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:

\[
15 \times 90 - 4 \times 103 + 9 \times 78 - 6 \times 45 + 12 \times 164
\]

\[
= 1350 - 412 + 702 - 270 + 1968 = 3338($)
\]

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: \[I = P \times R \times T\]

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:

\[
15000 \times 0.05 \times 10 = 7500($)
\]
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:**
\[
P = 2 \times 15 + 2 \times 25 = 30 + 50 = 80.
\]
**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:**
\[
A = \frac{1}{2}bh; \; 2A = bh; \; b = \frac{2A}{h}; \; b = \frac{2 \times 36}{9} = 8.
\]
**Answer:** 8

**Question 6**
The formula \( F = \frac{9}{5}C + 32 \) relates Celsius and Fahrenheit temperature. If the current temperature is \(-20°C\), what is the temperature in Fahrenheit?

**Calculations:**
\[
F = \frac{9}{5}(-20) + 32 = -36 + 32 = -4(°F).
\]
**Answer:** -4°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 $R = 80x + 12$.

a. Find the simplified expression that represents the profit.

b. Find the profit made when 110 arrangements are sold.

Calculations:

a. $R - C = 80x + 12 - 18 - 35x = 45x - 6$.

b. $45 \times 110 - 6 = 4944$.

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: $207500$