help me to figure out what my mistake was?

Your friend,

Puzzled Penguin

15. Write a response to Puzzled Penguin.
Discuss Number Lines

The number line below shows the fourths between 0 and 1. Discuss how the number line is like and unlike the fraction bar above it.

These number lines are divided to show different fractions.

Write > or < to make each statement true.

1. $\frac{3}{4}$ [ ] $\frac{5}{2}$
2. $\frac{15}{4}$ [ ] $\frac{20}{8}$
3. $\frac{10}{4}$ [ ] $\frac{24}{8}$
4. $\frac{4}{8}$ [ ] $\frac{13}{4}$

Identify Points

S. Write the fraction or mixed number for each lettered point above.

a. _____  b. _____  c. _____  d. _____

e. _____  f. _____  g. _____  h. _____
Number Lines for Thirds and Sixths

Tell how many equal parts are between zero and 1. Then write fraction labels above the equal parts.

6. _______

7. _______

Write > or < to make each statement true.

8. \( \frac{4}{3} \bigcirc \frac{7}{6} \)  
9. \( \frac{8}{3} \bigcirc \frac{18}{6} \)  
10. \( \frac{3}{5} \bigcirc \frac{3}{2} \)

Identify Points

12. Write the fraction or mixed number for each lettered point above. Describe any patterns you see with the class.

a. _______  
b. _______  
c. _______

d. _______  
e. _______  
f. _______

g. _______  
h. _______  
i. _______

Mark and label the letter of each fraction or mixed number on the number line.

13.  
a. \( \frac{1}{5} \)  
b. \( \frac{7}{10} \)  
c. \( \frac{2}{5} \)  
d. \( 2 \frac{1}{2} \)

e. \( 3 \frac{3}{10} \)  
f. \( 4 \frac{2}{5} \)  
g. \( 4 \frac{9}{10} \)  
h. \( 5 \frac{1}{2} \)
Equivalent Fractions

Read and discuss the problem situation.

Luis works summers at Maria’s Fruit Farm. One day, Maria agreed to give Luis extra pay if he could sell $\frac{2}{3}$ of her supply of peaches. They started with 12 bags of peaches, and Luis sold 8 of them.

1. Luis said to Maria, “Eight bags is $\frac{8}{12}$ of the 12 bags you wanted to sell. I think $\frac{2}{3}$ is the same as $\frac{8}{12}$. I can show you why.” Luis made this drawing. Did Luis earn his pay?

\[
\frac{2}{3} = \frac{8}{12}
\]

Two fractions that represent the same part of a whole are **equivalent fractions**. The fractions $\frac{2}{3}$ and $\frac{8}{12}$ are equivalent.

2. Maria said, “You are just fracturing each third into 4 twelfths. You can show what you did using numbers.”

Here’s what Maria wrote:

\[
\frac{2}{3} = \frac{2 \times 4}{3 \times 4} = \frac{8}{12}
\]

Discuss what Maria did. How does multiplying the numerator and denominator by 4 affect the fraction?
Use Fraction Bars to Find Equivalent Fractions

3. How do these fraction bars show equivalent fractions for $\frac{1}{3}$?

4. You can show how to find fractions equivalent to $\frac{1}{3}$ numerically. Fill in the blanks and finish the equations. Then explain how these fraction equations show equivalent fractions.

2 equal parts $\times 2$  
$\frac{1}{3} \times 2 = \frac{2}{6}$

3 equal parts $\times 3$  
$\frac{1}{3} \times 3 = \frac{3}{9}$

4 equal parts $\times ___$  
$\frac{1}{3} \times ___ = \frac{4}{12}$

... equal parts $\times ___$  
$\frac{1}{3} \times ___ = \frac{5}{15}$

... equal parts $\times ___$  
$\frac{1}{3} \times ___ = \frac{6}{18}$

5. Tell whether the fractions are equivalent.
   a. $\frac{1}{6}$ and $\frac{2}{12}$
   b. $\frac{3}{6}$ and $\frac{5}{9}$
   c. $\frac{6}{12}$ and $\frac{8}{15}$
Simplify Fractions

Simplifying a fraction means finding an equivalent fraction with a lesser numerator and denominator. Simplifying a fraction results in an equivalent fraction with fewer but greater unit fractions.

