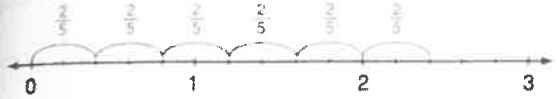
What Should I Be Able to Do?

LESSON

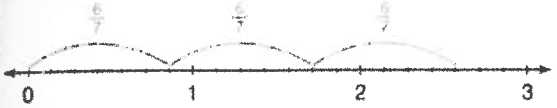
3.1

1. Write the multiplication equation each number line represents.

a)



b)



2. Multiply. Draw a picture or a number line to show each product.

a) $\frac{1}{3} \times 3$ b) $7 \times \frac{1}{2}$ c) $8 \times \frac{2}{5}$

3. Solve each problem.

a) There are 30 students in a class. Three-fifths of the students are girls. How many girls are in the class?

b) Six glasses are $\frac{2}{3}$ full. How many full glasses could be made?

c) There are 75 cars in the parking lot of a car dealership. Two-thirds of the cars are new. How many of the cars are new?

d) One serving is $\frac{1}{12}$ of a cake. How many cakes are needed for 18 servings?

3.2

4. Draw an area model to find each product.

a) $\frac{2}{3} \times \frac{3}{8}$ b) $\frac{4}{5} \times \frac{3}{10}$

c) $\frac{7}{10} \times \frac{3}{4}$ d) $\frac{3}{7} \times \frac{1}{3}$

5. Fasil donated $\frac{3}{5}$ of $\frac{1}{4}$ of his allowance to a charity. What fraction of his allowance did Fasil donate?

3.3

6. Multiply. Use benchmarks to estimate to check each product is reasonable.

a) $\frac{1}{2} \times \frac{3}{10}$ b) $\frac{3}{5} \times \frac{1}{8}$

c) $\frac{7}{8} \times \frac{2}{5}$ d) $\frac{3}{11} \times \frac{44}{63}$

7. Twenty Grade 8 students are going on a school trip. They pre-order sandwiches. Three-quarters of the students order a turkey sandwich, while $\frac{1}{4}$ of the students order a roasted vegetable sandwich. Of the $\frac{3}{4}$ who want turkey, $\frac{2}{5}$ do not want mayonnaise. What fraction of the students do not want mayonnaise?

8. Write a story problem that could be solved using the expression $\frac{5}{7} \times \frac{3}{8}$. Find the product to solve the problem. Estimate to check the solution is reasonable.

3.4

9. Write each mixed number as an improper fraction.

a) $7\frac{1}{2}$ b) $2\frac{7}{8}$ c) $10\frac{7}{10}$

10. Use an area model to find each product.

a) $1\frac{1}{2} \times 2\frac{1}{3}$ b) $\frac{19}{3} \times \frac{6}{5}$

c) $3\frac{1}{5} \times \frac{1}{4}$ d) $2\frac{1}{4} \times 3\frac{1}{3}$

LESSON

11. Multiply. Estimate to check the product is reasonable.

a) $1\frac{2}{3} \times 1\frac{9}{10}$

b) $4\frac{1}{2} \times \frac{5}{8}$

c) $\frac{9}{5} \times \frac{14}{8}$

d) $1\frac{3}{10} \times 6\frac{2}{3}$

12. Jonathan works for a landscape maintenance company. It took Jonathan $1\frac{3}{4}$ h to mow Mr. Persaud's lawn. The lawn he will mow next is $2\frac{1}{3}$ times as large as Mr. Persaud's lawn. How long will it take Jonathan to mow the next lawn? What assumptions do you make?

3.5

13. Find each quotient. Use number lines to illustrate the answers.

a) One-half of a cake is shared equally among 5 people. What fraction of the whole cake does each person get?

b) Nakkita's dog eats $\frac{3}{4}$ of a can of dog food each day. Nakkita has 9 cans of dog food. How many days' supply of dog food does Nakkita have?

14. Find each quotient.

a) $3 \div \frac{4}{5}$

b) $4 \div \frac{5}{6}$

c) $\frac{3}{10} \div 2$

d) $2\frac{5}{8} \div 3$

15. A glass holds $\frac{3}{4}$ cup of milk. A jug contains 12 cups of milk. How many glasses can be filled from the milk in the jug?

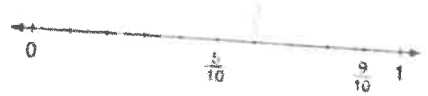
16. Kayla uses $\frac{2}{3}$ of a scoop of detergent to do one load of laundry. Kayla has 9 scoops of detergent. How many loads of laundry can Kayla do?

