

**Sample: Algebra - Financial Percentages and Simple Transformations****Question 1**

Companies often sell products at or below cost in order to draw in and retain customers. Redman Manufacturers is tracking 5 items from last month's sales. On item #1 they make \$15; item #2 loses \$4; item #3 makes \$9; item #4 loses \$6; and item #5 makes \$12. Last month's sales are as follows:

Item #1: 90 units sold

Item #2: 103 units sold

Item #3: 78 units sold

Item #4: 45 units sold

Item #5: 164 units sold

Write, simplify, and, calculate the **profit or loss** for the month.

**Calculations:**

$$15 * 90 - 4 * 103 + 9 * 78 - 6 * 45 + 12 * 164 \\ = 1350 - 412 + 702 - 270 + 1968 = 3338(\$)$$

**Answer:** \$3338 profit

**Question 2**

When principal (P) is invested at a rate of (R) over a period of time (T) in years, simple interest (I) is earned. The simple interest is calculated by multiplying the principal, rate, and time. Write an equation to represent this scenario.

**Answer:**  $I = P * R * T$

**Question 3**

Using the formula above, calculate the interest earned for an investment of \$15,000 at a rate of 5% over 10 years.

**Calculations:**

$$15000 * 0,05 * 10 = 7500(\$)$$



**Answer:** \$7500

#### Question 4

The perimeter of a rectangle is  $P=2L+2W$  where  $L$  is the length and  $W$  is the width. Find the perimeter when  $L=15$  and  $W=25$ .

**Calculations:**

$$P = 2 * 15 + 2 * 25 = 30 + 50 = 80.$$

**Answer:** 80

#### Question 5

The formula for a triangle is  $A = \frac{1}{2}bh$ . If the area of a triangle is 36 and the height is 9, what is the base?

**Calculations:**

$$A = \frac{1}{2}bh; 2A = bh; b = \frac{2A}{h}; b = \frac{2 * 36}{9} = 8.$$

**Answer:** 8

#### Question 6

The formula  $F = \frac{9}{5}C + 32$  relates Celsius and Fahrenheit temperature. If the current temperature is  $-20^{\circ}C$ , what is the temperature in Fahrenheit?

**Calculations:**

$$F = \frac{9}{5}(-20) + 32 = -36 + 32 = -4(^{\circ}F).$$

**Answer:**  $-4^{\circ}F$

**Question 7**

A triangle has sides measuring  $x + 7$ ,  $2x + 3$ , and  $5x - 6$ . Write and simplify an expression that represents the perimeter of the triangle.

**Calculations:**

$$P = (x + 7) + (2x + 3) + (5x - 6) = 8x + 4.$$

**Answer:**  $8x + 4$

**Question 8**

Floral Solutions is calculating their profits for the previous month. Profit is determined by revenue minus the cost. The cost of producing floral arrangements is represented by the equation  $C = 18 + 35x$  and the revenue is represented by the equation  $R = 80x + 12$ .

- Find the simplified expression that represents the profit.
- Find the profit made when 110 arrangements are sold.

**Calculations:**

- $R - C = 80x + 12 - 18 - 35x = 45x - 6.$
- $45 * 110 - 6 = 4944.$

**Answer:** The expression is:  $45x - 6$ . The profit made is: 4944.

**Question 9**

Jamie sold her house for  $x$  dollars. The real estate agent received a 5% commission and Jamie received \$197,125. **Write** and **solve** an equation to determine the selling price of the house.

**Calculations:**

$$x - 0,05x = 197125; \quad 0,95x = 197125 \rightarrow x = \frac{197125}{0,95} = 207500(\$)$$

**Answer:** \$207500