

TEST BANK

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Beginning Algebra

connect
MATHS

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Chapter 2

1. Determine whether the following is an expression, an equation, or neither.

$$8(x+8)+5$$

A) expression B) equation C) neither

Ans: A Difficulty: Routine Section: 2.1

2. Determine which of the given numbers is the solution to the given equation.

$$-2x = -16$$

$$x = -8, \quad x = -14, \quad x = 14, \quad x = 8$$

A) $x = -8$ B) $x = -14$ C) $x = 14$ D) $x = 8$

Ans: D Difficulty: Routine Section: 2.1

3. Determine which of the given numbers is/are a solution to the given equation.

$$x^2 + 4x + 3 = 0$$

$$x = -1, \quad x = 1, \quad x = -3, \quad x = 3$$

A) $x = -1$ B) $x = 3$ C) $x = -1$ and $x = -3$ D) $x = 1$ and $x = 3$

Ans: C Difficulty: Routine Section: 2.1

4. Determine which of the given numbers is the solution to the given equation.

$$9x - (2x - 3) + 3x = 4x + 3$$

$$x = 6, \quad x = 0, \quad x = 1, \quad x = -4$$

A) $x = 6$ B) $x = 0$ C) $x = 1$ D) $x = -4$

Ans: B Difficulty: Moderate Section: 2.1

5. Write an equation that can be used to solve the stated problem. Let x be the unknown number.

The difference of a number and -2 is -10 .

A) $x - (-10) = -2$ B) $x - (-2) = -10$ C) $-2 - x = -10$ D) $-2 - x = -2$

Ans: B Difficulty: Routine Section: 2.1

6. Write an equation that can be used to solve the stated problem. Let q be the unknown number.

The quotient of a number and 4 is 8.

A) $\frac{4}{q} = 8$ B) $\frac{8}{q} = 4$ C) $\frac{q}{4} = 8$ D) $\frac{q}{8} = 4$

Ans: C Difficulty: Routine Section: 2.1

7. Write an equation that can be used to solve the stated problem. Let x be the unknown number.

If four times a number is added to five times the same number, the result is the same as three less than ten times the number.

- A) $4x + 5x = 10x - 3$ C) $(4x)(5x) = 10x - 3$
 B) $4x + 5x = 3 - 10x$ D) $(4x)(5x) = 3 - 10x$

Ans: A Difficulty: Moderate Section: 2.1

8. Write an equation that can be used to solve the stated problem. Let x be the unknown number.

Five times the difference of a number and -6 is the same as two times the number.

- A) $5[x - 6] = 2x$ B) $5[x - (-6)] = 2x$ C) $5x - 6 = 2x$ D) $5x - (-6) = 2x$

Ans: B Difficulty: Moderate Section: 2.1

9. Write an equation that can be used to solve the problem. Let x be the variable.

One angle is 13° less than another angle. Their sum is 70° . Find the measure of the larger angle.

- A) $x + x + 13^\circ = 70^\circ$ C) $x + x = 70^\circ - 13^\circ$
 B) $x + 13^\circ - x = 70^\circ$ D) $x + x - 13^\circ = 70^\circ$

Ans: D Difficulty: Moderate Section: 2.1

10. Write an equation that can be used to solve the problem.

The perimeter of a rectangular garden is 35 ft. The width of the garden is 3 ft less than the length. Let l represent the length of the garden and let w represent the width of the garden. Write an equation in terms of l and w that represents the perimeter of the garden and then write an equation that relates the length of the garden to the width of the garden.