1. Maria had 12 boxes of apricots. She sold 10 of the boxes. Write the fraction of the boxes sold, and lightly shade the twelfths fraction bar to show this fraction.

   Fraction sold: ________________

2. Group the twelfths to form an equivalent fraction with a lesser denominator. Show the new fraction by dividing, labeling, and lightly shading the blank fraction bar.

   Fraction sold: ________________

3. In Problem 2, you formed groups of twelfths to get a greater unit fraction. How many twelfths are in each group? In other words, what is the group size?

   ____________________________

4. Show how you can find the equivalent fraction by dividing the numerator and denominator by the group size.

   \[
   \frac{10}{12} = \frac{10 \div 10}{12 \div 12} = \frac{1}{12}
   \]

Use what you know to find these equivalent fractions. You may want to sketch a thirds fraction bar below the two fraction bars above.

5. \[
   \frac{8}{12} = \frac{6}{6} = \frac{3}{3}
   \]

6. \[
   \frac{4}{12} = \frac{6}{6} = \frac{3}{3}
   \]

7. \[
   \frac{20}{12} = \frac{6}{6} = \frac{3}{3}
   \]
Use Fraction Bars to Find Equivalent Fractions

8. Look at the thirds bar. Circle enough unit fractions on each of the other bars to equal \(\frac{1}{3}\).

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</table>

9. Discuss how the parts of the fraction bars you circled show this chain of equivalent fractions. Explain how each different group of unit fractions is equal to \(\frac{1}{3}\).

\[
\frac{6}{18} = \frac{5}{15} = \frac{4}{12} = \frac{3}{9} = \frac{2}{6} = \frac{1}{3}
\]

10. Write the group size for each fraction in the chain of equivalent fractions. The first one is done for you.

6

11. Complete each equation by showing how you use group size to simplify. The first one is done for you.

\[
\frac{6 \div 6}{18 \div 6} = \frac{1}{3} \quad \frac{5 \div 1}{15 \div 1} = \frac{1}{3} \quad \frac{4 \div 1}{12 \div 1} = \frac{1}{3} \\
\frac{3 \div 1}{9 \div 1} = \frac{1}{3} \quad \frac{2 \div 1}{6 \div 1} = \frac{1}{3}
\]
Compare Fractions Using Fraction Strips and Number Lines

1. Use the number lines to compare the fractions \( \frac{4}{5} \) and \( \frac{7}{10} \).

\[
\begin{array}{cccccccc}
0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 & 10 \\
0 & \frac{1}{5} & \frac{2}{5} & \frac{3}{5} & \frac{4}{5} & 1 \\
0 & \frac{1}{10} & \frac{2}{10} & \frac{3}{10} & \frac{4}{10} & \frac{5}{10} & \frac{6}{10} & \frac{7}{10} & \frac{8}{10} & \frac{9}{10} & 1
\end{array}
\]

2. Use the fraction strips to compare the fractions \( \frac{3}{4} \) and \( \frac{5}{6} \).

\[
\begin{array}{cccccccc}
\frac{1}{4} & \frac{1}{4} & \frac{1}{4} & \frac{1}{4} \\
\frac{1}{6} & \frac{1}{6} & \frac{1}{6} & \frac{1}{6} & \frac{1}{6} & \frac{1}{6} \\
\frac{1}{12} & \frac{1}{12} & \frac{1}{12} & \frac{1}{12} & \frac{1}{12} & \frac{1}{12} & \frac{1}{12} & \frac{1}{12} & \frac{1}{12} & \frac{1}{12}
\end{array}
\]

Compare. Write >, <, or =.

