Worked Solutions

Problem 1: Basic Arithmetic

Question: Calculate $15 \times (4 + 3) - 28 \div 7$.

Solution:

$$\begin{aligned} 15 \times (4+3) - 28 \div 7 &= 15 \times 7 - 28 \div 7 \quad \text{(Parentheses first)} \\ &= 105 - 4 \quad \text{(Multiplication and division from left to right)} \\ &= 101 \quad \text{(Subtraction)} \end{aligned}$$

Answer: $\boxed{101}$

Problem 2: Solving a Linear Equation

Question: Solve for x: $3x - 7 = 14$.

Solution:

$$\begin{aligned} 3x - 7 &= 14 \\ 3x &= 14 + 7 \quad \text{(Add 7 to both sides)} \\ 3x &= 21 \\ x &= \frac{21}{3} \quad \text{(Divide both sides by 3)} \\ x &= 7 \end{aligned}$$

Answer: $\boxed{x = 7}$

Problem 3: Quadratic Equation

Question: Solve $x^2 - 5x + 6 = 0$.

Solution: We can factor the quadratic:

$$x^2 - 5x + 6 = (x - 2)(x - 3) = 0$$

Set each factor equal to zero:

$$\begin{aligned} x - 2 = 0 \quad &\Rightarrow \quad x = 2 \\ x - 3 = 0 \quad &\Rightarrow \quad x = 3 \end{aligned}$$

Answer: $\boxed{x = 2 \text{ or } x = 3}$

Problem 4: Geometry - Area of a Circle

Question: Find the area of a circle with radius $r = 5$ cm. Use $\pi \approx 3.1416$.

Solution: The area formula is $A = \pi r^2$.

$$A = \pi \times (5)^2 = \pi \times 25 \approx 3.1416 \times 25 = 78.54$$

Answer: $\boxed{78.54 \text{ cm}^2}$

Problem 5: Word Problem

Question: A store sells apples for \$2 each and oranges for \$3 each. If you buy 4 apples and 2 oranges, how much do you pay?

Solution: Cost of apples: $4 \times 2 = 8$ dollars.
Cost of oranges: $2 \times 3 = 6$ dollars.
Total cost: $8 + 6 = 14$ dollars.

$$\text{Total} = (4 \times 2) + (2 \times 3) = 8 + 6 = 14$$

Answer: $\boxed{\$14}$