- A) $2l + 2w = 35$; $l = w - 3$ C) $l + w = 35$; $l = w - 3$
 B) $2l + 2w = 35$; $l = w + 3$ D) $l + w = 35$; $l = w + 3$

Ans: B Difficulty: Moderate Section: 2.1

11. Decide if the equation is linear. If the equation is not linear, explain why not.

$$3.7(3.5x + 4.1) - 3.3 = x^2$$

- A) not linear because the largest exponent is 2
 B) not linear because the parentheses have not been eliminated
 C) not linear because the coefficients are not integers
 D) linear equation

Ans: A Difficulty: Routine Section: 2.2

12. Use the addition property of equality to solve the equation.

$$p + 8 = -3$$

A) {11} B) {-11} C) {5} D) {-5}

Ans: B Difficulty: Routine Section: 2.2

13. Use the addition property of equality to solve the equation.

$$y - \frac{5}{4} = \frac{3}{4}$$

A) {-2} B) $\left\{\frac{1}{2}\right\}$ C) $\left\{-\frac{1}{2}\right\}$ D) {2}

Ans: D Difficulty: Routine Section: 2.2

14. Solve the equation.

$$-4q - 2 = -3q - 6$$

A) {4} B) {-4} C) {-8} D) {8}

Ans: A Difficulty: Moderate Section: 2.2

15. Solve the equation.

$$5.2u - 7 = 6.2u + 5$$

A) {12} B) {-12} C) {-2} D) {2}

Ans: B Difficulty: Moderate Section: 2.2

16. Solve the equation.

$$\frac{4}{3}(s - 12) = \frac{1}{3}(s + 3)$$

A) {-17} B) {17} C) {15} D) {-15}

Ans: B Difficulty: Moderate Section: 2.2

17. Two times the sum of a number and 8 is the same as three times the number. Find the number.

A) {-8} B) {8} C) {-16} D) {16}

Ans: D Difficulty: Moderate Section: 2.2

18. A jeweler buys a ring for \$1250 and sells it for \$5000. What is the markup that the jeweler added to the cost of the ring?

A) \$6250 B) \$3750 C) \$1250 D) \$3125

Ans: B Difficulty: Moderate Section: 2.2

19. A computer store sells a laptop for \$499.99. This price includes a \$75 discount. What is the original price of the laptop?

A) \$425.99 B) \$575.99 C) \$424.99 D) \$574.99

Ans: D Difficulty: Moderate Section: 2.2

20. Solve the equation using the multiplication property of equality.

$$-7x = -35$$

A) {5} B) {-5} C) {-28} D) {-42}

Ans: A Difficulty: Routine Section: 2.3

21. Solve the equation using the multiplication property of equality.

$$\frac{2}{3}q = 8$$

A) {22} B) $\left\{\frac{22}{3}\right\}$ C) {12} D) $\left\{\frac{26}{3}\right\}$

Ans: C Difficulty: Routine Section: 2.3

22. Solve the equation.

$$5x - 1 = -41$$

A) $\left\{\frac{42}{5}\right\}$ B) $\left\{-\frac{42}{5}\right\}$ C) {-8} D) {8}

Ans: C Difficulty: Routine Section: 2.3

23. Solve the equation.

$$8x - 3 - 3x = 2x - 18$$

A) {-5} B) {-15} C) $\left\{\frac{15}{7}\right\}$ D) $\left\{-\frac{15}{7}\right\}$

Ans: A Difficulty: Moderate Section: 2.3

24. Solve the equation.

$$2(8n + 2) = 5n - 29$$

A) {-3} B) {-33} C) {3} D) {33}

Ans: A Difficulty: Difficult Section: 2.3

25. The cost to rent a car for one day is \$70 plus \$0.25 per mile. This daily cost is represented by the expression $70 + 0.25x$, where x is the number of miles driven. How many miles has the car been driven if the cost of the rental car is \$110?

A) 40 mi B) 98 mi C) 160 mi D) 28 mi

Ans: C Difficulty: Moderate Section: 2.3

26. How many nickels does it take to make \$4.30?

A) 80 nickels B) 20 nickels C) 26 nickels D) 86 nickels

Ans: D Difficulty: Moderate Section: 2.3

27. The sum of three consecutive odd integers is -423. Find the *smallest* of the three integers.

A) -147 B) -143 C) -139 D) -135

Ans: B Difficulty: Moderate Section: 2.3

28. The sum of the two largest of three consecutive odd integers is the same as 9 less than the smallest integer. Find the *largest* of the three integers.

