

## RATIOS

**Write the following ratios and reduce to lowest terms. Do not write answers as mixed numbers.**

1. Mr. Reeves planted 5 bean plants and 12 tomato plants in his garden. What is the ratio of bean plants to tomato plants?
2. In a recent year in Tennessee, there were 53 telephones for every 100 people. What was the ratio of phones to people?
3. In one season, a basketball team won 60 games and lost 20 games. What is the ratio of games won to games lost?
4. A mallard duck has 13 ducklings. Five of the ducklings are male. What is the ratio of male to female ducklings?
5. In a recent year in Illinois, there were 166 telephones for every 100 people. What is the ratio of phones to people?
6. Bebe paid \$8.00 for 20 pounds of oranges. What is the ratio of the price of oranges to the pound of oranges?

## PROPORTIONS

Solve each proportion.

$$1. \frac{28}{n} = \frac{7}{9}$$

$$2. \frac{m}{36} = \frac{5}{9}$$

$$3. \frac{2}{3} = \frac{x}{27}$$

$$4. \frac{96}{a} = \frac{16}{7}$$

$$5. \frac{20}{5} = \frac{16}{n}$$

$$6. \frac{3}{8} = \frac{y}{56}$$

$$7. \frac{5}{8} = \frac{15}{w}$$

$$8. \frac{5}{n} = \frac{6}{24}$$

$$9. \frac{5}{3} = \frac{25}{a}$$

$$10. \frac{c}{14} = \frac{6}{42}$$

$$11. \frac{12}{11} = \frac{n}{33}$$

$$12. \frac{1}{2} = \frac{49}{d}$$

$$13. \frac{4}{f} = \frac{20}{30}$$

$$14. \frac{3}{15} = \frac{9}{45}$$

$$15. \frac{3}{4} = \frac{36}{n}$$

$$16. \frac{4}{n} = \frac{80}{100}$$

$$17. \frac{n}{3} = \frac{24}{36}$$

$$18. \frac{7}{8} = \frac{42}{n}$$

## RATIO AND PROPORTION STORY PROBLEMS

**Solve, using a proportion.**

1. If 8 cases of merchandise cost \$60, what would a dozen cases cost?
2. Benito saves \$6 out of every \$20 he earns. He earned \$90 one month. How much did he save?
3. A man who is 6 feet tall casts a shadow that is 11 feet long. At the same time, a tree casts a shadow that is 33 feet long. What is the height of the tree?
4. Mr. Savage used 3 gallons of paint to cover 1,350 square feet of wall space. At this rate, how much paint will be needed to cover 1,800 square feet?
5. In his last game, the Rams' quarterback completed 10 out of 18 passes he threw. At this rate how many passes will he attempt if he completes 15 passes?
6. Serena paid a tax of \$288 on a house assessed at \$48,000. Using the same tax rate, find the tax on a house assessed at \$59,000.

7. At Kolbens Building, 3 out of every 7 employees use public transportation. There are 9,800 employees at the building. How many use public transportation?
  
  
  
  
  
  
  
  
  
  
8. At the snack bar, 7 hot dogs are sold for every 10 hamburgers sold. At this rate, how many hamburgers will be sold if 63 hot dogs are sold?
  
  
  
  
  
  
  
  
  
  
9. Jack delivered 90 circulars in 20 minutes. At this rate, how long will it take him to deliver 135 circulars?
  
  
  
  
  
  
  
  
  
  
10. At the airport, 4 planes land every 8 minutes. At this rate, how many planes will land in one hour?

## SCALE DRAWINGS AND MAPS

**Solve, using a proportion.**

1. If 4 inches represents 100 miles on a scale drawing, how long would a line segment be that represents 50 miles?
2. On a map drawn to scale, 7 cm represents 280 km. How many kilometers are represented by a line 8 centimeters long?
3. On a scale drawing, 4 inches represents 25 miles. If a line segment on the drawing is 6 inches long, what distance does this line segment represent?
4. On a map drawn to scale, 2 cm represents 870 km. How long would a line segment be that represents 130 kilometers?
5. If 3 inches represents 90 miles on a scale drawing, how long would a line segment be that represents 240 miles?