3. \( \frac{3}{4} \) \_ \( \frac{7}{12} \)
4. \( \frac{3}{5} \) \_ \( \frac{7}{12} \)
5. \( \frac{3}{5} \) \_ \( \frac{6}{10} \)
6. \( \frac{2}{5} \) \_ \( \frac{3}{6} \)
7. \( \frac{4}{10} \) \_ \( \frac{1}{5} \)
8. \( \frac{2}{10} \) \_ \( \frac{3}{8} \)
Compare Fractions Using Common Denominators

You can compare two fractions with different denominators by writing equivalent fractions that use the same unit fraction. The fractions will have a common denominator. You can use different strategies to do this. The ones shown below depend on how the denominators of the two fractions are related.

**Case 1:** One denominator is a factor of the other.

**Possible Strategy:** Use the greater denominator as the common denominator.

Example: Compare $\frac{3}{5}$ and $\frac{5}{10}$.

Use 10 as the common denominator.

\[
\frac{3 \times 2}{5} = \frac{6}{10}
\]

\[
\frac{6}{10} > \frac{5}{10}, \text{ so } \frac{3}{5} > \frac{5}{10}.
\]

**Case 2:** The only number that is a factor of both denominators is 1.

**Possible Strategy:** Use the product of the denominators as the common denominator.

Example: Compare $\frac{5}{8}$ and $\frac{4}{5}$.

Use $5 \times 8$, or 40, as the common denominator.

\[
\frac{5 \times 5}{8} = \frac{25}{40}, \frac{4 \times 8}{5} = \frac{32}{40}
\]

\[
\frac{25}{40} < \frac{32}{40}, \text{ so } \frac{5}{8} < \frac{4}{5}.
\]

**Case 3:** There is a number besides 1 that is a factor of both denominators.

**Possible Strategy:** Use a common denominator that is less than the product of the denominators.

Example: Compare $\frac{5}{8}$ and $\frac{7}{12}$.

24 is a common multiple of 8 and 12. Use 24 as the common denominator.

\[
\frac{5 \times 3}{8} = \frac{15}{24}, \frac{7 \times 2}{12} = \frac{14}{24}
\]

\[
\frac{15}{24} > \frac{14}{24}, \text{ so } \frac{5}{8} > \frac{7}{12}.
\]

Compare. Write $>$, $<$, or $=$.

- $\frac{3}{5}$\hspace{1cm} $\frac{2}{3}$
- $\frac{10}{12}$\hspace{1cm} $\frac{5}{6}$
- $\frac{11}{3}$\hspace{1cm} $\frac{8}{10}$
- $\frac{2}{3}$\hspace{1cm} $\frac{7}{10}$

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Compare Fractions with Unlike Denominators
**Tenths and Hundredths**

Pennies and dimes can help you understand tenths and hundredths. Discuss what you see.

100 pennies = 10 dimes = 1 dollar

100 pennies = 1 dollar  
10 dimes = 1 dollar

1 penny is \( \frac{1}{100} \) of a dollar  
1 dime is \( \frac{1}{10} \) of a dollar

3. 

\[
\begin{align*}
1 \text{ penny} &= \frac{1}{100} = 0.01 \\
\frac{10}{100} &= 10 \text{ of 100 equal parts} \\
\frac{1}{10} &= 1 \text{ of 10 equal parts}
\end{align*}
\]

\[
0.1 \\
0.10
\]

4. 

\[
\begin{align*}
1 \text{ dime} &= \frac{1}{10} = 0.1 \\
\frac{10}{100} + \frac{10}{100} &= \frac{20}{100} \\
\frac{1}{10} + \frac{1}{10} &= \frac{2}{10}
\end{align*}
\]

\[
0.1 + 0.1 = 0.2 \\
0.10 + 0.10 = 0.20
\]

5. 

\[
\begin{align*}
\frac{10}{100} + \frac{10}{100} + \frac{5}{100} &= \frac{25}{100} \\
\frac{1}{10} + \frac{1}{10} + \frac{5}{100} &= \frac{25}{100}
\end{align*}
\]

\[
0.1 + 0.1 + 0.05 = 0.25 \\
0.10 + 0.10 + 0.05 = 0.25
\]

6. 