A) -19 B) -15 C) -13 D) -11

Ans: D Difficulty: Difficult Section: 2.3

29. Solve the equation by first clearing fractions.

$$\frac{x}{2} + 7 = \frac{x}{4}$$

A) {7} B) {-7} C) {28} D) {-28}

Ans: D Difficulty: Routine Section: 2.4

30. Solve the equation by first clearing fractions.

$$\frac{10}{7}x + \frac{11}{14} = \frac{13}{14}x + \frac{12}{7}$$

A) $\left\{-\frac{13}{7}\right\}$ B) $\left\{\frac{13}{7}\right\}$ C) {14} D) {-14}

Ans: B Difficulty: Moderate Section: 2.4

31. Solve the equation by first clearing fractions.

$$\frac{4}{3}(x - 4) = \frac{5}{2}(x + 1)$$

A) $\left\{-\frac{30}{7}\right\}$ B) $\left\{\frac{30}{7}\right\}$ C) $\left\{-\frac{47}{7}\right\}$ D) $\left\{\frac{47}{7}\right\}$

Ans: C Difficulty: Difficult Section: 2.4

32. Solve the equation by first clearing decimals.

$$0.3x - 0.4x = -7.5$$

A) {75} B) {-23} C) {19} D) {-26}

Ans: A Difficulty: Routine Section: 2.4

33. Solve the equation by first clearing decimals.

$$0.5x + 0.25(-60.75) = 1.25(x - 60.75)$$

A) {81} B) {-34} C) {-52} D) {121}

Ans: A Difficulty: Moderate Section: 2.4

34. Solve the equation. If the equation is a contradiction, write the solution as $\emptyset$. If the equation is an identity, write the solution as **R**.

$$6(2r - 4) = 2(6r - 4)$$

A) $\emptyset$ B) **R** C) $\left\{\frac{2}{3}\right\}$ D) $\left\{-\frac{2}{3}\right\}$

Ans: A Difficulty: Moderate Section: 2.4

35. Solve the equation. If the equation is a contradiction, write the solution as $\emptyset$. If the equation is an identity, write the solution as **R**.

$$2s + 7 = 2(s - 3) + 13$$

A) $\emptyset$ B) **R** C) $\{0\}$ D) $\left\{\frac{7}{2}\right\}$

Ans: B Difficulty: Moderate Section: 2.4

36. Solve the equation. If the equation is a contradiction, write the solution as $\emptyset$. If the equation is an identity, write the solution as **R**.

$$5(y + 1) - (5 - y) = 6(y - 7) + 42$$

A) $\emptyset$ B) **R** C) $\{5\}$ D) $\{-5\}$

Ans: B Difficulty: Moderate Section: 2.4

37. Solve the equation. If the equation is a contradiction, write the solution as $\emptyset$. If the equation is an identity, write the solution as **R**.

$$7(m + 8) - (-7 - m) = 8(m + 2) + 33$$

A) $\emptyset$ B) **R** C) $\{7\}$ D) $\{-7\}$

Ans: A Difficulty: Moderate Section: 2.4

38. The formula $A = P(1 + r)^t$ is used to calculate the amount of money in an account at the end of t years if P dollars are invested at an annual interest rate, r . Find A if \$5000 is invested for 4 yr at 3.3% annual interest.

A) \$5705.54 B) \$5660.00 C) \$5693.39 D) \$5704.51

Ans: C Difficulty: Routine Section: 2.5

39. The formula $d = rt$ calculates the distance, d , traveled by an object traveling at an average rate r for time t . Find t if $d = 189$ mi and $r = 42$ mph.

