1. In a right triangle, if one leg is 3 units long and the other leg is 4 units long, what is the length of the hypotenuse?

    A. 7 units

    B. 6 units

    C. 5 units

    D. 8 units

2. If the hypotenuse of a right triangle is 13 units and one of the legs is 5 units, what is the length of the other leg?

    A. 11 units

    B. 14 units

    C. 10 units

    D. 12 units

3. Which of the following sets of numbers could be the lengths of the sides of a right triangle?

    A. 6, 10, 15

    B. 9, 12, 20

    C. 8, 15, 17

    D. 5, 12, 18

4. A right triangle has a hypotenuse of length 10 units and one leg of length 6 units. What is the length of the other leg?

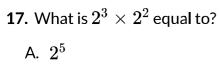   A. 7 units

    B. 11 units

    C. 8 units

    D. 9 units

5. If the legs of a right triangle are 5 units and 12 units, what is the length of the hypotenuse?

    A. 13 units

    B. 14 units

    C. 11 units

    D. 15 units
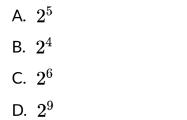
6. Which of the following triplets represents the side lengths of a right triangle?

    A. $11, 60, 65$

    B. $8, 30, 31$

    C. $7, 24, 26$

    D. $9, 40, 41$

7. Solve the equation $3x + 5 = 2x + 10$.

    A. x = 15

    B. x = 10

    C. x = -5

    D. x = 5

8. Solve the equation: $2(x + 3) = 4x - 6$

    A. x = -6

    B. x = 6

    C. x = 0

    D. x = 2

9. Solve the equation: $3(z + 4) = 2z + 18$

    A. z = 12

    B. z = 8

    C. z = 6

    D. z = 3

10. What is the solution to the equation: 3(2x - 1) = 4(x + 2) - 2?

    A. 2

    B. 1

    C. 3

    D. 0

11. What is the solution to the equation: 4(3x + 1) = 2(5x - 3) + 10?

   A. 1

   B. 0

   C. 3

   D. 2

12. What is the solution to the equation: 5(2x + 1) - 4 = 3(x + 2) + 2?

   A. 3

   B. 1

   C. 2

   D. 0

13. Sophie has twice as many apples as Tom. Together, they have 18 apples. How many apples does Tom have?

   A. 6

   B. 3

   C. 12

   D. 9

14. A bus travels 50 kilometers to the east and then turns north to travel another 120 kilometers. How far is the bus from its starting point?

   A. 150 kilometers

   B. 100 kilometers

   C. 130 kilometers

   D. 170 kilometers

15. A rectangle's length is three times its width. If the perimeter of the rectangle is 48 cm, what is the width of the rectangle?

   A. 6 cm

   B. 12 cm

   C. 4 cm

   D. 8 cm

16. Emma bought 5 notebooks and 3 pens. Each notebook costs $4 and each pen costs $2. How much did Emma spend in total?
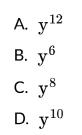
    A. $20

