1. Divide each circle into 6 equal parts. Color \( \frac{5}{6} \) of the circles.

2. Divide each rectangle into 3 equal parts. Color \( 2 \frac{1}{3} \) of the rectangles.

3. Divide each square into 8 equal parts. Color \( \frac{5}{8} \) of the rectangles.

Fill in the missing fractions and mixed numbers on the number lines.

4. 

\[
\begin{array}{cccccc}
1 & \_ & \_ & 1 & \frac{3}{5} & \_ & 2 & \_ & \_ & \_ & \_ & 3
\end{array}
\]

5. 

\[
\begin{array}{cccccc}
1 & \_ & \_ & \_ & \_ & \_ & \_ & \_ & \_ & \_ & \_ & 2
\end{array}
\]

**Thinking About Math** On the back of this sheet, explain how you completed problem 5.
1. Theresa had 72 cookies. She gave \( \frac{2}{12} \) to her sister and \( \frac{7}{12} \) to her mother.
   a. Fill in the “whole” box.
   b. How many cookies did she give to her sister? __________ cookies
   c. How many did she give to her mother? __________ cookies
   d. How many did she have left? __________ cookies

Solve.

2. \( \frac{1}{6} \) of 42 = ______
3. \( \frac{5}{6} \) of 42 = ______
4. \( \frac{1}{8} \) of 64 = ______

5. \( \frac{3}{8} \) of 64 = ______
6. \( \frac{4}{12} \) of 144 = ______
7. \( \frac{11}{12} \) of 144 = ______

Try This

8. \( \frac{7}{12} \) of 108 = ______
9. \( \frac{4}{9} \) of 81 = ______
10. \( \frac{7}{11} \) of 132 = ______

11. What is \( \frac{1}{4} \) of 15? ________ Explain. ________________________________________
    __________________________________________________________________________
    __________________________________________________________________________

Thinking About Math On the back of this sheet, describe a “rule” for how to find a fraction of a set when the numerator of the fraction is larger than 1.
There are 25 blue, 12 red, 5 yellow, and 8 green tiles in a bag.

1. Without looking, Maren picks a tile from the bag. Which of these best describes her chances of picking a blue tile?
   A. likely
   B. 50-50 chance
   C. unlikely
   D. very unlikely

2. Which of these best describes her chances of picking a yellow tile?
   A. certain
   B. likely
   C. 50-50 chance
   D. very unlikely

3. Find the probability of each event. Then make up an event and find the probability.

<table>
<thead>
<tr>
<th>Event</th>
<th>Favorable Outcomes</th>
<th>Possible Outcomes</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pick a blue tile</td>
<td></td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Pick a red tile</td>
<td></td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Pick a yellow tile</td>
<td></td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Pick a green tile</td>
<td></td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Pick a blue, red, or green tile</td>
<td></td>
<td>50</td>
<td></td>
</tr>
</tbody>
</table>

4. Suppose you picked a color tile from the bag 10 times. After each pick, you put the tile back in the bag. How many times would you expect to pick a blue tile? _______ times

Try the experiment. Compare your prediction with the actual results.

**Thinking About Math** In all of the problems you’ve been given so far, you were told that the tiles were put back in the bag before another tile was drawn. Why is this important? How would it change your predictions if the tiles were NOT put back before another was drawn? Explain your thinking on the back of this page.
Dividing Squares, continued

Thinking About Math

You divided squares into fractions on Problems 1-2. “Prove” that your solutions are correct. Convince someone that your drawings show the right fractions.

Problem 1 (fourths):
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________

Problem 2 (eighths):
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
Thinking About Math

Look at the fractions of a dollar Jake and Maxwell had in problem 1. Is there a way to know if the sum is more or less than $1.00 without actually adding those fractions? Do you have to use equivalent fractions, or can you figure it out with the fractions that are given? Explain your thinking.