6. On a scale drawing, 2 inches represents 30 feet. How many inches long is a line segment that represents 10 feet?
  
  
  
  
  
  
  
  
  
  
7. On a scale drawing of a planned office space, one inch represents 6 feet. How wide is the conference room if the width in the drawing is 3 inches?
  
  
  
  
  
  
  
  
  
  
8. If 2 cm represents 75 miles on a scale drawing, how long would a line segment be that represents 50 miles?
  
  
  
  
  
  
  
  
  
  
9. If 1 inch represents 8 miles on a map drawing, how many inches would represent 50 miles?
  
  
  
  
  
  
  
  
  
  
10. On a scale drawing of a house plan, one inch represents 10 feet. How many feet wide is the master bedroom, if the width in the drawing is 2.5 inches?

## CUMULATIVE REVIEW

**Read carefully and solve.**

1. Out of 80 students surveyed, 20 are girls. What is the ratio of girls to the total number of students surveyed?
2. The ratio of dogs to cats being adopted today at the animal rescue center is 7 to 5. If there are 70 cats up for adoption, how many dogs are there?
3. Fifty out of 125 eighth graders took summer school. What is the ratio of eighth graders who took summer school to the total number of eighth graders?
4. Uncle Buck used 5 cups of flour to make 8 dozen muffins. How many cups of flour would he need to make 20 dozen muffins?
5. On a map, 2 inches represents 60 miles. If a line between two cities measures 9 inches, how many miles apart are they?

6. Brian mixed 8 cups of milk to make 6 dozen brownies. At that rate, how many cups of milk would he need to make 15 dozen brownies?
7. A five-foot boy casts a two-foot shadow. At the same time, the shadow of the court house tower is 25 feet in length. How tall is the court house tower?

**Solve.**

8.  $\frac{16}{x} = \frac{2}{3}$

9.  $\frac{3}{4} = \frac{x}{12}$

10.  $\frac{x}{18} = \frac{1}{3}$

11.  $\frac{5}{9} = \frac{15}{x}$

12.  $\frac{10}{21} = \frac{x}{7}$

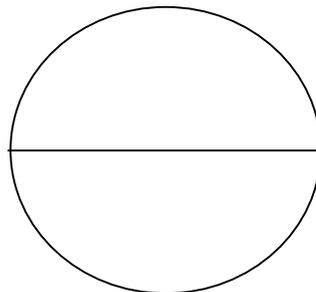
13.  $\frac{2}{9} = \frac{15}{x}$

**Read carefully and solve.**

14. If 2 cm represents 9 m on a scale drawing, how many meters do 15 cm represent?
15. If 15 inches represents 8 feet on a scale drawing, how long will a line segment be that represents 12 feet?

16. On a scale drawing of an office space floor plan, 1 inch represents 3 feet. The length of the copier room measures 7 inches on the floor plan. How many feet does that represent?
17. On a scale drawing, 3 inches represent 50 miles. If a line segment between two points measured 7 inches, how many miles would it represent?
18. On a map scale, 2 inches represent 7 miles. If two towns on the map are 35 kilometers apart, how long would the line segment be between the two towns on the map?

- 1.) Cameron uses color film for 48 out of every 72 photographs he takes. If he takes 156 photographs, how many will be on color film?
- A. 72 photos
  - B. 104 photos
  - C. 156 photos
  - D. 234 photos
  - E. 276 photos
- 2.) A basketball player was successful on 18 out of his last 24 free-throws attempts. If he attempts 20 free-throws in the next game, about how many will he make if the ratio is the same as the first game?
- A. 6
  - B. 4
  - C. 15
  - D. 18
  - E. 20
- 3.) Maria made punch for a party. The ratio of a can concentrated juice to water is one to three. How much water did she use with 4 cans of concentrated juice?
- A. 12
  - B. 8
  - C. 6
  - D. 4
  - E. 3
- 4.) The scale of this drawing of a wheel is 1 feet: 30 inches.  
What is the actual diameter of the wheel?
- A. 30 inches
  - B. 45 inches
  - C. 60 inches
  - D. 15 feet
  - E. 30 feet