A) 4.5 hr B) 5.5 hr C) 4 hr D) 5 hr

Ans: A Difficulty: Moderate Section: 2.5

40. The formula $V = lwh$ calculates the volume of a box with length l , width w , and height h . Find w if $V = 450 \text{ m}^3$, $l = 5$ m, and $h = 10$ m.

A) 10 m B) 5 m C) 11 m D) 9 m

Ans: D Difficulty: Moderate Section: 2.5

41. Find the height of a triangle whose area is 12 cm^2 and whose base is 6 cm.

A) 8 cm B) 4 cm C) 2 cm D) 6 cm

Ans: B Difficulty: Moderate Section: 2.5

42. Find the perimeter of a rectangle whose length is 9 ft and whose width is 5 ft.

A) 90 ft. B) 45 ft. C) 28 ft. D) 14 ft.

Ans: C Difficulty: Routine Section: 2.5

43. Find the circumference and area of a circle with radius 6 m. Use 3.14 for the value of π to approximate answers to two decimal places.

A) circumference: 113.04 m; area: 37.68 m²
 B) circumference: 226.08 m; area: 18.84 m²
 C) circumference: 18.84 m; area: 226.08 m²
 D) circumference: 37.68 m; area: 113.04 m²

Ans: D Difficulty: Moderate Section: 2.5

44. Solve the formula for x .

$$y = \frac{1}{8}x - 7$$

A) $x = 8y + 7$ B) $x = 8y + 56$ C) $x = y + \frac{55}{8}$ D) $x = y - \frac{55}{8}$

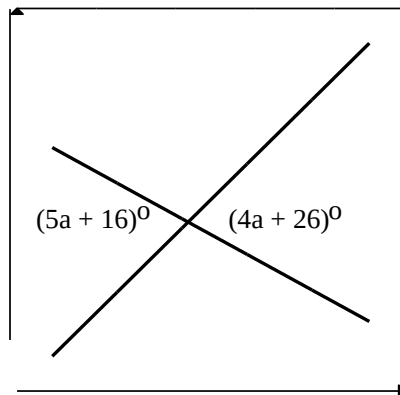
Ans: B Difficulty: Moderate Section: 2.5

45. The supplement of an angle is 38° more than three times its complement. Find the measure of the angle.

A) 26° B) 64° C) 76° D) 66°

Ans: B Difficulty: Difficult Section: 2.5

46. Find the measure of each angle labeled in the figure. Figure may not be drawn to scale.



A) 66° B) 10° C) 80° D) 24°

Ans: A Difficulty: Moderate Section: 2.5

47. In triangle ABC , the measure of angle B is 20° more than the measure of angle A . The measure of angle C is 67° more than the measure of angle A . Find the measure of each angle in the triangle.

A) $A = 35^\circ$, $B = 55^\circ$, $C = 100^\circ$ C) $A = 35^\circ$, $B = 53^\circ$, $C = 102^\circ$
 B) $A = 33^\circ$, $B = 55^\circ$, $C = 102^\circ$ D) $A = 31^\circ$, $B = 51^\circ$, $C = 98^\circ$

Ans: D Difficulty: Difficult Section: 2.5

48. A TV is on clearance at an electronics store for \$442.20. If this price is 33% off the original price, what is the original price of the TV?

A) \$146 B) \$660 C) \$1459 D) \$588

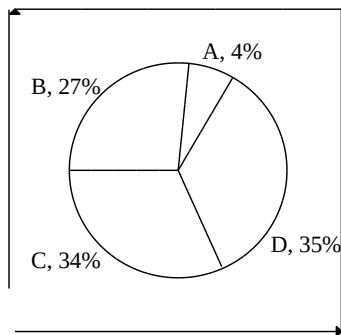
Ans: B Difficulty: Moderate Section: 2.6

49. A campus bookstore sells graphing calculators for \$62.50. This is a 25% markup on the cost the bookstore pays for the calculator. What does the bookstore pay for the calculator?

