

43

1. Which is 3 times the difference of y and 4?
 A. $3 \cdot y - 4$ B. $3 \cdot (y + 4)$
 C. $3 \cdot (y - 4)$ D. $3 - (y - 4)$
2. Which is the prime factorization of 72?
 A. $3 \cdot 3 \cdot 2 \cdot 2 \cdot 2$ B. $3 \cdot 2 \cdot 2 \cdot 6$
 C. $3^3 \cdot 2^2$ D. $3^2 \cdot 4 \cdot 2$

$3(y-4)$
 72
 $2 \cdot 36$
 $2 \cdot 18$
 $2 \cdot 9$
 $3 \cdot 3$

3. What is the value of the expression $3x - 4$ when $x = 2$?

$3(2) - 4 = 10$

4. A company prints n books at a cost of \$9 per book. What is the total cost of the books?
 A. $9 \cdot n$ B. $\frac{n}{9}$
 C. $n + 9$ D. $9n$

9n

5. Which value of x is the solution of the equation when $x - 5 = 8$?

$x - 5 = 8$
 $+5$
 $x = 13$

6. Determine which value of x is a solution of the equation $3x + 2 = 11$
 A. $x = 2.2$ B. $x = 3$
 C. $x = 4.3$ D. $x = 3.6$

$3x = 9$
 $x = 3$

7. Determine which value of x is a solution of the equation $4x - 3 = 13$

$4x - 3 = 13$
 $4x = 16$
 $x = 4$

8. Solve the equation $7x = 42$

$7x = 42$
 $\frac{7x}{7} = \frac{42}{7}$
 $x = 6$

9. Solve the equation $\frac{x}{3} = 7$

A. $x = 21$ B. $x = 10$
 C. $x = 4$ D. $x = 39$

$3 \cdot \frac{x}{3} = 7 \cdot 3$
 $x = 21$

10. Solve $x - 7 < 15$

$x < 8$
 $\{x + 7 - 7 < 15 - 7\}$

11. Solve $2 \leq \frac{x}{2}$
 A. $x \leq 8$ B. $x \geq 8$
 C. $x \geq 2$ D. $x \leq 2$
- $2 \cdot 4 \leq \frac{x}{2} \cdot 2$
 $8 \leq x$

12. Which algebraic equation represents the word sentence "15 less than the number of computers c is 32"?

A. $\frac{c}{15} = 32$ B. $15 - x = 32$
 C. $15c = 32$ D. $c - 15 = 32$

$c - 15 = 32$

13. The solution of $k + 3(k - 2) = 34$

A. $k = 10$ B. $k = 8$
 C. $k = 9$ D. $k = 7$

$k + 3k - 6 = 34$
 $4k - 6 = 34$
 $4k = 40$
 $k = 10$

14. When twice a number is decreased by 4, the result is 236. What is the number?

A. 293 B. 116
 C. 59 D. 120

$2n - 4 = 236$
 $2n = 240$
 $n = 120$

15. Which has the greatest value?

A. $(2 - 3)(2 + 3)$ B. $(2 + 3)(2 + 3)$
 C. $2 - 3 + 3$ D. $2 + 2 + 3 + 3$

$6 \cdot 5$ $6 \cdot 6$
 $2 + 9$ $4 + 9$

16. If $(n + 3)(9 - 5) = 16$, then what does n equal?

A. 1 B. 4
 C. 7 D. 9

$9n - 5n + 27 - 15 = 16$
 $4n + 12 = 16$
 $4n = 4$
 $n = 1$

17. Which is 9.1×10^4 ?

A. 8,100,000 B. 0.000081
 C. 810,000 D. 0.0000081

18. Which of the following numbers is greater than 1?

A. -245 B. 1.000009
 C. 0.99999 D. -5.33

19. Which is not a solution to $-3y < 15$?

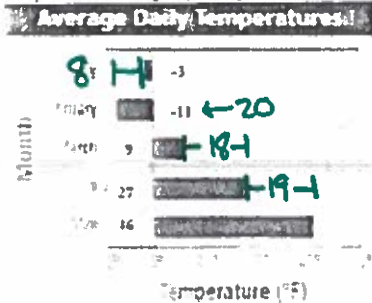
A. $y = 18$ B. $y = 12$
 C. $y = -5$ D. $y = 45$

~~$y < \frac{15}{-3} = -5$~~
 $y > \frac{15}{-3} = -5$

Answer Key

1. C
 2. A
 3. D
 4. D
 5. B
 6. B
 7. C
 8. A
 9. A
 10. A
 11. D
 12. A
 13. A
 14. D
 15. B
 16. B
 17. B
 18. C
 19. C

10. The bar graph shows the average daily temperatures in Toledo, Ohio, for five months. Between which two months did the average temperature change by the greatest amount?