    B. $26

    C. $24

    D. $28

17. What is $2^3 \times 2^2$ equal to?

    A. 2^5

    B. 2^4

    C. 2^6

    D. 2^9

18. What is $\left(3^2\right)^3$ equal to?

    A. 9^3

    B. 3^6

    C. 3^5

    D. 3^9

19. What is $\left(x^2 \cdot x^3\right) \div x$ equal to?

    A. x^5

    B. x^1

    C. x^4

    D. x^6

20. What is the simplified form of $\left(y^3 \cdot y^2\right)^2$?

    A. y^{12}

    B. y^6

    C. y^8

    D. y^{10}

21. What is 7^0 equal to?

    A. 7^1

    B. 0

    C. 1

    D. 7

22. What is the result of $4^3 \times 4^{-1}$?

    A. 4^4

    B. 4^{-4}

    C. 4^0

    D. 4^2

23. If $a = 2$ and $b = 3$, what is $(a^2 \cdot b)^3$?

    A. 64

    B. 216

    C. 144

    D. 36

24. Simplify the expression $2^3 \times 2^4 \div 2^5$.

    A. 2^1

    B. 2^2

    C. 2^6

    D. 2^0

25. Simplify $\left(3^4 \times 3^{-2}\right)^2 \div 3^6$.

    A. 3^0

    B. 3^2

    C. 3^{-2}

    D. 1

26. Simplify $\left(5^{-2} \times 5^3\right) \div 5^{-1}$.

   A. 5^0

   B. 5^{-1}

   C. 5^2

   D. 5^1

27. What is $\left(4^2 \times 4^{-3}\right)^2 \div 4^{-4}$?

   A. 4^0

   B. 4^{-6}

   C. 4^3

   D. 4^6

28. Simplify $\left(6^3 \times 6^{-4} \times 6^2\right) \div 6^{-3}$.

   A. 6^3

   B. 6^{-1}

   C. 6^0

   D. 6^4

29. Simplify $\left(2^{-3} \times 2^5\right) \div \left(2^2\right)^2$.

   A. 2^3

   B. 2^4

   C. 2^0

   D. 2^{-2}

30. What is the sum of the interior angles of a hexagon?

   A. 720°

   B. 540°

   C. 900°

   D. 360°

31. What is the measure of each exterior angle of a regular pentagon?

   A. $90°$

   B. $60°$

   C. $72°$

   D. $108°$

32. How many sides does a polygon have if the sum of its interior angles is $1440°$?

   A. 10

   B. 12

   C. 9

   D. 8

33. What is the measure of each interior angle of a regular octagon?

   A. $130°$

   B. $135°$

   C. $140°$

   D. $120°$

34. Combine like terms in the expression:
$3x + 5y - 2x + 7 - 4y + 8x - 3 - 2y + 9 - 5x$

   A. $2x + y + 13$

   B. $5x + 3y + 13$

   C. $4x - y + 13$

   D. $4x + y + 10$

35. Simplify the expression by combining like terms:
$6a - 4b + 3 - 5a + 2b + 8 + 7b - 1 - 3a - b$

   A. $4a + 4b + 10$

   B. $-2a - 4b + 10$

   C. $-4a + 6b + 12$

   D. $-2a + 4b + 10$

36. What is the simplified form of the expression:
$5m - 3n + 4 - 2m + 6 + n - 7m + 3n - 1?$

   A. $-4m + n + 9$

   B. $-4m - 3n + 9$

   C. $-4m + 7n + 9$

   D. $4m + n + 9$

37. Combine like terms in the expression: $9x - 7y + 2 + 3x + 5 - 4x - 2y + 8 - y$

   A. $8x - 10y + 15$

   B. $8x - 10y + 13$

   C. $8x - 6y + 15$

   D. $9x - 9y + 15$

38. Calculate the value of $(2 + 3)^2 - (4/2) * 3 + 1$

   A. 8

   B. 10

   C. 6

   D. 12

39. What is the result of $3 * (2 + 4) - 5^2 + (10/2)$?

   A. 5

   B. 0

   C. -2

   D. 2

40. What is the value of $8 - (3 * 2) + 4^2/(2 + 2)$?

   A. 8

   B. 14

   C. 10

   D. 12

41. What is the result of $(3 + 5) * (2^2 - 1) + 10/5$?

   A. 34

   B. 32

   C. 36

   D. 30

42. Calculate the value of $(3/4 + 2/5) - (1/2 * 3/8) + 2^2$

   A. $3/2$

   B. $5/2$

   C. $1/4$

   D. $7/4$

43. Calculate the value of $(1/4 + 1/2) * (6 - 3) + 3^2 - (1/5 * 5)$

   A. 4

   B. 5

   C. 8

   D. 6

44. What is the equation of a straight line with a gradient of 2 and y-intercept of 3?

   A. y = -2x + 3

   B. y = 3x + 2

   C. y = 2x - 3

   D. y = 2x + 3

45. What is the y-intercept of the line given by the equation $y = -3x + 5$?

   A. 3

   B. 5

   C. -3

   D. -5

46. Which of the following points lies on the line represented by the equation $y = x + 2$?

   A. $(3, 5)$

   B. $(3, 6)$

   C. $(3, 4)$

   D. $(3, 2)$

47. If the line passes through the points (0, 4) and (2, 8), what is the gradient of the line?

    A. 2
    B. 4
    C. -2
    D. 1/2

48. What is the gradient of the line given by the equation $y = -5x + 7$?

    A. 7
    B. -7
    C. -5
    D. 5

49. Which of the following is the equation of a horizontal line passing through the point (0, -3)?

    A. x = 3
    B. y = -3
    C. x = -3
    D. y = 3

50. What is the x-intercept of the line represented by the equation $y = 3x - 6$?

    A. -2
    B. 2
    C. -6
    D. 6

51. Given two points (2, 3) and (4, 7), what is the equation of the line in gradient intercept form?

    A. $y = 3x + 1$
    B. $y = x + 1$
    C. $y = 2x - 1$
    D. $y = 4x - 2$

52. What is the equation of the line in gradient intercept form given the points (1, 2) and (3, 6)?

A. $y = 2x$

B. $y = x + 2$

C. $y = x - 2$

D. $y = 3x - 1$