

3.1**Practice**

For use with pages 119-124

Tell whether the given value of the variable is a solution of the equation.

1. $6x - 7 = 17; x = 4$

2. $1 = 4x + 9; x = -2$

3. $8 - 3x = 5; x = -1$

4. $-15 = -3x + 15; x = 5$

5. $\frac{x}{5} - 6 = -2; x = 20$

6. $-6 = \frac{x}{2} - 7; x = -2$

Solve the equation. Check your solution.

7. $7x + 12 = 26$

8. $2x + 9 = -5$

9. $-4 = 9x + 23$

10. $-10 = 6x - 16$

11. $25 - 3x = -8$

12. $4x - 15 = 25$

13. $70 = 19 - 3x$

14. $-2x - 47 = -11$

15. $-14 = -22 - \frac{x}{3}$

16. $\frac{x}{12} + 13 = 18$

17. $-10 = 8 - \frac{x}{7}$

18. $3 = \frac{x}{25} + 6$

19. $250 = 124 - 3x$

20. $-\frac{x}{9} - 12 = -23$

21. $56 - \frac{x}{15} = 47$

3.1

Continued

Practice

For use with pages 119–124

Write the verbal sentence as an equation. Then solve the equation.

22. Fourteen minus the product of 3 and a number is 26.
23. Negative seven minus the product of 5 and number is 28.
24. Eleven minus the quotient of a number and 8 is 15.
25. Negative sixteen plus the quotient of a number and 2 is 35.
26. Thirty-nine minus a number is -19 .
27. Fifteen people volunteer for a park cleanup. The number of volunteers increases by 7 people each month for several months. After how many months will there be 50 volunteers?
28. You have a \$100 gift card to spend at a store. You buy a portable compact disc player for \$45. Compact discs are on sale for \$11 each. How many compact discs can you buy with the money remaining on the gift card?
29. A group of 4 friends are playing golf. The total cost of the round of golf is \$108. Each person in the group has the same coupon. The total cost of the round with the coupons is \$76. How much is the coupon worth?
30. A school makes \$715 from ticket sales for a school play. From the ticket sales, \$448 is from adult tickets. Student tickets are \$3 each. How many students attended the play?
31. You are rock climbing and descending a cliff at a rate of about 9 feet per minute. The cliff is about 360 feet high.
- a. How long until you are at a height of 234 feet?
- b. How long until you are halfway down the cliff?

3.2**Practice**

For use with pages 125-129

Solve the equation. Check your solution.

1. $10 + 3(x + 2) = 31$

2. $-2(x - 6) + 7 = 35$

3. $-20 - (4x - 1) = -15$

4. $12(x + 3) - 3x = 117$

5. $-25 + 4(2x + 5) = -61$

6. $187 = 19 + 7(13 - x)$

7. $20 = 14 + 3(x + 8)$

8. $-5(2x - 7) + 24 = 89$

9. $-14 = 6x - 8(x + 3)$

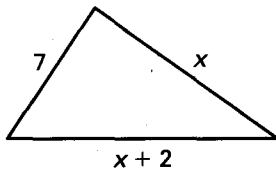
10. $-7x - (10 - x) = -58$

11. $48 = 15 + 6(4 + x) - 3x$

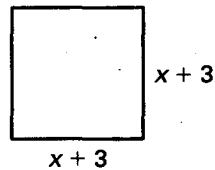
12. $23 - 7(x + 3) + 5x = 10$

Find the value of x for the given triangle, rectangle, or square.