\[
\begin{align*}
\frac{25}{100} + \frac{25}{100} + \frac{25}{100} &= \frac{75}{100} \\
\frac{1}{10} + \frac{1}{10} + \frac{1}{10} + \frac{1}{10} &= \frac{5}{10} = \frac{1}{2}
\end{align*}
\]

\[
0.25 + 0.25 + 0.25 = 0.75
\]

\[
0.1 + 0.1 + 0.1 + 0.1 + 0.1 = 0.5 \\
0.10 + 0.10 + 0.10 + 0.10 + 0.10 = 0.50
\]
# Halves and Fourths

Equal shares of 1 whole can be written as a fraction or as a decimal. Each whole dollar below is equal to 100 pennies. Discuss the patterns you see.

<table>
<thead>
<tr>
<th></th>
<th>1 of 2 equal parts</th>
<th>2 of 2 equal parts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \frac{1}{2} )</td>
<td>( \frac{2}{2} )</td>
</tr>
<tr>
<td>0.5</td>
<td>( \frac{5}{10} )</td>
<td>( \frac{10}{10} )</td>
</tr>
<tr>
<td>0.50</td>
<td>( \frac{50}{100} )</td>
<td>( \frac{100}{100} )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>1 of 4 equal parts</th>
<th>2 of 4 equal parts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \frac{1}{4} )</td>
<td>( \frac{2}{4} )</td>
</tr>
<tr>
<td>0.25</td>
<td>( \frac{25}{100} )</td>
<td>( \frac{50}{100} )</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( \frac{25 + 25}{100 + 100} = \frac{50}{100} )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>3 of 4 equal parts</th>
<th>4 of 4 equal parts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \frac{3}{4} )</td>
<td>( \frac{4}{4} )</td>
</tr>
<tr>
<td>0.25 + 0.25 + 0.25 = 0.75</td>
<td>( \frac{25 + 25 + 25}{100 + 100 + 100} = \frac{75}{100} )</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>4 of 4 equal parts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \frac{1}{1} )</td>
</tr>
<tr>
<td>0.25 + 0.25 + 0.25 + 0.25 = 1.00</td>
<td>( \frac{25 + 25 + 25 + 25}{100 + 100 + 100 + 100} = \frac{100}{100} )</td>
</tr>
</tbody>
</table>

Relate Fractions and Decimals
Numbers Greater Than 1

Numbers greater than 1 can be written as fractions, decimals, or mixed numbers. A mixed number is a number that is represented by a whole number and a fraction.

Discuss the patterns you see in the equivalent fractions, decimals, and mixed numbers shown below.

12. \[
\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{5}{4} \quad \text{5 of 4 equal parts} = 1 \frac{1}{4}
\]

0.25 + 0.25 + 0.25 + 0.25 + 0.25 = 1.25

\[
\frac{25}{100} + \frac{25}{100} + \frac{25}{100} + \frac{25}{100} + \frac{25}{100} = \frac{125}{100} = 1 \frac{25}{100}
\]

13. \[
\frac{1}{4} : \frac{1}{4} : \frac{1}{4} : \frac{1}{4} : \frac{1}{4} : \frac{1}{4} : \frac{6}{4} \quad \text{6 of 4 equal parts} = 1 \frac{2}{4}
\]

0.25 + 0.25 + 0.25 + 0.25 + 0.25 + 0.25 = 1.50

\[
\frac{25}{100} + \frac{25}{100} + \frac{25}{100} + \frac{25}{100} + \frac{25}{100} + \frac{25}{100} = \frac{150}{100} = \frac{100}{100} + \frac{50}{100} = 1 + \frac{50}{100} = 1 \frac{50}{100}
\]

14. \[
\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{7}{4} \quad \text{7 of 4 equal parts} = 1 \frac{3}{4}
\]

0.25 + 0.25 + 0.25 + 0.25 + 0.25 + 0.25 = 1.75

\[
\frac{25}{100} + \frac{25}{100} + \frac{25}{100} + \frac{25}{100} + \frac{25}{100} + \frac{25}{100} = \frac{175}{100} = \frac{100}{100} + \frac{75}{100} = 1 + \frac{75}{100} = 1 \frac{75}{100}
\]
Model Equivalent Fractions and Decimals

Write a fraction and a decimal to represent the shaded part of each whole.