|----- 1.5 ft -----|

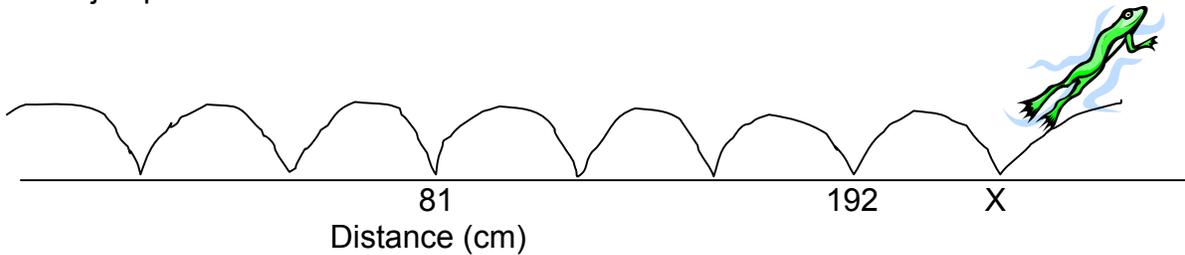
- 5.) Audrey makes an average of 148 minutes of business calls every 2 days. At this rate, how much time does she spend making business calls in a five-day work week?
- A. 12 hours 20 minutes
  - B. 6 hours 10 minutes
  - C. 5 hours 50 minutes
  - D. 4 hours 56 minutes
  - E. 2 hours 28 minutes
- 6.) A sleeping person breaths an average of 15 times a minute. How many breathes would someone take during 8 hours of sleep?
- A. 120 breaths
  - B. 480 breaths
  - C. 900 breaths
  - D. 1920 breaths
  - E. 7200 breaths
- 7.) A typical walking rate is 1 mile in twenty minutes. If a jogger can jog about 3 times that speed, approximately how far would that jogger be able to jog in 2 hours?
- A. 2 to 3 miles
  - B. 5 to 6 miles
  - C. 8 to 13 miles
  - D. 15 to 30 miles
  - E. 30 to 35 miles
- 8.) If 25 pounds of sugar costs \$6.25, how much does each pound cost?
- A. \$.20
  - B. \$.25
  - C. \$.62
  - D. \$.85
- 9.) Greg purchased a set of 4 tires for \$ 208.32. How much did he pay per tire?
- A. \$5.28
  - B. \$52.08
  - C. \$52.80
  - D. \$528.00

- 10.) If the scale on a map is 1 cm = 210 miles, what is the actual distance between two points 2.5 cm on the map?
- A. 5250 mi.  
 B. 525 mi.  
 C. 420 mi.  
 D. 210 mi.  
 E. 2.5 mi.
- 11.) The scale on a map is 2 cm = 15 km. How far apart are two cities shown as 7 cm apart on the map?
- A. 4.3 km  
 B. 15.5 km  
 C. 30 km  
 D. 52.5 km  
 E. 62.5 km
- 12.) A map is drawn to a scale of 1 inch = 15 miles. If the distance on the map from one side of town to the other is 3 inches, what is the actual distance?
- A. 5 miles  
 B. 15 miles  
 C. 18 miles  
 D. 45 miles
- 13.) The ratio of men to women at a dance was 2 to 3. If there were 300 people at the dance, which of the following proportions could be used to find  $M$ , the number of men at the dance?

$$\frac{2}{3} = \frac{M}{300} \qquad \frac{2}{3} = \frac{300}{M} \qquad \frac{2}{5} = \frac{M}{300} \qquad \frac{2}{5} = \frac{300}{M}$$

- 14.) If soup is on sale at 3 cans for a dollar but you buy only 2 cans, what will you pay if the clerk automatically rounds up all fractions of a cent?
- A. \$0.33  
 B. \$0.34  
 C. \$0.66  
 D. \$0.67  
 E. \$1.00

- 15.) Suppose a frog made equal jumps across a road and the distances were measured and recorded as shown in the diagram below. How should the measure at point X be labeled to be consistent with the labeling of the frog's jumps?



