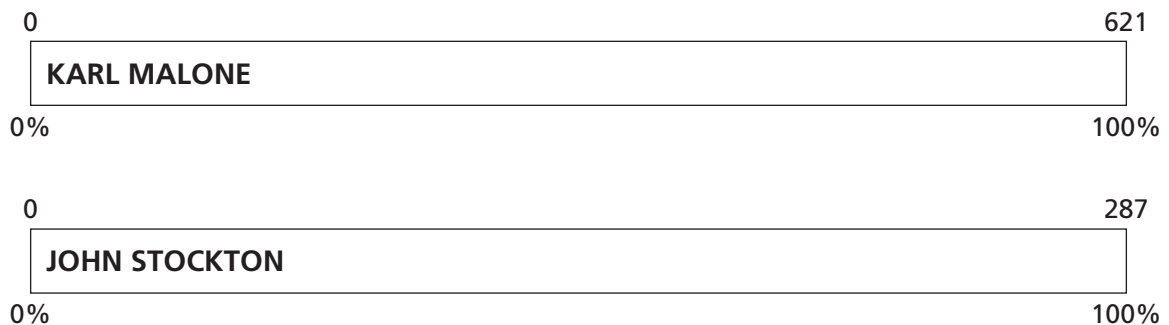## Applications

1. In a recent year, Karl Malone made 474 out of 621 free-throw attempts and John Stockton made 237 out of 287 free-throw attempts. Copy the percent bars and use them to answer each question.

```
0                                                      621
┌──────────────────────────────────────────────────────┐
│ KARL MALONE                                            │
└──────────────────────────────────────────────────────┘
0%                                                     100%
```

```
0                                                      287
┌──────────────────────────────────────────────────────┐
│ JOHN STOCKTON                                          │
└──────────────────────────────────────────────────────┘
0%                                                     100%
```

   a. What fraction benchmark is near the number of free throws made by each player?

   b. Estimate the percent of free throws made by each player.

2. Use the data at the right. Which neighborhood (Elmhurst or Little Neck) is more in favor of the proposed school bond to build a new sports complex? Explain your reasoning.

People Favorable to School Bond

Neighborhood	Yes	No
Elmhurst	43	57
Little Neck	41	9

3. **Multiple Choice** Choose the best score on a quiz.

   A. 15 points out of 25   **B.** 8 points out of 14

   C. 25 points out of 45   **D.** 27 points out of 50

4. **Multiple Choice** Choose the best score on a quiz.

   F. 150 points out of 250   **G.** 24 points out of 42

   H. 75 points out of 135   **J.** 75 points out of 150

5. **Multiple Choice** What is the percent correct for a quiz score of 14 points out of 20?

   A. 43%   **B.** 53%   **C.** 70%   **D.** 75%

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6. Multiple Choice What is the percent correct for a quiz score of 26 points out of 60?

F. about 43%   **G.** about 57%   **H.** about 68%   **J.** about 76%

For Exercises 7–15, use the cat data in the table.

Distribution of Cat Weights				
Weight (lb.)	**Males**		**Females**	
	Kitten	**Adult**	**Kitten**	**Adult**
0–5.9	8	1	7	4
6–10.9	0	16	0	31
11–15.9	2	15	0	10
16–20	0	4	0	2
Total	10	36	7	47

7. **a.** What fraction of the cats are female?
   b. What fraction of the cats are male?
   c. Write each fraction as a decimal and as a percent.

8. **a.** What fraction of the cats are kittens?
   b. What fraction of the cats are adults?
   c. Write each fraction as a decimal and a percent.

9. **a.** What fraction of the kittens are male?
   b. Write the fraction as a decimal and as a percent.

10. What percent of the cats weigh from 11 to 15.9 pounds?

11. What percent of the cats weigh from 0 to 5.9 pounds?

12. What percent of the cats are male kittens and weigh from 11 to 15.9 pounds?

13. What percent of the cats are female and weigh from 6 to 15.9 pounds?

14. What percent of the cats are kittens and weigh from 16 to 20 pounds?

15. What percent of the females weigh from 0 to 5.9 pounds?

For Exercises 16–19 use the following information:

In a recent survey, 150 dog owners and 200 cat owners were asked what type of food their pets liked. Here are the results of the survey.