15. 16.

Divide each whole and use shading to show the given fraction or decimal.

17. 0.75 18. \( \frac{9}{10} \)

Shade these grids to show that \( \frac{3}{2} = 1\frac{1}{2} \).
Practice Writing Decimal Numbers

Write these numbers in decimal form.

4. 8 tenths
5. 6 hundredths
6. 35 hundredths

7. \[
\frac{92}{100}
\]
8. \[
\frac{2}{10}
\]
9. \[
\frac{9}{100}
\]

Answer the questions below.

In the little town of Silver there are 100 people. Four are left-handed.

10. What decimal number shows the fraction of the people who are left-handed?

There are 10 children playing volleyball, and 6 of them are boys.

12. What decimal number shows the fraction of the players that are boys?

13. What decimal number shows the fraction of the players that are girls?

Complete the table.

<table>
<thead>
<tr>
<th>Name of Coin</th>
<th>Fraction of a Dollar</th>
<th>Decimal Part of a Dollar</th>
</tr>
</thead>
</table>
| Penny        | \[
\frac{1}{100}
\] |                          |
| Nickel       | \[
\frac{5}{100}
\]  = 0.05        |                          |
| Dime         | \[
\frac{5}{100}
\]  = 0.05        |                          |
| Quarter      | \[
\frac{25}{100}
\]  = 0.25       |                          |
Write Decimal Numbers

In the situations below, each person is traveling the same distance. Write a decimal number to represent the distance each person has traveled.

1. Aki has traveled 3 tenths of the distance, and Steven has traveled 5 tenths of the distance.

   Aki    Steven
   _______    _______

2. Jose has traveled 25 hundredths of the distance, and Lakisha has traveled 18 hundredths of the distance.

   Jose    Lakisha
   _______    _______

3. Yasir has traveled 7 tenths of the distance, and Danielle has traveled 59 hundredths of the distance.

   Yasir    Danielle
   _______    _______

4. Lea has traveled 8 hundredths of the distance, and Kwang-Sun has traveled 6 tenths of the distance.

   Lea    Kwang-Sun
   _______    _______

Practice Comparing

Write >, <, or = to compare these numbers.

5. 0.4    0.04
   _______    _______

6. 0.30   0.3
   _______    _______

7. 0.7    0.24
   _______    _______

8. 0.1    0.8
   _______    _______

9. 0.61   0.8
   _______    _______

10. 0.54  0.2
    _______    _______

11. 0.11  0.15
    _______    _______

12. 0.02  0.2
    _______    _______

13. 0.5    0.50
    _______    _______

14. 0.77  0.3
    _______    _______

15. 0.06  0.6
    _______    _______

16. 0.9    0.35
    _______    _______

17. 0.4    0.7
    _______    _______

18. 0.1    0.10
    _______    _______

19. 0.5    0.81
    _______    _______

20. 0.41  0.39
    _______    _______

21. 0.9    0.09
    _______    _______

22. 0.48  0.6
    _______    _______

23. 0.53  0.4
    _______    _______

24. 0.70  0.7
    _______    _______
Write Numbers in Decimal Form

Read and write each mixed number as a decimal.

3. \(3 \frac{1}{10}\)
4. \(5 \frac{7}{100}\)
5. \(2 \frac{46}{100}\)
6. \(28 \frac{9}{10}\)

Read and write each decimal as a mixed number.

7. 12.8
8. 3.05
9. 4.85
10. 49.7

Read each word name. Then write a decimal for each word name.

11. sixty-one hundredths
12. six and fourteen hundredths

13. seventy and eight tenths
14. fifty-five and six hundredths

Expanded Form

Write each decimal in expanded form.

15. 8.2
16. 17.45
17. 106.24
18. 50.77
19. 312.09
20. 693.24

Solve.

