Identify Factors

Factors are numbers that are multiplied together to determine a product. The factors of 10 are 1, 2, 5, and 10. The factors multiply to give 10.

$1 \times 10 = 10$ $2 \times 5 = 10$

10 can be divided evenly by each factor.

$10 \div 1 = 10$ $10 \div 2 = 5$ $10 \div 5 = 2$ $10 \div 10 = 1$

1. List the factors of each number.

   a) 6

   b) 10

   c) 24

2. Circle the following numbers that have 2 as a factor. How do you know?

   100 301 456 294 279 193
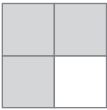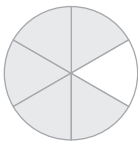
Represent Fractions

A **fraction** is a number that represents a part of a whole or a part of a group. $\frac{3}{8}$ means 3 parts out of a group of 8 equal parts.

$\frac{3}{8}$ ⟵ The **numerator** is the top number.
⟵ The **denominator** is the bottom number.

3. Write the fraction shaded in each diagram.

   a)   **b)**

   c)

4. Draw a diagram to represent each fraction.

   a) $\frac{1}{4}$ **b)** $\frac{5}{12}$
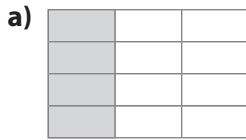
   c) $\frac{2}{5}$

Represent Equivalent Fractions

Equivalent fractions are fractions that represent the same part of a whole or group.

These fraction strips show that $\frac{4}{6}$ and $\frac{2}{3}$ are equivalent fractions.

$\frac{4}{6}$

$\frac{2}{3}$
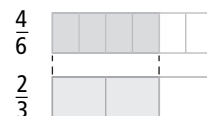
5. Identify the fraction shaded in each diagram. Draw a diagram to show an equivalent fraction for each.

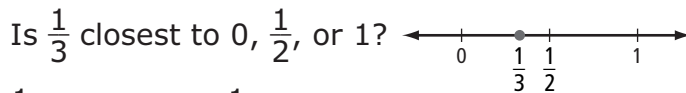a)

b)

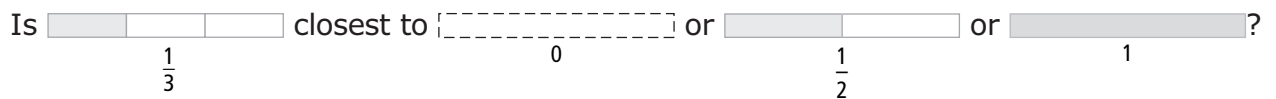**6.** Draw a diagram of each fraction. Then draw an equivalent fraction.
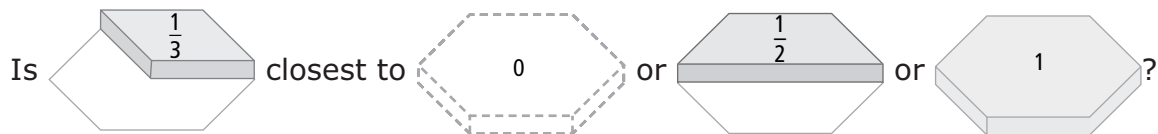
a) $\dfrac{1}{2}$

b) $\dfrac{8}{10}$

c) $\dfrac{3}{4}$

Estimate Fractions

You can use pattern blocks, fractions strips, or number lines to help estimate fractions. Compare fractions to 0, $\dfrac{1}{2}$, or 1.

M E

Is $\dfrac{1}{3}$ closest to 0 or $\dfrac{1}{2}$ or 1 ?

Is $\dfrac{1}{3}$ closest to 0 or $\dfrac{1}{2}$ or 1 ?

Is $\dfrac{1}{3}$ closest to 0, $\dfrac{1}{2}$, or 1?

0 $\dfrac{1}{3}$ $\dfrac{1}{2}$ 1

$\dfrac{1}{3}$ is closest to $\dfrac{1}{2}$.

7. Estimate whether the following fractions are closest to 0, $\dfrac{1}{2}$, or 1.

a)

b)

c)

0 $\dfrac{2}{5}$ $\dfrac{1}{2}$ 1

d)
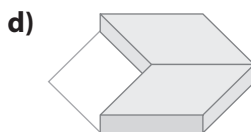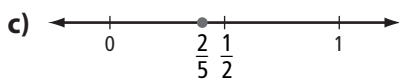
8. Tina estimates that $\dfrac{1}{4}$ is closest to 0, using the number line shown.

