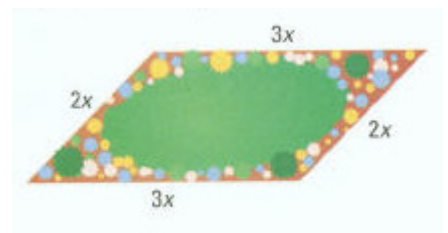


Chapter 3 Review

1. Solve the equation $11 = r - 4$.
2. Solve the equation $|-6| + y = 11$
3. Solve the equation $-3 = -a + (-4)$
4. There are 15 members of a high school band brass section. After graduation there are only 7 members. How many members graduated? Write an equation to represent the problem and solve the equation.
5. The average 12-to-17-year-old spends 645 minutes per month on a personal computer. This is 732 fewer minutes per month than the average 18-to-24-year-old spends. How many minutes per month does the average 18-to-24-year-old spend on a personal computer?
6. Solve the equation $18 = -2a$
7. Solve the equation $-\frac{2}{3}t = -16$
8. Solve the equation $-6y = -|27|$
9. Solve the equation $\frac{1}{3}y = 82$
10. Solve the equation $-10x = -9$
11. A 10,000-square-foot pizza was created on October 11, 1987. This pie was eaten by about 30,000 people. On average, how much did each person eat?
12. A homeowner is installing a fence around a garden (see picture to the right). The garden has a perimeter of 216 feet. Write and solve an equation to find the garden's dimensions.



13. Solve the equation $2x + 7 = 15$
14. Solve the equation $8x - 3x = 10$
15. Solve the equation $3(x - 2) = 18$
16. Solve the equation $\frac{4x}{3} + 3 = 23$
17. Solve the equation $-10 = \frac{1}{2}x + x$
18. Solve the equation $17 = 2(3x + 1) - x$
19. Your school's drama club charges \$4 per student for admission to *Our Town*. The club borrowed \$400 from parents to pay for costumes, props, and the set. After paying back the parents, the drama club has \$100. How many students attended the play?
20. Solve the equation $\frac{2}{3}x + 1 = \frac{1}{3}$ in two different ways. Explain which method you prefer and why.
21. A person has quarters, dimes, and nickels with a total value of 500 cents. The number of nickels is twice the number of quarters. The number of dimes is four less than the number of quarters.
- Explain why the expression $5(2q)$ represents the value of the nickels if q represents the number of quarters. How can you simplify the expression?
 - Write and solve an equation to find the number of each type of coin.
22. Solve the equation $4x + 27 = 3x$.
23. Solve the equation $12c - 4 = 12c$
24. Solve the equation $-2(6 - 10n) = 10(2n - 6)$

25. Solve the equation $\frac{1}{4}(60 + 16s) = 15 + 4s$
26. Solve the equation $\frac{3}{4}(24 - 8b) = 2(5b + 1)$
27. A rock-climbing gym charges nonmembers \$16 per day to use the gym and \$8 per day for equipment rental. Members pay a yearly fee of \$450 for unlimited climbing and \$6 per day for equipment rental. Write and solve an equation to find how many times you must use the gym to justify becoming a member.
28. Find the resulting unit of measure
- (hours per day) \cdot (days)
 - (feet) \div (minute)
 - (inches) \div (inches per foot)
 - (miles per hour) \cdot (hours per minute)
29. At Barton High School, 45 students are taking Japanese. This number has been increasing at a rate of 3 students per year. The number of students taking German is 108 and has been decreasing at a rate of 4 students per year. At these rates, when will the number of students taking Japanese equal the number taking German? Write and solve an equation to answer the question. Check your answer with a table or a graph.
30. A migrating elephant herd started moving at a rate of 6 miles per hour. One elephant stood still and was left behind. Then this stray elephant sensed danger and began running at a rate of 10 miles per hour to reach the herd. They stray caught up in 5 minutes.
- How long (in hours) did the stray run to catch up? How far did it run?
 - Find the distance that the herd traveled while the stray ran to catch up. Then write an expression for the total distance the herd traveled. Let x represent the distance (in miles) that the herd traveled while the stray elephant stood still.
 - Use the distances you found in parts **a** and **b**. Write and solve an equation to find how far the heard traveled while the stray stood still.
 - Make a table or a graph to check your answers.