A) \$78 B) \$50 C) \$47 D) \$16

Ans: B Difficulty: Moderate Section: 2.6

50. On a certain algebra exam, no students made an F. The pie chart shows the percentage of students who took the exam that scored an A, B, C, and D. The percentages have been rounded to the nearest integer.



If 29 students made a C on the exam, how many students took the exam?

A) 86 students B) 100 students C) 39 students D) 48 students

Ans: A Difficulty: Moderate Section: 2.6

51. The population of a certain city in 2000 was 163,644. By 2010, the city's population had grown to 204,849. By what percent did the population increase from 2000 to 2010? Round to the nearest hundredth of a percent.

A) 79.89% B) 20.11% C) 74.82% D) 25.18%

Ans: D Difficulty: Moderate Section: 2.6

52. Jo has \$2000 to invest. She invests this money in two accounts. One account is highly risky but earns 11% annual interest. The other account is less risky and earns 4% annual interest. If Jo earns a total of \$122 in interest for the year, how much did she invest in each account?

A) \$1400 in the higher risk account; \$600 in the lower risk account
 B) \$880 in the higher risk account; \$1120 in the lower risk account
 C) \$600 in the higher risk account; \$1400 in the lower risk account
 D) \$1120 in the higher risk account; \$880 in the lower risk account

Ans: C Difficulty: Difficult Section: 2.6

53. Sammie has a total of 200 coins, which consists of dimes and quarters. If the collection is worth \$33.50, how many of each coin does she have?

A) 114 dimes and 86 quarters C) 100 dimes and 94 quarters
 B) 120 dimes and 86 quarters D) 110 dimes and 90 quarters

Ans: D Difficulty: Difficult Section: 2.6

54. How many gallons of gasoline that is 5% ethanol must be added to 2,000 gallons of gasoline with no ethanol to get a mixture that is 3% ethanol?

A) 2,100 gal B) 2,060 gal C) 3,000 gal D) 1000 gal

Ans: C Difficulty: Difficult Section: 2.6

55. Andy and Brittany live in towns that are 287.5 miles apart. They leave their homes at the same time and begin traveling toward one another. Andy travels at 40 mph and Brittany travels at 75 mph. How long will it take before they meet?

A) 2.5 hr B) 3.5 hr C) 2 hr D) 1.25 hr

Ans: A Difficulty: Difficult Section: 2.6

56. Two planes leave the same airport at the same time. One plane travels east of 600 mph and the other plane travels west at 400 mph. How long will it take for the planes to be 2000 mi apart?

A) 1.5 hr B) 2 hr C) 2.5 hr D) 1 hr

Ans: A Difficulty: Difficult Section: 2.6

57. A plane leaves Atlanta heading to San Francisco traveling at 400 mph. One hour later another plane leaves Atlanta heading to San Francisco traveling at 500 mph. How long will it take for the second plane to catch up with the first?

A) 3 hr B) 2.5 hr C) 4.5 hr D) 4 hr

Ans: D Difficulty: Difficult Section: 2.6

58. Solve the inequality. Write the solution set in interval notation.

$$y - 12 > 14$$

A) $(26, \infty)$ B) $(-\infty, 26)$ C) $(2, \infty)$ D) $(-\infty, 2)$

Ans: A Difficulty: Routine Section: 2.7

59. Solve the inequality. Write the solution set in set builder notation.

$$-3x \leq -12$$

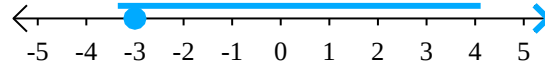
A) $\{x | x \leq -4\}$ B) $\{x | x \leq 4\}$ C) $\{x | x \geq -4\}$ D) $\{x | x \geq 4\}$

Ans: D Difficulty: Routine Section: 2.7

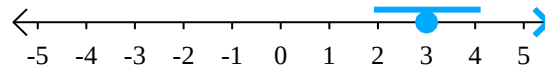
60. Graph the solution set of the inequality.