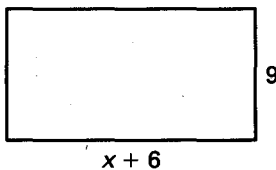
13. Perimeter = 29 units



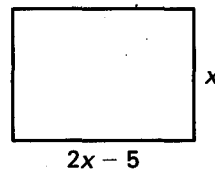
14. Perimeter = 28 units



15. Perimeter = 52 units



16. Perimeter = 38 units



3.2

Continued

Practice

For use with pages 125–129

17. The length of a rectangle is 3 meters more than twice its width. The perimeter of the rectangle is 48 meters. Let w represent the width.
- Sketch a diagram of the rectangle.
 - Write an equation for the perimeter of the rectangle.
 - Find the length and width of the rectangle.
18. A class of 42 students and 2 teachers plan a trip to an observatory. The class has raised \$485 for the trip. Admission is \$5 per person and bus rental is \$230. With the remaining money, the class can invite guests to fill the remaining seats on the bus. Write and solve an equation to find the number of guests g the class can invite.
19. A plumber charges \$30 per hour and \$42 for each hour of overtime. For a job, the plumber works 3 regular hours, h overtime hours, and charges \$195 for new parts. The total amount of the bill for the job is \$390. Write and solve an equation to find the number of overtime hours the plumber worked.

Practice

For use with pages 130-136

Tell whether the given value of the variable is a solution of the equation.

1. $41 - 8x = -6x - 23; x = -9$

2. $4x + 13 = -9 - 3(x + 9); x = -7$

3. $-2(3x + 7) = -3(2x + 8); x = -5$

4. $-9x + 7 = 25 + 2(5 - x); x = -4$

Solve the equation. Check your solution.

5. $12x - 28 = -63 + 7x$

6. $6x - 21 = 33 + 9x$

7. $-15x = -5(3x + 7)$

8. $16x - 19 = 113 - 6x$

9. $-19x - 34 = 56 - x$

10. $-6(4x + 3) = 6(-4x - 3)$

11. $3(-2x + 5) = 11 - 4x$

12. $14 - 9x = -8(10 + x)$

13. $-3(8x + 11) = 6(-4x - 13)$

14. $5x - 8 = 13 + 7(x - 3)$

15. $15x + 24 = 8(10 + 3x) - 2$

16. $-9x + 15 = -22 - 4(x + 12)$

3.3

Continued

Practice

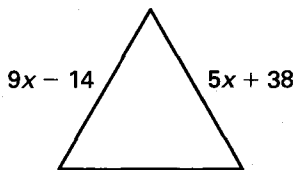
For use with pages 130–136

Write the verbal sentence as an equation. Then solve the equation.

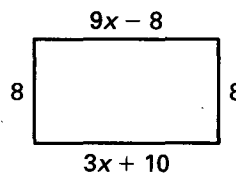
17. Negative thirteen times a number plus 20 is equal to -11 times the number plus 38.
18. Seventeen less than 6 times a number is equal to 47 plus 10 times the number.
19. Twenty nine less than -10 times a number is equal to -18 times the number plus 91.
20. Seventeen times a number minus 56 is equal to 10 times the number minus 63.

Find the perimeter of the triangle or rectangle. The sides of the triangle are equal in length.

21.



22.



23. You are buying flowers to hand out at a school dance. Roses cost \$30 for a dozen but cost more if bought individually. With the money you have, you can buy 7 dozen and 4 single roses, or 64 single roses. How much is one rose? How much money do you have?
24. The populations of two towns are changing at steady rates. One town has a population of 25,500. Its population is increasing by 2000 people each year. The other town has a population of 47,900. Its population is decreasing by 800 people each year. If the rates for each town remain the same, in how many years will the populations be the same?

3.4**Practice**

For use with pages 138–142

Tell whether the given number is a solution of $-8 > -17 + x - 14$.

1. -23

2. 23

3. 0

4. 25

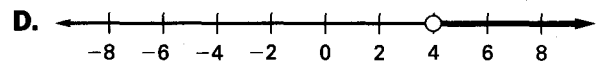
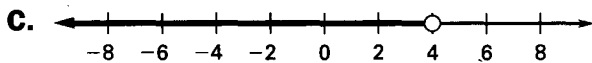
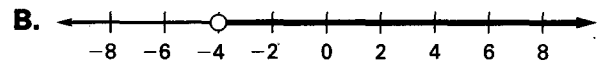
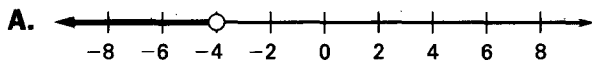
Write an inequality that represents the verbal sentence.