Pet Food Preferences

Preference	Out of 150 Dog Owners	Out of 200 Cat Owners
Human Food Only	75	36
Pet Food Only	45	116
Human and Pet Food	30	48

16. Find the food category that the greatest number of dog owners say is favored by their pets. Write the number in this category as a fraction, as a decimal, and as a percent of the total dog owners surveyed.

17. Find the food category that the greatest number of cat owners say is favored by their pets. Write the number in this category as a fraction, as a decimal, and as a percent of the total cat owners surveyed.

18. Suppose only 100 dog owners were surveyed, with similar results. Estimate how many would have answered in each of the three categories.

19. Suppose 50 cat owners were surveyed, with similar results. Estimate how many would have answered in each of the three categories.

20. Elisa's math test score, with extra credit included, was $\frac{26}{25}$. What percent is this?

21. Suppose 12% of students surveyed said they have tried rock climbing. Estimate how many would say they have tried rock climbing if

  a. 100 students were surveyed

  b. 200 students were surveyed

  c. 150 students were surveyed

22. When surveyed, 78% of pet owners said they live in a town where there is a pooper-scooper law in effect.

   a. How would you express this percent as a decimal?

   b. How would you express this percent as a fraction?

   c. What percent of people surveyed said they do not live in a town with a pooper-scooper law? Explain your reasoning. Express this percent as a decimal and as a fraction.

   d. Can you determine how many people were surveyed? Why or why not?

23. When surveyed, 66% of dog owners who took their dog to obedience school said their dog passed.

   a. What percent of the dog owners said their dogs did not pass?

   b. Write an explanation for a friend about how to solve part (a) and why your solution works.

24. Copy the table below and fill in the missing parts.

Percent	Decimal	Fraction
62%	▪	▪
▪	▪	$\frac{4}{9}$
▪	1.23	▪
▪	▪	$\frac{12}{15}$
▪	2.65	▪
▪	0.55	▪
48%	▪	▪
▪	▪	$\frac{12}{10}$

25. When Diane and Marla got their partner quiz back, their grade was 105% because they got some of the extra credit problems correct.

   a. Write this percent as a decimal and as a fraction.

   b. If each problem on the test had the same point value, how many problems could have been on the test?

Connections

Compare each pair of fractions in Exercises 26–31 using benchmarks or another strategy that makes sense to you. Copy the fractions and insert $<$, $>$, or $=$ to make a true statement.

26. $\dfrac{7}{10}$ ■ $\dfrac{5}{8}$

27. $\dfrac{11}{12}$ ■ $\dfrac{12}{13}$

28. $\dfrac{12}{15}$ ■ $\dfrac{12}{14}$

29. $\dfrac{3}{8}$ ■ $\dfrac{4}{8}$

30. $\dfrac{3}{5}$ ■ $\dfrac{4}{6}$

31. $\dfrac{4}{3}$ ■ $\dfrac{15}{12}$

32. Copy the table below and fill in the missing parts.

Fraction	Mixed Number
$\dfrac{13}{5}$	■
■	$5\dfrac{2}{7}$
■	$9\dfrac{3}{4}$
$\dfrac{23}{3}$	■

33. The following percents are a good set of benchmarks to know because they have nice fraction equivalents and some nice decimal equivalents. Copy the table and fill in the missing parts. Use your table until you have learned these relationships.
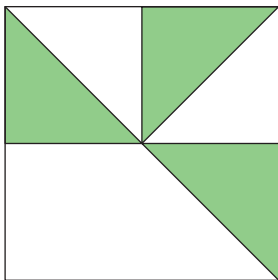
| Percent	10%	$12\dfrac{1}{2}$%	20%	25%	30%	$33\dfrac{1}{3}$%	50%	$66\dfrac{2}{3}$%	75%
Fraction	■	■	■	■	■	■	■	■	■
Decimal	■	■	■	■	■	■	■	■	■

Extensions

In Exercises 34–36, determine what fraction is the correct label for the
mark halfway between the two marked values on the number line. Then
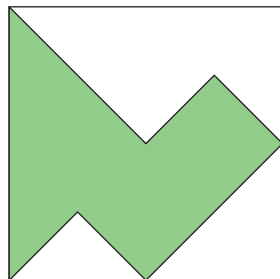write the fraction as a percent and as a decimal.

