

1. Question: What is the value of

- (A) 10
- (B) 12
- (C) 16
- (D) 20

Answer: (C) 16.

Explanation: First, compute $(4^3=64)$ and $(2^2=4)$. Multiply these to get . Then divide by 8: $(256 \div 8=32)$.

2. Question: If a shirt originally costs \$50 and is discounted by 30%, what is the sale price?

- (A) \$35
- (B) \$40
- (C) \$45
- (D) \$50

Answer: (A) \$35.

Explanation: The discount is (30\%) of \$50, which is $(0.30 \times 50 = 15)$. Subtract this from the original price: $(50 - 15 = 35)$.

3. Algebra:

Question: Solve for (x): (3x + 7 = 16).

- (A) 2
- (B) 3
- (C) 4
- (D) 5

Answer: (A) 3.

Explanation: Subtract 7 from both sides: (3x = 9). Then divide by 3: (x = 3).

4. Algebra:

Question: What is the solution to the equation $(x^2 - 4x - 5 = 0)$?

- (A) 1 and -5
- (B) 1 and 5
- (C) -1 and 5
- (D) -1 and -5

Answer: (C) -1 and 5.

Explanation: Factor the quadratic equation: $((x-5)(x+1)=0)$. Set each factor to zero: (x - 5 = 0) or (x + 1 = 0), yielding (x = 5) and (x = -1).

5. Geometry:

Question: What is the area of a right triangle with base 8 units and height 6 units?

- (A) 24 square units
- (B) 48 square units
- (C) 28 square units
- (D) 30 square units

Answer: (A) 24 square units.

Explanation: The area of a right triangle is given by $(\frac{1}{2} \times \text{base} \times \text{height})$. Thus, $(\frac{1}{2} \times 8 \times 6 = 24)$.

6. Geometry:

Question: In a circle, if the radius is 7 units, what is the circumference? (Use $\pi \approx 3.14$)

- (A) 21.98 units
- (B) 43.96 units
- (C) 14 units
- (D) 49 units

Answer: (B) 43.96 units.

Explanation: The circumference of a circle is given by $(2\pi r)$. Thus, $2 \times 3.14 \times 7 = 43.96$.

7. Data Analysis

Question: The average of five numbers is 12. What is their total sum?

- (A) 60
- (B) 48
- (C) 54
- (D) 72

Answer: (A) 60.

Explanation: The average of a set of numbers is the total sum divided by the number of items. Thus, the total sum is $(12 \times 5 = 60)$.

8. Data Analysis:

Question: In a dataset with values 10, 15, 20, 25, and 30, what is the median?

- (A) 15
- (B) 20
- (C) 25
- (D) 30

Answer: (B) 20.

Explanation: The median is the middle value when the numbers are arranged in ascending order. For the dataset, the middle value is 20.

9. Algebra:

Question: If $(2x - 3 = 7)$, what is (x) ?

- (A) 4
- (B) 5
- (C) 6
- (D) 7

Answer: (B) 5.

Explanation: Add 3 to both sides: $(2x = 10)$. Divide by 2: $(x = 5)$.

10. Arithmetic:

Question: What is (15%) of 200?

- (A) 20
- (B) 25
- (C) 30
- (D) 35

Answer: (C) 30.

Explanation: Calculate

11. Geometry:

Question: What is the volume of a cylinder with a radius of 3 units and a height of 5 units? (Use $(\pi \approx 3.14)$)

- (A) 141.3 cubic units
- (B) 282.6 cubic units
- (C) 94.2 cubic units
- (D) 235.8 cubic units

Answer: (A) 141.3 cubic units.

Explanation: The volume of a cylinder is $(\pi r^2 h)$. Thus, $(3.14 \times 3^2 \times 5 = 141.3)$.

12. Algebra:

Question: What is the value of $(3x^2 - 2x)$ when $(x = 4)$?

- (A) 40
- (B) 50
- (C) 52
- (D) 60

Answer: (C) 52.

Explanation: Substitute $(x = 4)$ into the expression:

$(3 \times 4^2 - 2 \times 4 = 48 - 8 = 40)$.

13. Geometry:

Question: What is the surface area of a cube with a side length of 6 units?

- (A) 72 square units
- (B) 96 square units
- (C) 108 square units
- (D) 144 square units

Answer: (D) 144 square units.

Explanation: The surface area of a cube is $(6 \times \text{side}^2)(6 \times \text{side}^2)$. Thus, $(6 \times 6^2 = 144)(6 \times 6^2 = 144)$.

14. Data Analysis:

Question: What is the range of the dataset {5, 8, 12, 20, 25}?

- (A) 15
- (B) 17
- (C) 20
- (D) 25

Answer: (B) 20.

Explanation: The range is the difference between the maximum and minimum values: $(25 - 5 = 20)$.

15. Geometry:

Question: What is the length of the hypotenuse of a right triangle with legs of lengths 5 and 12 units?

- (A) 13 units
- (B) 14 units
- (C) 15 units
- (D) 17 units

Answer: (A) 13 units.

Explanation: Use the Pythagorean theorem:

16. Algebra:

Question: Simplify $(6x^2 - 4x^2x) \cdot (2x^6x^2 - 4x)$.

- (A) $(3x - 2)$
- (B) $(3x + 2)$
- (C) $(3x - 1)$
- (D) $(3x + 1)$

Answer: (A) $(3x - 2)$.

Explanation: Divide each term by $(2x)$: $(6x^2 \div 2x)(2x^6x^2 - 4x^2x = 3x - 2) \cdot 2x^4x = 3x - 2$.

17. Data Analysis:

Question: The mean of a dataset is 14 and the sum of the dataset is 84. How many numbers are in the dataset?

- (A) 5
- (B) 6
- (C) 7
- (D) 8

Answer: (B) 6.

Explanation: The mean is given by the sum divided by the number of items. Thus, $(\frac{84}{14} = 6)$.

18. Geometry:

Question: The diagonal of a square is $10\sqrt{2}$ units. What is the side length of the square?

- (A) 10 units
- (B) 5 units
- (C) $5\sqrt{2}$ units
- (D) 15 units

Answer: (A) 10 units.

Explanation: The diagonal of a square is (s^2, s^2) , where (s) is the side length. Given the diagonal $(10\sqrt{2}, 10\sqrt{2})$, solve $(s^2 = 10\sqrt{2}), (s^2 = 10\sqrt{2})$, giving $(s = 10)$.

19. Algebra:

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

- (A) 18
- (B) 12
- (C) 10
- (D) 8

Answer: (D) 8.

Explanation: Expand and solve: $(4x - 8 = 3x + 6)$. Subtract $(3x)$ from both sides: $(x - 8 = 6)$. Add 8 to both sides: $(x = 14)$.

20. Data Analysis:

Question: In a dataset with values 3, 7, 7, 10, and 14, what is the mode?

- (A) 3
- (B) 7
- (C) 10
- (D) 14

Answer: (B) 7.

Explanation: The mode is the value that appears most frequently. In this dataset, 7 appears twice, more than any other value.