0 $\dfrac{1}{4}$ $\dfrac{1}{2}$ 1

Is there another possible estimate? Explain.

6.1 Divisibility

MathLinks 7, pp. 198–209

Key Ideas Review

Circle the correct response to complete each statement. Then give an example.

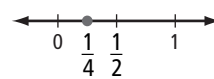1. Only (odd/even) numbers can be divided evenly by 2. For example, _____.

2. If the sum of the digits of a number is divisible by 9, then the whole number is divisible by (4/9). For example, _____.

3. A number is divisible by 8 if the number is divisible by 2 at least (two/three) times. For example, _____.

4. A fraction is written in lowest terms when the numerator and denominator have no (common/possible) factors other than 1. For example, _____.

5. Numbers (can/cannot) be divided by 0. For example, _____.

Practise and Apply

6. Which of the following numbers are divisible by 5? Explain how you know.

   482   506   955   1090 956   911

7. **a)** Use a diagram or table to sort the following numbers according to divisibility by 8 and 10.

   700   416   3296 1720 280   190

   b) If the number of apples in a basket is divisible by 8 and 10, what is the smallest number other than 1 that it is also divisible by? How do you know?

8. Use divisibility rules to determine the factors of each number.

   a) 12 _____

   b) 35 _____

   c) 48 _____

9. Use divisibility rules to determine the common factors for each pair of numbers.

   a) 4 and 8 _____

   b) 6 and 9 _____

   c) 8 and 12 _____

10. Use divisibility rules to determine the common factors for each pair of numbers.

    a) 10 and 25 _____
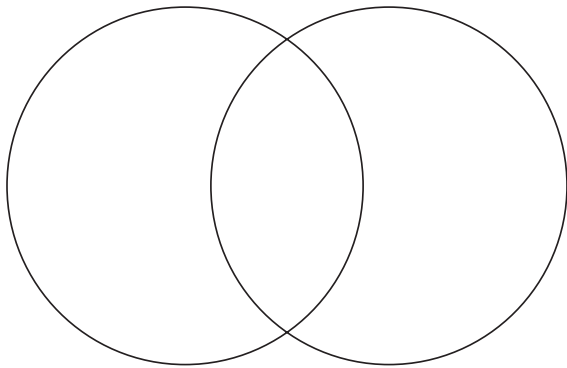
    b) 8 and 16 _____

    c) 27 and 36 _____

11. Determine the factors of each number.

   a) 16 _____

   b) 24 _____

   c) 60 _____

12.a) Use divisibility rules to determine the common factors of 18 and 24. Use a Venn diagram to show your answer.

   b) Identify the greatest common factor of 18 and 24.

13. Write the following fractions in lowest terms. Show your thinking.

   a) $\dfrac{10}{12} = \dfrac{\square}{\square}$

   b) $\dfrac{3}{9} = \dfrac{\square}{\square}$

   c) $\dfrac{25}{30} = \dfrac{\square}{\square}$

   d) $\dfrac{9}{45} = \dfrac{\square}{\square}$

   e) $\dfrac{16}{18} = \dfrac{\square}{\square}$

   f) $\dfrac{12}{24} = \dfrac{\square}{\square}$

14. Desiree is buying boxes of chocolates for tables at a banquet. The people at each table will divide the chocolates equally. The tables seat 2, 3, 5, or 6 people. Which size of box will work on all the tables: 12 or 30? Show your thinking.

15. Yanika is teaching a swim class. She needs to divide the class into teams for a relay race. There are 18 students.

   a) List all the possible sizes of the relay teams.

   b) Part of the swimming pool is being used by another class. There are only 3 lanes available. Can Yanika divide her class equally into those lanes? Explain how you know.
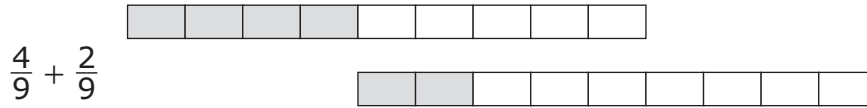
6.2 Add Fractions With Like Denominators

MathLinks 7, pp. 210–216

Key Ideas Review

Statements 1 and 2 refer to the model below. Circle the part of each statement that correctly completes the statement.