______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
Many Names for Fractions, cont.

Thinking About Math

When you matched the pictures to fractions for Problems 1-4, how did you figure out which pictures represented each fraction? Explain your strategy for matching them. Which pictures were the hardest to match, and why?

______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
Today in class, we discussed a rule for finding equivalent fractions.

*If the numerator and denominator of a fraction are multiplied by the same nonzero number, the result is a fraction that is equivalent to the original fraction.*

In your own words, explain this rule and why it works. You can also draw pictures below, or give number sentences or phrases to help clarify your explanation.

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________
Today in class, we discussed the relationship between fractions and division. Using the problem that follows, explain in your own words how fractions and division are related. You can also draw pictures below or give number sentences or phrases to help clarify your explanation.

*Lucy forgot her lunch on the day of her class field trip. So her two friends Lily and Chloe offered to share their sandwiches with her. If the three girls shared two sandwiches equally, how much would each get?*
Compare and Order Fractions

Write <, >, or = to make each number sentence true.

1. \( \frac{5}{6} \) ______ \( \frac{1}{3} \)  
2. \( \frac{3}{10} \) ______ \( \frac{6}{8} \)  
3. \( \frac{2}{3} \) ______ \( \frac{12}{18} \)  
4. \( \frac{10}{40} \) ______ \( \frac{8}{32} \)  
5. \( \frac{4}{9} \) ______ \( \frac{14}{18} \)  
6. \( \frac{10}{12} \) ______ \( \frac{5}{8} \)  

7. Explain how you solved Problem 1. ________________________________

8. Explain how you solved Problem 2. ________________________________

9. Circle each fraction that is less than \( \frac{3}{4} \):

\[
\begin{array}{cccccccc}
\frac{7}{8} & \frac{4}{16} & \frac{4}{10} & \frac{7}{12} & \frac{3}{7} & \frac{73}{100} & \frac{24}{50} & \frac{342}{400}
\end{array}
\]

Write the fractions in order from smallest to largest:

10. \( \frac{13}{12} \) \( \frac{3}{6} \) \( \frac{24}{12} \) \( \frac{11}{12} \) \( \frac{1}{4} \)  
    smallest ______ ______ ______ ______ largest

11. \( \frac{1}{5} \) \( \frac{2}{3} \) \( \frac{1}{20} \) \( \frac{1}{2} \) \( \frac{2}{50} \)  
    smallest ______ ______ ______ largest

12. \( \frac{4}{3} \) \( \frac{4}{100} \) \( \frac{4}{4} \) \( \frac{6}{12} \) \( \frac{1}{3} \)  
    smallest ______ ______ ______ ______ largest

Thinking About Math What was your strategy for ordering the fractions in Problems 10-12? On the back of this sheet, explain where you started, and how you determined where to place each fraction. You may choose one of those problems to use as an example in describing your strategy.
Can you make up a rule for finding the ONE given a whole number, and the fraction it represents? Some examples of this type of problem would be:
  - If 6 is 2/3, then what is the ONE?
  - If 21 is 3/8, then what is the ONE?
  - If 12 is 3/4, then what is the ONE?

Using these problems, or others that you make up, describe a procedure for finding the ONE that you think would work for any similar problem.

______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
Thinking About Math

You made a spinner for Problems 1-2. Explain how you designed your spinner. Once it was made, how did you figure out the chances of landing on a certain color? Compare the chances of landing on one color to the chances of landing on another.

______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
What Are the Chances?, cont.

Thinking About Math

You completed a cube-drop experiment today in class. Describe the relationship between the results of the predictions and the sample size. For example, would you expect the results of 100 cube drops to be closer or farther from your predictions than the results of 1,000 cube drops? Why do you think this is so?
Challenge Study Link Answer Key
Unit 7

Study Link 7-1 Fractions

1.

2.

3.