34.

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

35.

$\dfrac{1}{2}$? $\dfrac{3}{4}$

36.

$\dfrac{1}{6}$? $\dfrac{1}{5}$
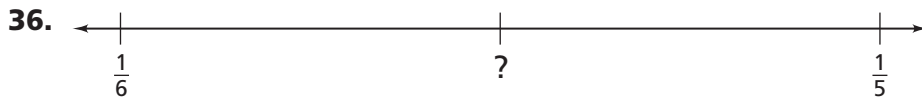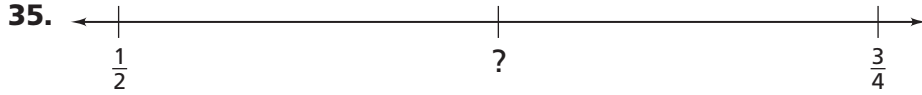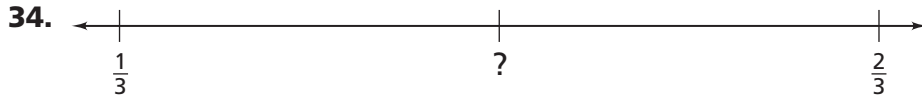
37. What fraction of the square
below is shaded? Explain your
reasoning.

38. In decimal form, what part
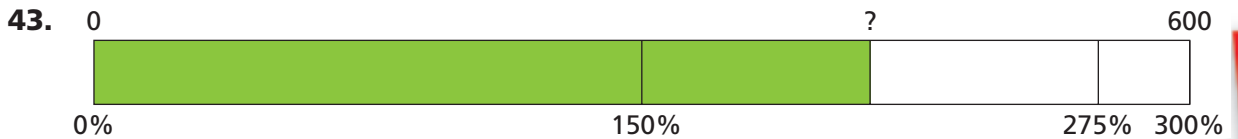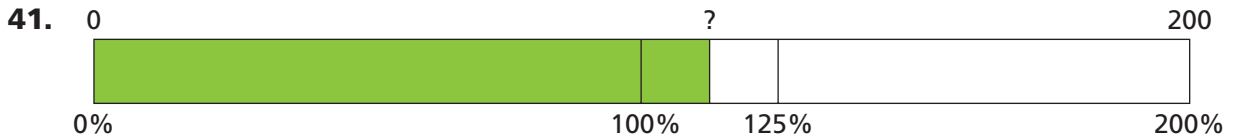of the square below is shaded?
Explain.
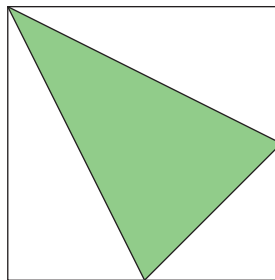
39. What percent of the square below is shaded? Explain.

40. A pet store sells digestible mouthwash for cats. To promote the new
product, the store is offering $0.50 off the regular price of $2.00 for an
8-ounce bottle. What is the percent discount on the mouthwash?

In Exercises 41–43, determine what number is the correct label for the place halfway between the two percents marked on the percent bar. Then determine what percent the number represents.

41.

| 0 | ? | 200 |

| 0% | 100% 125% | 200% |

42.

| 0 | ? | 400 |

| 0% | 125% 150% | 200% |

43.

| 0 | ? | 600 |

| 0% | 150% | 275% 300% |

44. A store offers a discount of 30% on all reference books.

    a. If a dictionary costs $12.00 before the discount, what is the amount of the discount?

    b. If a book on insect identification originally costs $15.00, how much will you have to pay for it?