17. When you divide a fraction by a whole number, is the quotient greater than or less than 1? Include examples in your explanation.

3.6

18. Use a copy of each number line to illustrate each quotient.

a) $\frac{9}{10} \div \frac{3}{5}$



b) $\frac{3}{4} \div \frac{1}{2}$

19. Divide. Estimate to check each quotient is reasonable.

a) $\frac{3}{4} \div \frac{3}{8}$

b) $\frac{1}{4} \div \frac{7}{8}$

c) $\frac{5}{12} \div \frac{1}{3}$

d) $\frac{1}{2} \div \frac{3}{5}$

20. Midori lives on a farm. Midori has $\frac{7}{8}$ of a tank of gas. Each trip to town and back uses $\frac{1}{6}$ of a tank of gas. How many trips to town and back can Midori make until she needs more gas? Estimate to check the solution is reasonable.

21. When you divide a proper fraction by its reciprocal, is the quotient less than 1, greater than 1, or equal to 1? Use examples in your explanation.

LESSON 3.7

22. Write each mixed number as an improper fraction.

a) $3\frac{7}{11}$ b) $5\frac{1}{6}$

c) $4\frac{8}{9}$ d) $2\frac{5}{12}$

23. Divide. Estimate to check the quotient is reasonable.

a) $1\frac{3}{4} \div 2\frac{1}{8}$

b) $3\frac{5}{6} \div 2\frac{1}{5}$

c) $3\frac{1}{2} \div 1\frac{3}{8}$

d) $2\frac{1}{5} \div 4\frac{2}{5}$

24. A recipe for cereal squares calls for $1\frac{1}{4}$ bags of regular marshmallows. The recipe makes a cookie sheet of squares. Marcus has $\frac{3}{4}$ of a bag of marshmallows. He buys 5 more bags. How many sheets of cereal squares can Marcus make?

3.8

25. A cookie recipe calls for $\frac{3}{4}$ cup of rolled oats. Norma has $\frac{5}{8}$ cup of rolled oats. How much more rolled oats does she need to make the cookies? How did you decide which operation to use?

26. In a lottery for a local charity, 1000 tickets are sold. Of these tickets, $\frac{1}{1000}$ will win \$1000, $\frac{1}{500}$ will win \$50, $\frac{1}{200}$ will win \$25, $\frac{1}{100}$ will win \$10, and $\frac{1}{10}$ will win \$5. How many tickets will not win a prize? How did you decide which operations to use?

27. There are 30 students in a Grade 8 class. One-third of the students take a school bus, $\frac{1}{5}$ take public transportation, $\frac{1}{6}$ are driven by family, and the rest walk to school.

a) What fraction of the students in the class walk to school?

b) How many of the students in the class walk to school? How did you decide which operations to use?

3.9

28. Evaluate. State which operation you do first.

a) $\frac{1}{5} + \frac{2}{3} \times \frac{3}{5}$ b) $\frac{4}{5} \div (\frac{2}{3} - \frac{3}{10})$

c) $\frac{7}{3} + \frac{1}{6} \times \frac{2}{5}$ d) $\frac{7}{8} \div \frac{5}{6} \times \frac{4}{7}$

29. Evaluate.

a) $\frac{2}{3} + \frac{1}{4} - \frac{1}{6}$ b) $\frac{3}{2} \times (\frac{4}{3} - \frac{1}{6})$

c) $\frac{9}{8} \div (\frac{3}{4} + \frac{3}{2})$ d) $\frac{2}{3} \times (\frac{1}{8} + \frac{5}{6} - \frac{3}{4})$

30. Carlton evaluated this expression:
$2\frac{4}{5} \div (\frac{2}{3} + \frac{1}{12})$
His work is shown below.
Where did Carlton go wrong?
What is the correct answer?

$$2\tfrac{4}{5} \div (\tfrac{2}{3} + \tfrac{1}{12}) = 2\tfrac{4}{5} \div (\tfrac{8}{12} + \tfrac{1}{12})$$
$$= 2\tfrac{4}{5} \div (\tfrac{9}{12})$$
$$= \tfrac{14}{5} \div \tfrac{9}{12}$$
$$= \tfrac{14}{5} \times \tfrac{9}{12}$$
$$= \tfrac{21}{10}$$
$$= 2\tfrac{1}{10}$$