4. 1 1/5, 1 2/5, 1 4/5, 2 1/5, 2 2/5, 2 3/5, 2 4/5

5. 1 1/8, 1 2/8, 1 3/8, 1 4/8, 1 5/8, 1 6/8, 1 7/8

Thinking About Math: Answers may vary; correct answers should have a logical explanation that shows mathematical thinking.

Study Link 7-2 “Fraction-of” Problems

1. a. 72  b. 12  c. 42  d. 18
2. 7  3. 35  4. 8  5. 24  6. 48  7. 132
8. 63  9. 36  10. 84  11. 3/4

Think About Math: Answers may vary; correct answers should have a logical explanation that shows mathematical thinking.

Study Link 7-3 Color Tiles


<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>blue</td>
<td>25</td>
<td>50</td>
<td>25/50</td>
</tr>
<tr>
<td>red</td>
<td>12</td>
<td>50</td>
<td>12/50</td>
</tr>
<tr>
<td>yellow</td>
<td>5</td>
<td>50</td>
<td>5/50</td>
</tr>
<tr>
<td>green</td>
<td>8</td>
<td>50</td>
<td>8/50</td>
</tr>
<tr>
<td>b,r,or g</td>
<td>45</td>
<td>50</td>
<td>45/50</td>
</tr>
</tbody>
</table>

4. 2 or 3 times

Thinking About Math: Answer might explain that if tiles are not returned, that changes the number of tiles remaining, and therefore changes the number of possible outcomes.

Study Link 7-4 Dividing Squares, continued

 Thinking About Math: Answers may vary; correct answers should have a logical explanation that shows mathematical thinking.

Study Link 7-5 Fractions, continued

 Thinking About Math: Answers may vary; correct answers should have a logical explanation that shows mathematical thinking. Example: I know that 1/10 is smaller than 1/4, and 3/4 plus 1/4 is 1, so the sum has to be less than a dollar.

Study Link 7-6 Many Names for Fractions, continued

 Thinking About Math: Answers may vary; correct answers should have a logical explanation that shows mathematical thinking.
**Study Link 7-7 Fraction Name-Collection Boxes, continued**

Thinking About Math: Answers may vary; correct answers should have a logical explanation that shows mathematical thinking. Example: When you multiply the numerator and denominator, it’s like cutting those pieces into smaller pieces. If you cut them into the same number of pieces, then they will be the same size, but the fraction will stay the same.

**Study Link 7-8 Fractions and Decimals, continued**

Thinking About Math: Answers may vary; correct answers should have a logical explanation that shows mathematical thinking. The girls will each get 2/3 of a sandwich, because 2 sandwiches divided among 3 girls would be 2 \div 3, which is the same as 2/3.

**Study Link 7-9 Compare and Order Fractions**

1. > 2. < 3. = 4. = 5. < 6. >
7. answers may vary 8. answers may vary
9. 4/16, 4/10, 7/12, 3/7, 73/100, 24/50
10. 3/6, 1/4, 11/12, 13/12, 24/12
11. 2/50, 1/20, 1/5, 1/2, 2/3
12. 4/100, 1/3, 6/12, 4/4, 4/3

Thinking About Math: Answers may vary; correct answers should have a logical explanation that shows mathematical thinking.

**Study Link 7-10 What is the ONE?, continued**

Thinking About Math: Answers may vary; correct answers should have a logical explanation that shows mathematical thinking. Answer might include dividing by the numerator and then multiplying by the denominator to find the ONE.

**Study Link 7-11 Spinners and Fractions, continued**

Thinking About Math: Answers may vary; correct answers should have a logical explanation that shows mathematical thinking. Answer might include explaining that the chances of landing on a color are related to the fraction of the total area that color represents, and that relative chances for different colors can be determined by figuring out how the area for each compares.

**Study Link 7-12 What Are the Chances?, continued**

Thinking About Math: Answers may vary; correct answers should have a logical explanation that shows mathematical thinking. Answer might include some formulation of the idea that the higher the sample size, the more accurate the result will be.