- A.  $X = 200$                       B.  $X = 222$                       C.  $X = 229$                       D.  $X = 273$

- 16.) If you are told that 1 inch on a drawing equals 4 feet on an actual object, which of these line segments on a drawing represents a length of 12 feet on the actual project?

- A. Line segment 3 inches in length.  
 B. Line segment 12 inches in length.  
 C. Line segment 48 inches in length.  
 D. Line segment  $\frac{1}{4}$  inch in length.  
 E. Line segment  $\frac{1}{3}$  inch in length.

- 17.) If each  $\frac{1}{4}$  inch of a floor plan represents 2 feet, what length is represented by a  $4\frac{3}{4}$  inch segment?

- A. 38 feet  
 B. 19 feet  
 C. 9.5 feet  
 D. 7 feet  
 E. 5 feet

- 18.) Which pair of ratios has the same value?

- A.  $\frac{3}{8}$  and  $\frac{6}{18}$   
 B. 10 to 25 and 16 to 40  
 C. 6:25 and 24:150  
 D. 9 to 12 and 12 to 9  
 E. None of the above

19.) Solve for x:  $\frac{8}{9} = \frac{32}{x}$

- A. 39.7
- B. 36
- C. 33
- D. 31
- E. 28.4

20.) If the ratio of cars to trucks is 1:3 what percent of vehicles are trucks?

- A.  $\frac{1}{3}\%$
- B. 25%
- C.  $33\frac{1}{3}\%$
- D. 75%
- E. 80%

21.) A machine can make 20 parts in 5 minutes. How long will it take the machine to make 30 parts?

- A. 0.13 minutes
- B. 3 minutes
- C. 7.5 minutes
- D. 10 minutes
- E. 120 minutes

22.) A machine seals 30 boxes in 2 minutes. How many minutes would it take to seal 105 boxes?

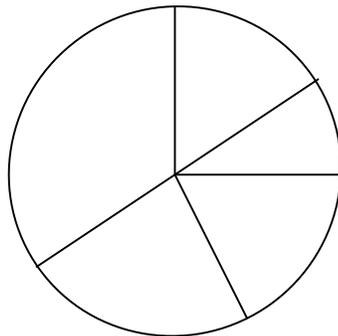
- A. 3.5 minutes
- B. 7 minutes
- C. 22.5 minutes
- D. 37.5 minutes
- E. 60 minutes

23.) Brandon wants to enlarge a photo that is 4 inches wide and 6 inches high to make a 24-inch-wide poster. How high will the poster be?

- A. 36 inches
- B. 34 inches
- C. 24 inches
- D. 16 inches
- E. 10 inches

- 24.) A teacher can grade 5 exams in 3 minutes. At this rate, how long will it take the teacher to grade 30 exams?
- A. 6 minutes
  - B. 10 minutes
  - C. 15 minutes
  - D. 18 minutes
  - E. 38 minutes
- 25.) The Dukes have won three of their last five games. If this pattern continues and the season has twenty games, how many more games will the Dukes win by the end of the season?
- A. 6
  - B. 9
  - C. 12
  - D. 15
  - E. 18
- 26.) Steve surveyed 50 people in Lewisville. He found that 25 people preferred Channel 3 News, 10 people preferred Channel 8 News, and 15 people preferred the news on other channels. If there are 6400 residents in Lewisville, predict the number of residents who might prefer Channel 8 News.
- A. 1,280
  - B. 1,600
  - C. 640
  - D. 5,120
  - E. 2,560

- 27.) Below is a graph representing a survey of 100 students about their favorite colors. If Bruce surveys 500 students, how many would you expect to say that red or yellow is their favorite color?



- A. 25
- B. 100
- C. 125
- D. 250
- E. 500

Orange	21
Grapefruit	6
Pineapple	10
Apple	15
Tomato	8

Use the data from the survey on favorite fruit juices to answer the following question.

Favorite Fruit Juices  
# selecting



28.) For a sample of 500 people, how many would you expect to choose orange juice?

- A. 150
- B. 175
- C. 200
- D. 210
- E. 225