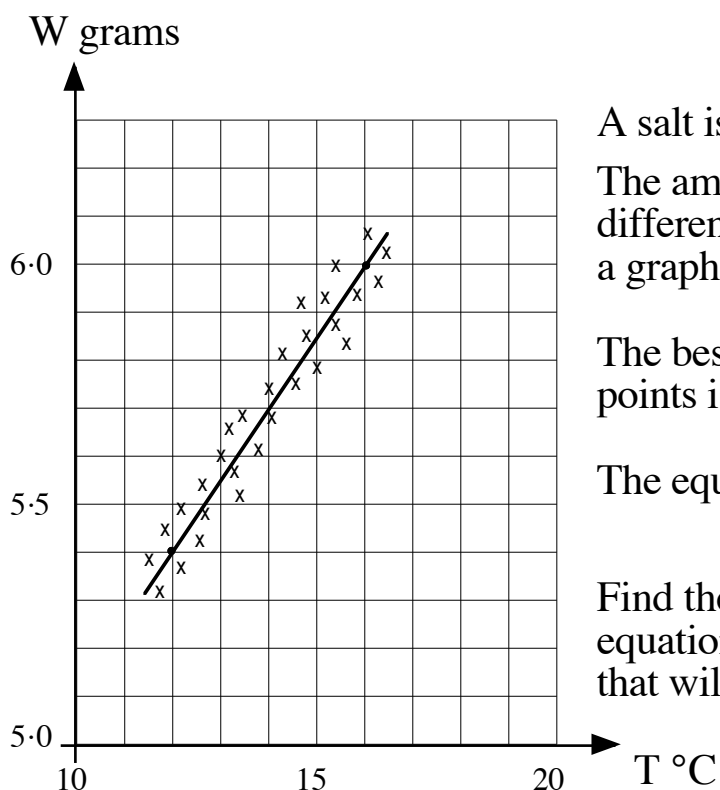


SCATTER DIAGRAM: LINE OF BEST FIT



A salt is dissolved in a litre of solvent. The amount of salt that dissolves at different temperatures is recorded and a graph plotted.

The best-fitting straight line through the points is drawn.

The equation of the graph is of the form

$$W = mT + C.$$

Find the equation of the line and use the equation to calculate the mass of salt that will dissolve at 30 °C.

using two well-separated points on the line (16, 6.0) (12, 5.4)

$$m = \frac{6.0 - 5.4}{16 - 12} = \frac{0.6}{4} = 0.15$$

substituting for one point on the line $\begin{matrix} a & b \\ (16, & 6.0) \end{matrix}$

$$y - b = m(x - a)$$

$$y - 6.0 = 0.15(x - 16)$$

$$y - 6.0 = 0.15x - 2.4$$

$$y = 0.15x + 3.6$$

$$\underline{\underline{W = 0.15T + 3.6}}$$

$$T = 30$$

$$W = 0.15 \times 30 + 3.6$$

$$= 4.5 + 3.6$$

$$= 8.1$$

$$\underline{\underline{8.1 \text{ grams}}}$$