21. There are 100 centimeters in 1 meter. A snake crawls 3 meters and 12 more centimeters. What decimal represents the number of meters the snake crawls?

22. There are 100 pennies in 1 dollar. A jar contains 20 dollars. You add 8 pennies to the jar. What decimal represents the number of dollars in the jar?
Compare Decimals

You can use your understanding of place value and the placement of zeros in decimal numbers to compare decimal numbers.

Problem: Which of these numbers is the greatest: 2.35, 2.3, or 2.4

Solution: 2.35 With the places aligned and the extra zeros added, we can see which is greatest.

2.4

Write >, <, or = to compare these numbers.

7. 27.5 8. 6.04 9. 7.36 10. 36.9
   8.37 5.98 7.38 37.8

11. 0.5 12. 0.09 13. 0.8 14. 0.42
    0.26 0.9 0.80 0.6

Use the table to answer Problems 15 and 16.

<table>
<thead>
<tr>
<th>Lengths of Insects</th>
<th>Name</th>
<th>Length</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Ladybug</td>
<td>0.64 cm</td>
</tr>
<tr>
<td></td>
<td>Moth</td>
<td>0.3 cm</td>
</tr>
<tr>
<td></td>
<td>Mosquito</td>
<td>0.32 cm</td>
</tr>
<tr>
<td></td>
<td>Cricket</td>
<td>1.8 cm</td>
</tr>
<tr>
<td></td>
<td>Bumblebee</td>
<td>2 cm</td>
</tr>
</tbody>
</table>

15. Francis measured some common insects. The table shows the lengths in centimeters. List the insects from longest to shortest.

Longest

Shortest

16. Maya read about a stick insect that is 1.16 centimeters long. She compared the length with the lengths in the table. Maya says the mosquito is longer than the stick insect because 0.32 > 0.16. Is Maya's reasoning correct? Explain.
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## Special Education Support

<table>
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<tr>
<th>Subject</th>
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| Reading Fluency          | 1. Day 1: Cold Read: Set a timer for 1 minute, ask the student to read for one minute and mark the text where they stop. After they have marked where they stopped, read the passage aloud to the student.  
2. Day 2: Choral Read: Have the student and another person read the passage together.  
3. Day 3: Practice: Set the timer for 1 minute and ask the student to read the passage for marking where they stop.  
4. Day 4: Practice: Repeat the steps for Day 3.  
5. Day 5: Hot Read: Set the timer for 1 minute, ask the student to read for one minute and mark the text where they stopped. After multiple days of practice, the student should see that they can read farther and with less errors. |
| Reading Comprehension    | 1. Ask the student to read the text and use a writing tool to code the text using the symbols below.  
   o ! - surprising facts  
   o ? - questions they had about the event  
   o * - important information  
   o L - information that tells the location of the event  
   o P - information that describes the place of the event  
2. Ask students to share with you what they coded and why.  
3. Ask students to reread the text.  
4. Read aloud the questions to the students. Ask students to use what they read to answer the multiple choice questions. |
| Writing                  | After reading the text, use the steps below to answer the short answer questions.  
   **K-5**  
   a. R: Restate the question  
   b. A: Answer all parts of the questions  
   c. C: Cite evidence from the text to support your answer.  
   d. E: Explain how the evidence from the text supports your answer  
   **6-12**  
   a. Claim  
   b. Support  
   c. Evidence  
   d. Tie-in |
| Math Calculation                        | Encourage students to use the following to solve math problems:  
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<tbody>
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<td></td>
<td>• Number lines</td>
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<td>• 100 charts</td>
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<td>• Formula sheets</td>
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Choose the tool that students are most comfortable with and apply to their problems.

<table>
<thead>
<tr>
<th>Math Problem Solving</th>
<th>1. Read word problems to the student.</th>
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<tr>
<td></td>
<td>2. Ask the student to highlight or underline the important</td>
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<td>information in the problem that is needed to solve the</td>
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<td>3. Write a number sentence or equation to solve the problem.</td>
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<td>4. Use the math tool necessary to solve the problem.</td>
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