5. Nine and four tenths plus a number is less than or equal to 14.1.

6. Thirty two plus a number minus 18 is greater than -3 .7. Six tenths plus 4.7 plus a number is greater than or equal to -5.6 .

8. A number minus 6.88 is less than 22.74.

Match the inequality with the graph of its solution.



9. $x - 8 - 11 < -15$

10. $13 > -6 + 23 + x$

11. $10.45 + x - 5 > 1.45$

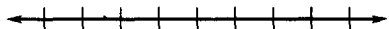
12. $4.5 + x - 4 > 4.5$

Practice

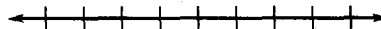
For use with pages 138-142

Solve the inequality. Graph your solution.

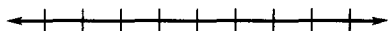
13. $7 + x + 10 < -2$



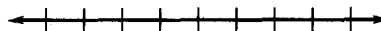
14. $5 + x - 9 \geq 4$



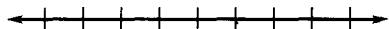
15. $x - 12 - 14 \leq 6$



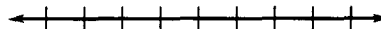
16. $-7 - 15 + x > -15$



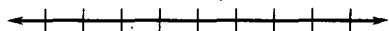
17. $-23 \leq x - 18 + 25$



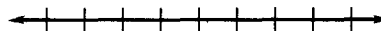
18. $2.9 + x + 7.5 > 6$



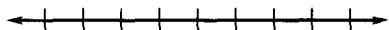
19. $-12.1 + 16.4 + x < -3.7$



20. $-2.87 - 4.66 + x > -7.53$



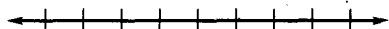
21. $-1.12 \leq x + 1.53 - 4.01$



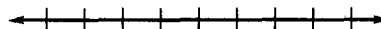
22. $10 + 11.88 + x \leq -4.5$



23. $42.76 - 21.15 \geq x + 12.9$



24. $-140.67 < 74.9 - 101.23 + x$



25. The table shows the number of preordered tickets for a three-day showing of a play. The theater has a seating capacity of 5400 people. Write and solve an inequality that represents the possible number of tickets t that can be sold at the door for each night of the play without exceeding the seating capacity of the theater.

Night	Preorder tickets
Friday	3488
Saturday	4109
Sunday	4573

26. An elevator has a weight limit of 2000 pounds. The weights in pounds of twelve people on the elevator are shown below.

175, 140, 135, 155, 170, 190, 125, 160, 150, 150, 130, 145

- a. Find the total weight of the twelve people on the elevator.
- b. A thirteenth person wants to get on the elevator. Write and solve an inequality that represents the weight w that person can be without exceeding the elevator's weight limit.

3.5

Practice

For use with pages 143-148

Tell whether the given number is a solution of $-1.5x > -12$.

1. -4

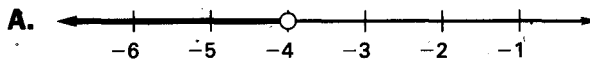
2. 12

3. 0

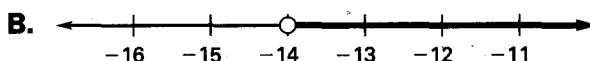
4. 8

Match the inequality with the graph of its solution.

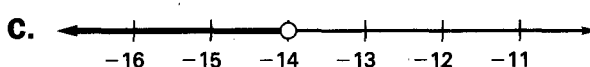
5. $\frac{x}{1.4} > -10$



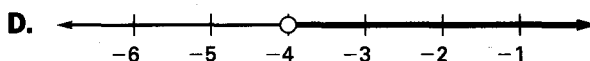
6. $-3.5x > 14$



7. $\frac{x}{-1.4} > 10$



8. $-3.5x < 14$



Solve the inequality. Graph your solution.