$$5x - 7 \leq 8$$

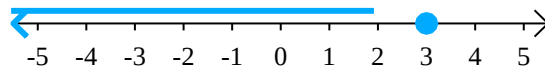
A)



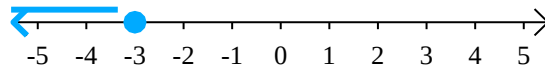
B)



C)



D)

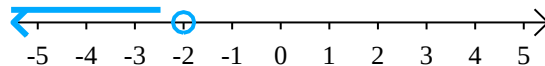


Ans: C Difficulty: Routine Section: 2.7

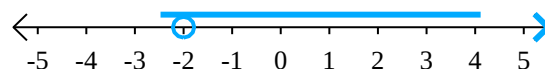
61. Graph the solution set of the inequality.

$$3x - 7 > 5x - 3$$

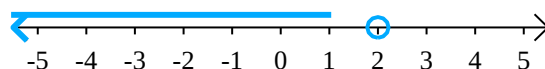
A)



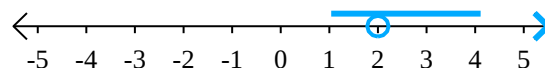
B)



C)



D)



Ans: A Difficulty: Moderate Section: 2.7

62. Solve the inequality. Write the solution set in set builder notation.

$$\frac{x}{2} + 3 < \frac{x}{4}$$

A) $\{x | x > 3\}$ B) $\{x | x < 3\}$ C) $\{x | x > -12\}$ D) $\{x | x < -12\}$

Ans: D Difficulty: Moderate Section: 2.7

63. Solve the inequality. Write the solution set in interval notation.

$$59 + 0.2x > 64$$

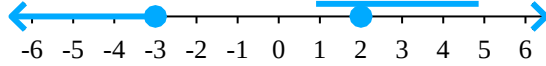
A) $(25, \infty)$ B) $(-\infty, 25)$ C) $(-25, \infty)$ D) $(-\infty, -25)$

Ans: A Difficulty: Moderate Section: 2.7

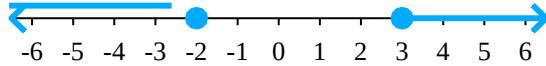
64. Graph the solution set of the inequality.

$$-17 \leq 5x - 2 \leq 8$$

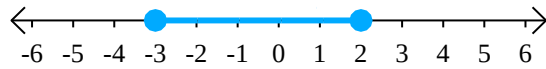
A)



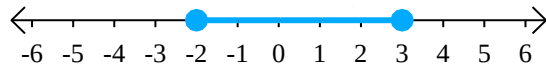
B)



C)



D)



Ans: C Difficulty: Moderate Section: 2.7

65. Solve the inequality. Write the solution set in set builder notation.

$$-\frac{7}{4} < \frac{5}{2}x + 1 < \frac{5}{4}$$

A) $\{x \mid -11 < x < 1\}$

C) $\left\{x \mid -\frac{11}{10} < x < \frac{1}{10}\right\}$

B) $\{x \mid -1 < x < 11\}$

D) $\left\{x \mid -\frac{1}{10} < x < \frac{11}{10}\right\}$

Ans: C Difficulty: Difficult Section: 2.7

66. Solve the inequality. Write your answer in interval notation.

$$-2(2x - 7) + x \geq 2x - (-5 + x)$$

A) $\left[\frac{9}{4}, \infty\right)$ B) $\left[-\frac{9}{4}, \infty\right)$ C) $\left(-\infty, -\frac{9}{4}\right]$ D) $\left(-\infty, \frac{9}{4}\right]$

Ans: D Difficulty: Difficult Section: 2.7

67. A rental company charges a flat fee of \$15 to rent a karaoke machine plus \$4 per day. How many days could you keep the karaoke machine if you plan to spend no more than \$37?

A) at most 6 days B) at most 5 days C) at most 4 days D) at most 3 days

Ans: B Difficulty: Difficult Section: 2.7