WORD PROBLEMS 1

1) The sum of three consecutive numbers is 72. What are these numbers?

2) If one half of a number is added to one quarter of the same number, the result is 12. Find the number.

3) You bought a magazine for $5 and four erasers. You spent a total of $25. How much did each eraser cost?

4) The perimeter of a rectangle is 28 metres. The base is 6 metres longer than its height. Work out the sides and the area of the rectangle.

5) There are 112 people at a party. If there are 18 boys more than girls, how many boys and girls are there at the party?

6) Calculate the measurement of the three angles of a triangle if the first is three times the second and the second one is twice the third.

7) In a triangle, the base is the double of its height. If the area of the triangle is 144 square metres, calculate the base and the height of the triangle.

8) In a right angled triangle one of the legs measures 7m more than the other leg and the hypotenuse measures 13m. Calculate its area.

9) A farmer has planted one third of his garden with tomatoes, and two fifths with green peppers. He still has $300m^2$ left to be planted. What is the total area of the garden?

10) Edward is 32 years younger than his father, and 28 years older than his son. How old is each one now if the sum of their ages is 94?

SOLUTION

1) The sum of three consecutive numbers is 72. What are these numbers?

Numbers: $x, x+1, x+2$

Equation: $x+x+1+x+2=72$

$3x+3=72 \Rightarrow 3x=69 \Rightarrow x=69/3=23$

Solution: Numbers are 23, 24 and 25

2) If one half of a number is added to one quarter of the same number, the result is 12. Find the number.

Number: x

Equation: $\frac{x}{2}+\frac{x}{4}=12 \Rightarrow \frac{2x}{4}+\frac{x}{4}=\frac{48}{4} \Rightarrow 3x=48 \Rightarrow x=16$

Solution: the number is 16

3) You bought a magazine for $5 and four erasers. You spent a total of $25. How much did each eraser cost?

Price of each eraser: x

Equation: $5+4x=25 \Rightarrow 4x=25-5 \Rightarrow 4x=20 \Rightarrow x=5$

Solution: Each eraser costs $5

4) The perimeter of a rectangle is 28 metres. The base is 6 metres longer than its height. Work out the sides and the area of the rectangle.

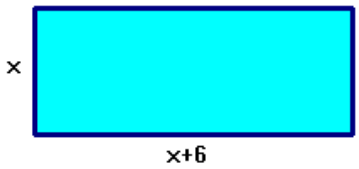
Equation: Perimeter $x+x+x+6+x+6$

$4x+12=28 \Rightarrow 4x=28-12$

$4x=16 \Rightarrow x=4$

Solution: height 4m, base 10m

Area: $A=4\times10=40\text{m}^2$



5) There are 112 people at a party. If there are 18 boys more than girls, how many boys and girls are there at the party?

Girls x; boys x+18

Equation: $x+x+18=112 \Rightarrow 2x=112-18 \Rightarrow 2x=94 \Rightarrow x=47$

Solution: There are 47 girls and 65 boys

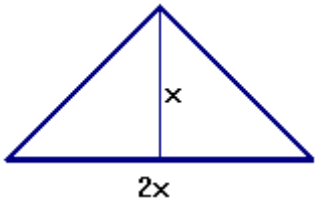
6) Calculate the measurement of the three angles of a triangle if the first is three times the second and the second one is twice the third.

The third one x, the second one 2x, the first one 6x

Equation: $x+2x+6x=180 \Rightarrow 9x=180 \Rightarrow x=20$

Solution: The first angle 120°, the second 40°, the third 20°

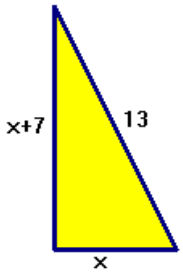
7) In a triangle, the base is the double of its height. If the area of the triangle is 144 square metres, calculate the base and the height of the triangle.



Equation: $A = \frac{x \cdot 2x}{2} = 144$

$x^2 = 144 \Rightarrow x = \sqrt{144} = \pm 12$

Solution: Base 24 metres
Height 12 metres



8) In a right angled triangle one of the legs measures 7m more than the other leg and the hypotenuse measures 13m. Calculate its area.

Equation: $(x+7)^2 + x^2 = 13^2$

$x^2 + 14x + 49 + x^2 = 169 \Rightarrow 2x^2 + 14x - 120 = 0$

$x^2 + 7x - 60 = 0 \rightarrow x = \frac{-7 \pm \sqrt{49+240}}{2} = \frac{-7 \pm 17}{2} = \begin{cases} 5 \\ -12 \end{cases}$

Solution: one side 5m (base), the other side 12m (height)

Area $A = \frac{5 \times 12}{2} = 30$ square metres

9) A farmer has planted one third of his garden with tomatoes, and two fifths with green peppers. He still has $300m^2$ left to be planted. What is the total area of the garden?

Area of his garden x square metres

Equation: $\frac{x}{3} + \frac{2x}{5} + 300 = x \Rightarrow \frac{5x}{15} + \frac{6x}{15} + \frac{4500}{15} = \frac{15x}{15}$

$11x + 4500 = 15x \Rightarrow 4500 = 4x \Rightarrow x = \frac{4500}{4} = 1125$

Solution: The total area of the garden is 1120 square metres

10) Edward is 32 years younger than his father, and 28 years older than his son. How old is each one now if the sum of their ages is 94?

Edward x years old, his father x+32 years old, his son x-28 years old

Equation: $x + x + 32 + x - 28 = 94 \Rightarrow 3x + 4 = 94$

$3x = 94 - 4 \Rightarrow 3x = 90 \Rightarrow x = \frac{90}{3} = 30$

Solution: Edward is 30 years old
His father is 62 years old
His son is 2 years old