

Applications

For Exercises 1–4, decide what operation is needed to answer the question. Explain.

1. Akiko's dog has three puppies. They weigh 2.6 pounds, 2.74 pounds, and 3.1 pounds. How much more does the heaviest puppy weigh than the lightest puppy?
2. Angie is making wreaths to sell at a craft show. She has 6.5 yards of ribbon. Each wreath has a bow made from $1\frac{1}{3}$ yards of ribbon. How many bows can she make?
3. Mrs. Doran has three grandchildren. She takes them to lunch where kids' meals are \$2.95 each. How much will the three kids' meals cost?
4. Loren is putting brick along both edges of the 21-meter walkway to his house. Each brick is 0.26 meters long. Loren is placing the bricks end to end. How many bricks does he need?
5. Draw a diagram to show how to find the solution to $2.6 \div 0.4$. Explain what the quotient means.
6. Will the quotient in each be greater than or less than 1? Explain.
 - a. $19.36 \div 3.893$
 - b. $0.962 \div 0.3$
 - c. $5.3 \div 11.07$
 - d. $0.072 \div 0.09$



For Exercises 7–12, write the decimals as fractions. Then find each quotient.

7. $4.5 \div 0.9$
8. $0.6 \div 0.12$
9. $1.2 \div 0.5$
10. $0.18 \div 0.03$
11. $22.5 \div 1.5$
12. $3.42 \div 0.19$
13. Find the quotient of $22.4 \div 0.5$ and describe what the quotient means.
14. Explain how finding the quotient of $401 \div 5$ can help you find the quotient of $40.1 \div 0.5$.

Compute each quotient.

15. $12.012 \div 5.6$

16. $45.13 \div 0.125$

17. $1.2 \div 4.8$

18. $1.99 \div 10$

For Exercises 19 and 20, compute the quotients. Look for patterns in your answers.

19. a. $36 \div 12$

b. $3.6 \div 12$

c. $3.6 \div 1.2$

d. $3.6 \div 0.12$

e. $3.6 \div 120$

f. $0.36 \div 0.012$

20. a. $124 \div 32$

b. $1,240 \div 320$

c. $12,400 \div 3,200$

d. $12,400 \div 3.2$

e. $1.24 \div 3.2$

f. $1.24 \div 0.32$

21. a. Find the quotient of $0.37 \div 10$.

b. How is the quotient similar to 0.37 ? How is it different?

c. Divide the quotient from part (a) by 10. How is the quotient similar to 0.37 , and how is it different?

d. In general, what do you think happens to a decimal number when you divide it by 10?

22. a. Write two related problems with the same answer as $48 \div 12$. Explain.

b. Write two related problems with the same answer as $4.8 \div 0.12$.

Find the value of N, and then write the complete multiplication-division fact family.

23. $0.42 \div N = 0.6$

24. $N \div 0.5 = 6.4$

25. Find the decimal equivalent for each of these fractions:

a. $\frac{2}{6}$

b. $\frac{13}{39}$

c. $\frac{5}{15}$

d. Describe the relationship between the fractions and their decimal equivalents.

26. Find the decimal equivalent for each fraction or mixed number:

a. $\frac{11}{9}$

b. $1\frac{6}{27}$

c. Describe the relationship between the fraction or mixed number and its decimal equivalents.

- 27. a.** Copy the table below, and write each fraction as a decimal.

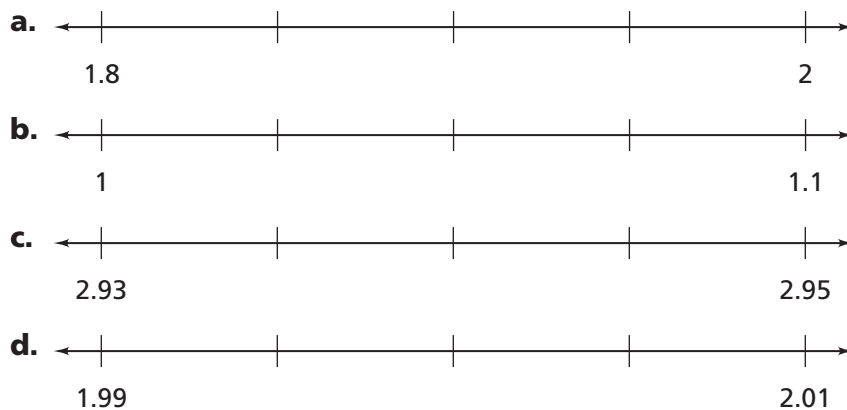
Fraction	Decimal
$\frac{1}{9}$	■
$\frac{2}{9}$	■
$\frac{3}{9}$	■
$\frac{4}{9}$	■
$\frac{5}{9}$	■
$\frac{6}{9}$	■
$\frac{7}{9}$	■
$\frac{8}{9}$	■



- b.** Describe the pattern you see in your table.
- c.** Use the pattern to write decimal representations for each of these fractions. Use your calculator to check your answers.
- i.** $\frac{9}{9}$ **ii.** $\frac{10}{9}$ **iii.** $\frac{15}{9}$
- d.** What fraction is equivalent to each of these decimals? Note that $1.222\dots$ can be written as $1 + 0.22\dots$
- i.** $1.2222\dots$ **ii.** $2.7777\dots$

Connections

- 28.** For parts (a)–(d), copy the number line and label the marks.