9. $\frac{x}{-10} \leq 22$



10. $\frac{x}{25} > -30$



11. $-13x < -208$



12. $45x \leq -855$



13. $1.6x \leq -11.2$



14. $-5.3x > 21.2$



15. $-10.7 > \frac{x}{-4}$



16. $8.3 \leq \frac{x}{-5}$



17. $\frac{x}{1.3} \geq 7.1$



18. $\frac{x}{-5.6} < 2.8$



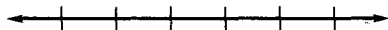
3.5

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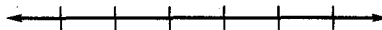
Practice

For use with pages 143-148

19. $-3.8x \geq 28.5$



20. $10.4x > 520$



21. $-0.1x \leq -2.5$



22. $-9.8x \geq 44.1$



23. $\frac{x}{-12.7} \geq -2.2$



24. $\frac{x}{4.2} < -20.45$



Write the verbal sentence as an inequality. Then solve the inequality.

25. A number divided by 3.5 is greater than or equal to 7.8.

26. The product of a number and -5 is less than -1.6 .

27. The product of a number and -0.9 is greater than 27.

28. A number divided by -4.75 is greater than or equal to -20 .

29. You need to complete at least 300 math problems in 4 days for a homework assignment. How many exercises should you complete each day?

30. An admission pass for an art museum is \$4.50. Write and solve an inequality to find the number of passes p that must be sold for the museum to make at least \$7200.

Practice

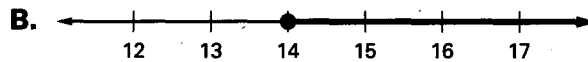
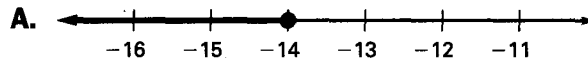
For use with pages 149-153

Tell whether the given number is a solution of $2(3x + 1) \geq 7x + 4$.

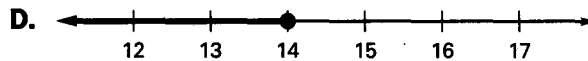
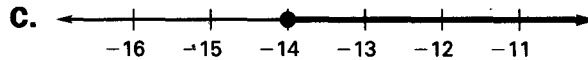
1. -1 2. -2 3. -10 4. 0

Match the inequality with the graph of its solution.

5. $3(4x - 1) \leq 10x + 25$



6. $2(14 - 3x) \leq -4x$



7. $-7x + 17 \geq 115$

8. $\frac{x+4}{5} \geq -2$

Solve the inequality. Graph your solution.

9. $-6x - 15 > 57$



10. $22 > \frac{x}{-12} + 4$



11. $-3(2 - x) \leq 2x - 9$



12. $6(5 - 2x) < 5x + 13$



13. $\frac{3x-1}{4} < 8$



14. $\frac{2x+5}{3} \geq -7$



3.6

Continued

Practice

For use with pages 149-153

15. $\frac{-x - 11}{3} \leq 21$



16. $-8 < \frac{5x + 4}{7}$



17. $4x + 22 > -2(14 + 3x)$



18. $-4(x + 10) \geq -7x + 65$



19. $8(3x - 19) < 15x + 73$



20. $74 < \frac{-17x + 30}{5}$



21. $\frac{25x - 41}{13} \leq 18$



22. $12(2x - 13) > 117 - 15x$

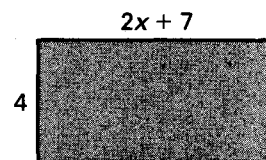


23. $29x - 515 \leq -14(8 - 3x)$



24. The golf course you play at charges \$22 per round of golf. You can either rent golf clubs at the course for \$8 or you can buy your own set of clubs for \$160. Write and solve an inequality to find the number of rounds of golf you need to play in order for the cost of purchasing clubs to be less than the cost of renting clubs. Let r represent the number of rounds of golf.

25. For what values of x is the area of the rectangle shown greater than 100 square units?



26. For what values of x is the perimeter of the rectangle shown greater than 50 units?