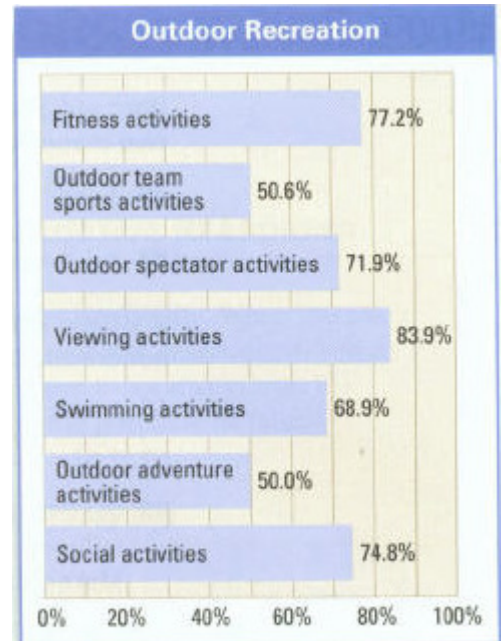
31. Solve the equation. Round the result to the nearest hundredth.
- a. $38 = -14 + 9a$
 - b. $2(-5a + 7) = -a$
 - c. $-(d - 3) = 2(3d + 1)$
 - d. $4.65x - 4.79 = 13.57 - 6.84x$
 - e. $4.21x + 5.39 = 12.07(2.01 - 4.72x)$
32. Bridge sections expand as the temperature goes up, so a small *expansion gap* is left between sections when a bridge is built. As the sections expand, the width of the gap gets smaller.

Suppose that for some bridge the expansion gap is 16.8 millimeters wide at 10°C and decreases by 0.37 millimeter for every 1°C rise in temperature.

- a. If the temperature is 18°C , by how many degrees did the temperature rise? By how much would the width of the gap decrease? What would the new width of the gap be? Round to the nearest tenth of a millimeter.
 - b. The temperature rises to $t^{\circ}\text{C}$. Write expressions for the temperature rise, the decrease in the width of the gap, and the new width of the gap.
 - c. Use the expressions from parts **a** and **b**. Write and solve an equation to find the temperature at which the gap decreases to 9.4 millimeters.
33. Solve the equation $A = \frac{1}{2}bh$ for b .
34. Rewrite the equation $\frac{1}{4}y + 3 = -5x$ so that y is a function of x .
35. Rewrite the equation $7x - 4x + 12 = 36 - 5y$ so that y is a function of x .
36. Rewrite the equation $\frac{1}{5}(25 - 5y) = 4x = 9y + 13$ so that y is a function of x .

37. The *General Sherman* tree, a sequoia tree in Sequoia National Park, has the greatest volume of any tree in the world. The distance around the tree (the circumference) measures 102.6 feet. Show how to find the distance straight through the center of the tree (the diameter) without measuring it directly. Then find this value to the nearest tenth of a foot.
38. Find the unit rate: \$2 for 5 cans of dog food
39. Find the unit rate: \$1.39 for $1\frac{1}{2}$ quarts of juice
40. A store sells a box of 5 frozen yogurt bars for \$1.20. The store also sells a box containing 7 of the same frozen yogurt bars for \$1.59. Which is the better buy? Explain how you decided.
41. 1,100,000,000 miles are driven to move the mail in the United States per year. Find the rate per week. Round to the nearest million miles.
42. A car uses fuel at a rate of 15 miles per gallon. Estimate how many miles the car can travel on 20 gallons of fuel.
43. A total of 382 kilograms of lunar samples (rocks, dust, and so on) were collected during the six Apollo moon landings between 1969 and 1972.
- The largest rock collected weighs 11.7 kilograms. This single rock is what percent of the total weight of the samples?
 - The 110.5 kilograms of lunar samples collected by the Apollo 17 astronauts represent what percent of the total weight of the samples?
 - About 7.5% of the lunar samples (by weight) have been analyzed and then returned for storage in the Return Sample Vault at NASA's Johnson Space Center. What is the combined weight of the samples in this vault?

44. Use the graph at the right. It shows the percent of 16-to-24-year-olds participating in the top seven categories of outdoor recreation.
- Viewing activities include sightseeing, visiting a nature center, and so on. Estimate how many students participate in viewing activities in a college with 1400 students.
 - Estimate the survey size if a survey of 16-to-24-year-olds found that 270 of them participate in fitness activities.
 - Write your own question based on the survey data. Then find the answer.



► Source: National Survey on Recreation and the Environment