- e.** Explain your strategy for parts (a)–(d).

- 29. Multiple Choice** Which quotient is greater than 1?

A. $\frac{1}{4} \div \frac{3}{8}$ B. $\frac{19}{5} \div 5$ C. $1\frac{2}{3} \div 2\frac{2}{9}$ D. $3 \div \frac{19}{7}$

- 30.** For parts (a)–(c), use the table. Give evidence to support your conclusions. You may want to make a table of the differences between each pair of consecutive years.

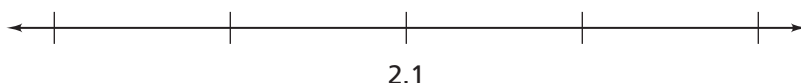
Men's Springboard Diving

Year	Winner (country)	Score
1960	Gary Tobian (USA)	170
1964	Kenneth Stizberger (USA)	150.9
1968	Bernie Wrightson (USA)	170.15
1972	Vladimir Vasin (USSR)	594.09
1976	Phil Boggs (USA)	619.52
1980	Aleksandr Portnov (USSR)	905.02
1984	Greg Louganis (USA)	754.41
1988	Greg Louganis (USA)	730.8
1992	Mark Lenzi (USA)	676.53
1996	Ni Xiong (CHINA)	701.46
2000	Ni Xiong (CHINA)	708.72
2004	Bo Peng (CHINA)	787.38



- a. Between what consecutive Olympic years did the greatest change in winning score occur?
- b. Between what consecutive Olympic years did the next greatest change in winning score occur?
- c. Between what consecutive Olympic years did the least change in winning score occur?
- d. What is the average of Greg Louganis's scores?
- 31. a.** Find the product of 0.37 and 10.
- b. How is the product similar to 0.37? How is it different?
- c. Multiply the product from part (a) by 10. How is the product similar to 0.37? How is it different?
- d. In general, what do you think happens to a decimal number when you multiply it by 10?

- 32. a.** Give four different ways to label the unlabeled marks on the number line.



- b.** Find the mean of the five numbers in each of your answers in part (a). Do you see a pattern?
- c.** Can you label the unlabeled marks on the number line in part (a) so that the sum of the five numbers will be 10? Explain.
- 33.** The area of a circle is 2.0096 square inches. Use 3.14 as an approximation for the number π .
- a.** What is the diameter of this circle?
- b.** What is the circumference of this circle?

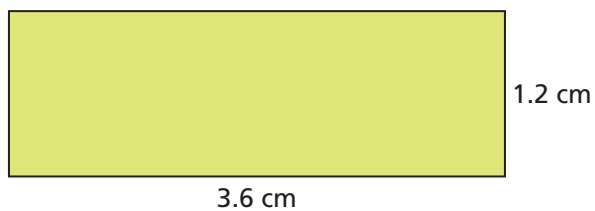
Extensions

- 34.** Leah filled her gas tank at the start of a trip and noted that her mileage indicator read 15,738.1 miles. When her mileage indicator read 16,167.6, she needed gas again. It took 18.2 gallons of gas to fill the tank. About how many miles did her car go on each gallon of gas?
- 35.** Explore the decimal representations of fractions with a denominator of 99. Try $\frac{1}{99}$, $\frac{2}{99}$, $\frac{3}{99}$, and so on. What patterns do you see?
- 36.** Explore the decimal representations of fractions with a denominator of 999. Try $\frac{1}{999}$, $\frac{2}{999}$, $\frac{3}{999}$, and so on. What patterns do you see?

Use the patterns you discovered in Exercises 35 and 36 to write fractions for these decimal representations.

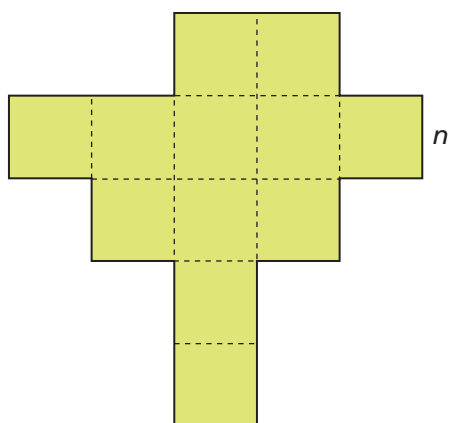
- 37.** 0.05050505 ... **38.** 0.45454545 ...
- 39.** 0.045045045 ... **40.** 10.121212 ...

Each of the shapes in Exercises 41–43 has the same area as the area of the rectangle.

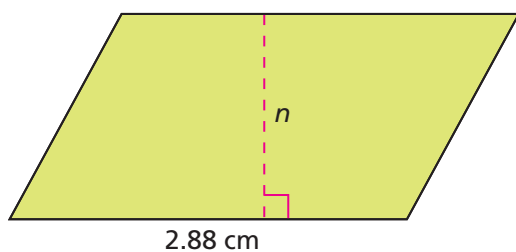


Use this information to find the length marked by n .

41.



42.



43.