- A. January to February
 B. February to March
 C. March to April
 D. April to May

11. Which number is equivalent to $(-6)^4$?

- A. $(-4)^4$
 B. $(-6)^4$
 C. 4^4
 D. 6^4

12. Which represents the phrase *the difference of a number and 32*?

- A. $n - 32$
 B. $n - 32$
 C. $n + 32$
 D. $32 - n$

13. Evaluate the expression $12 - y$ for the value $y = -8$.

$$12 - (-8) = 7$$

$$12 + 8 = 20$$

14. Which ordered pair is a solution of $2y - 3x = 8$?

- A. $(6, 13)$
 B. $(19, 4)$
 C. $(10, -4)$
 D. $(-4, 0)$

15. Which of the following is the value of $-7 + 3h$ when $h = 5$?

$$-7 + 3(5)$$

$$-7 + 15 = 8$$

16. Solve the inequality $8x \leq 24$.

- A. $x \leq 2$
 B. $x < 3$
 C. $x \leq 3$
 D. $x \leq 16$

17. Subtract $(-4) - (-12)$.

- A. 8
 B. -16
 C. -8
 D. 16

18. Simplify the expression $100 - 2(+3^2)$.

- A. 3325
 B. 28
 C. 52
 D. 2352

19. Simplify the expression $+1 + 3(8 - 2^3)$.

$$= 41 + 3(8 - 8)$$

$$= 41 + 3(0)$$

$$= 41 + 0 = 41$$

20. Write 0.0000524 in scientific notation.

- A. 5.24×10^4
 B. 5.24×10^5
 C. 5.24×10^{-4}
 D. 5.24×10^{-5}

21. It took Tina 6 minutes to saw a board into 3 equal pieces. How long would it have taken her to saw it into 9 equal pieces (HINT: think about the number of cuts she must make).

$$6 \text{ min for 2 cuts}$$

$$8 \text{ cuts} = 2 + 2 + 2 + 2 \text{ cuts}$$

$$4 \cdot 6 \text{ min} = 24 \text{ min}$$

22. Which is the next term in the sequence 5, 12, 26, 54, ...?

$$2(54) + 2 = 110$$

$$2(5) + 2 = 12$$

$$2(12) + 2 = 26$$

$$2(26) + 2 = 54$$

23. Which number is less than 10^3 ?

- A. 2^{12}
 B. 25^2
 C. 10^3
 D. $1,000$

24. What value of x is a solution of $x - 9 = 5$?

$$x - 9 = 5$$

$$+9 \quad +9$$

$$x = 14$$

25. Claire visits her grandmother every 4 weeks, washes her car every 3 weeks and gets paid every 2 weeks. How often will all three things happen in the same week?

- A. every 3 weeks
 B. every 9 weeks
 C. every 12 weeks
 D. every 24 weeks

GCF \rightarrow 12

Answer Key

20. B
 21. D
 22. B
 23. A
 24. A
 25. C
 26. C
 27. A
 28. B
 29. D
 30. D
 31. C
 32. C
 33. C
 34. C
 35. A
 36. C
 37. B
 38. B
 39. A
 40. D
 41. B
 42. D
 43. D

$$1235600 \cdot 1.12 =$$

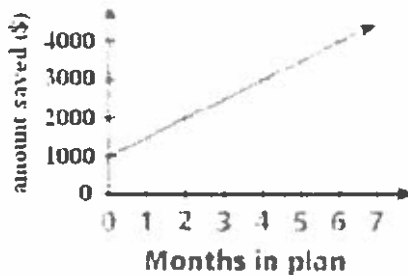
$$1383872$$

1,23

CALC

16. Last year a factory produced 1,235,600 parts. If the company expects a 12% increase in production this year, how many parts will the factory produce?

- (A) 1,333,872 B. 1,432,200
C. 12,625,400 D. 1,462,720



17. Last year, Chloe earned \$5,672. Of this amount, \$622.44 was withheld for income taxes. What percent of Chloe's income was withheld?

- A. 12% B. 17%
C. 55% D. 13%

$$\frac{6,622.44}{45,672} \rightarrow .145 = 14.5\%$$

18. A savings plan requires \$1000 to start plus a monthly deposit, as shown on the graph.

- (A) The plan is for 500 weeks
(B) Members will make 500 deposits
(C) Each successive deposit is \$500 more
(D) The monthly deposit is \$500

~~1000~~

19. A spinner was spun 220 times. The outcome was red 58 times. Estimate the probability of the outcome red.

- A. 0.225 B. 0.264
C. 0.126 D. 0.32

$$\frac{58}{220} = .264$$

20. What is the probability of rolling an odd number on a single dice?

- (A) $\frac{1}{2}$ B. $\frac{2}{3}$
C. $\frac{1}{6}$ D. $\frac{1}{3}$

1, 2, 3, 4, 5, 6
* * *
 $\frac{1}{2}$ #'s are odd

21. Which of the following is the solution of the equation $5y = 4(x - 4)$?

- (A) (6, 13) B. (19, 4)
C. (10, 4) D. (4, 0)

$$5y = 4(x - 4)$$

A) $5(13) = 4(6 - 4)$
 $65 \neq 8$

B) $5(4) = 4(19 - 4)$
 $20 \neq 60$

C) $5(4) = 4(10 - 4)$
 $20 \neq 24$

D) $5(0) = 4(4 - 4)$
 $0 = 0$

22. Ten years from now, Cal will be x years old. How old was he 5 years ago?

- (A) $x - 5$ B. $x - 15$
C. $x - 10$ D. $x + 10$

$$y + 10 = x$$

$$y = x - 10$$

$$y - 5 = (x - 10) - 5$$

$$= x - 15$$

~~now~~ $y = \text{now}$

$$y + x = 10$$

$$y = 10 - x$$

$$y - 5 = 10 - x - 5 = 5 - x$$

23. A landscaping company charges a \$35 consultation fee, plus \$50 per hour. How much would it cost to hire the company for 3 hours?

$$35 + 50h = \$$$

$$35 + 50(3) = 35 + 150$$

$$= \$185$$



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