$$\frac{4}{9} + \frac{2}{9}$$

1. The sum of the two fractions is close to $(0/\frac{1}{2}/1)$.

2. To add $\frac{4}{9} + \frac{2}{9}$, add the (denominators/numerators).

3. Add $\frac{4}{9} + \frac{2}{9}$. Write your answer in lowest terms. Show which method you use.

Practise and Apply

4. Write each addition statement shown by the pattern blocks. Estimate the answer, and then add.

   a)

   Addition statement: _____

   Estimate: _____

   Calculation:

   b)

   Addition statement: _____

   Estimate: _____

   Calculation:

   c)

   Addition statement: _____

   Estimate: _____

   Calculation:

   d)

   Addition statement: _____

   Estimate: _____

   Calculation:

5. Write each addition statement shown by fraction strips. Estimate the answer, and then add.

a) [fraction strips] + [fraction strips]

Addition statement: _____

Estimate: _____

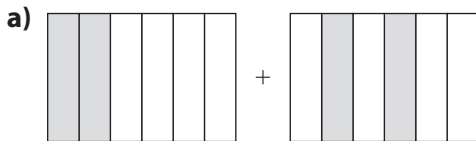Calculation:

b) [fraction strips] + [fraction strips]

Addition statement: _____

Estimate: _____

Calculation:

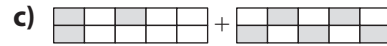**6.** Write each addition statement shown by the diagram. Then add. Write your answer in lowest terms.

a) [diagram] + [diagram]

Addition statement: _____

Calculation:

b) [hexagon diagram] + [hexagon diagram]

Addition statement: _____

Calculation:

c) [fraction strips] + [fraction strips]

Addition statement: _____

Calculation:

d) [diagram] + [diagram]
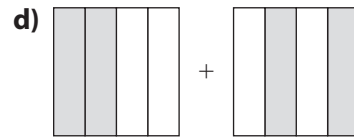
Addition statement: _____

Calculation:

7. What is the sum of each fraction statement? Write each answer in lowest terms.

a) $\dfrac{1}{4} + \dfrac{2}{4} = \dfrac{\boxed{}}{\boxed{}} = \dfrac{\boxed{}}{\boxed{}}$

b) $\dfrac{1}{6} + \dfrac{1}{6} = \dfrac{\boxed{}}{\boxed{}} = \dfrac{\boxed{}}{\boxed{}}$

c) $\dfrac{1}{3} + \dfrac{2}{3} = \dfrac{\boxed{}}{\boxed{}} = \dfrac{\boxed{}}{\boxed{}}$

d) $\dfrac{3}{8} + \dfrac{2}{8} = \dfrac{\boxed{}}{\boxed{}} = \dfrac{\boxed{}}{\boxed{}}$

8. Lukas and Nick are following a recipe to bake cookies. Lukas puts $\dfrac{3}{8}$ of a cup of flour in the bowl, and Nick adds another $\dfrac{3}{8}$ of a cup of flour. How much flour do they put into the bowl altogether? Show your work.

6.3 Subtract Fractions With Like Denominators

MathLinks 7, pp. 217–221

Key Ideas Review

1. Decide whether each of the following statements is true or false. Circle the word *True* or *False*. If the statement is false, rewrite it to make it true.

   a) **True/False** To estimate a difference, compare fractions to 0, $\frac{1}{2}$, and 1.

   _____

   _____

   b) **True/False** When subtracting fractions using models or diagrams, remove parts of the whole that are of different sizes.

   _____

   _____

   c) **True/False** You can use models, diagrams, or factors to help you write your answer in lowest terms.

   _____

   _____

   d) **True/False** To subtract fractions with like numerators, subtract the denominators. The numerator stays the same.

   _____

   _____

Practise and Apply

2. Write the subtraction statement for each set of pattern blocks. Estimate the answer, and then subtract.

   a)

   Subtraction statement: _____

   Estimate: _____

   Calculation:

   b)

   Subtraction statement: _____

   Estimate: _____

   Calculation:

3. Write a subtraction statement for each set of fraction strips. Estimate the answer, and then subtract.

a) ▢▨▨▨ – ▢▢▢▨

Subtraction statement: _____

Estimate: _____
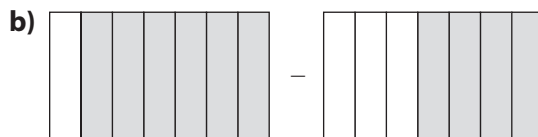
Calculation:

b) ▨▨▨▨ – ▢▨▨▨

Subtraction statement: _____

Estimate: _____

Calculation:

4. Write each subtraction statement shown by the diagrams. Determine the difference. Write the answer in lowest terms.

a) ⬡ – ⬡

b) (diagram of fraction strips)

5. Determine each difference. Write your answer in lowest terms.

a) $\dfrac{6}{7} - \dfrac{5}{7} = \dfrac{\boxed{}}{\boxed{}} = \dfrac{\boxed{}}{\boxed{}}$

b) $\dfrac{5}{9} - \dfrac{2}{9} = \dfrac{\boxed{}}{\boxed{}} = \dfrac{\boxed{}}{\boxed{}}$

6. After mowing $\dfrac{2}{3}$ of the lawn, Lin takes a break. How much lawn does he have left to mow? Write a fraction statement to answer the question.

7. A family started a trip with $\dfrac{4}{5}$ of a tank of gasoline in the car. When they reached their destination, only $\dfrac{1}{5}$ of the tank of gas was left. How much gasoline was used on the trip? Write a fraction statement to answer the question.

8. A log is cut into 12 equal pieces. Of these pieces, 10 are piled for firewood. Of those 10 pieces, 4 are burned. What fraction of the log is left in the firewood pile? Draw a diagram and write a fraction statement to answer the question.

Link It Together

Fatima is planning a birthday party for her little sister. She has just picked up the birthday cake. Now she must decorate the room and cook lunch for the 9 guests.

1. a) When she opens the cake box, Fatima finds $\frac{3}{8}$ of the cake got squished on the car ride home! Luckily, she finds half a cake mix in the cupboard. If she bakes the mix, will she have enough to make a whole cake? Show your thinking.

b) To decorate the cake, Fatima uses $\frac{4}{9}$ of a tube of icing around the edge of the cake and $\frac{2}{9}$ of the tube to write the birthday girl's name. What fraction of the icing is left in the tube? Write the answer in lowest terms. Show your thinking.

2. Fatima will decorate the room with groups of 3 balloons. Which package of balloons should she buy so there are no leftovers: 16, 42, or 128 balloons? Use divisibility rules to prove your answer.
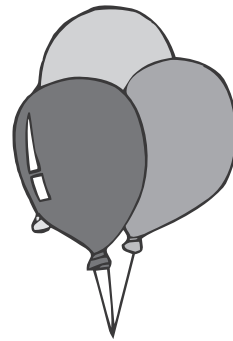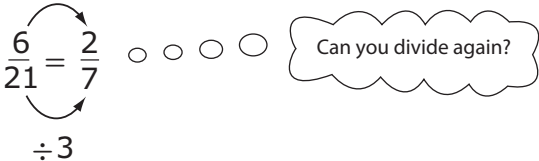
3. Hot dogs come in packages of 12, but the buns come in bags of 8. After using one bag of buns, there are still 4 hot dogs left over. What fraction of a package of buns is needed for the rest of the hot dogs? Write a fraction statement to show your thinking.

Vocabulary Link

Unscramble the letters for each word. Use the clues to help you solve the puzzles.

A	B
1. $\frac{15}{16} \leftarrow$? The _____ is the top part of the fraction.	EURTNROAM
2. This visual shows _____.	LEIATQNEUV SNARCOFIT
3. 6: 1, ②, 3, 6 8: 1, ②, 4, 8 The number 2 is circled because it is a _____ _____.	MCNOMO AROCTF
4. ÷3 $\frac{6}{21} = \frac{2}{7}$ ○ ○ ○ ○ *Can you divide again?* ÷3 This fraction is now in _____ _____.	WETSLO MSTRE
5. $\left(\frac{27}{35}\right) \leftarrow$? The numerator and denominator make up a _____.	IRTFACON
6. 12: 1, 2, 3, 4, 6, 12 12 is _____ by each number in the list.	BILVEISDI
7. $\frac{3}{11} \leftarrow$? The _____ tells how many equal parts are in the whole.	AMOONIERTDN
8. 10: 1, 2, 5, 10 1, 2, 5, and 10 are all _____ of 10.	SFROCAT