Guide to:
Direct and inverse proportion

maths Links

Explanation:

If **y is directly proportional to x** (written $y \propto x$), then $y = kx$. If **y is inversely proportional to x** (written $y \propto \frac{1}{x}$), then $y = \frac{k}{x}$. Read the question carefully for powers or roots such as x^2, x^3, or $\sqrt{x}$.

Always follow three steps: (1) write the proportion equation with constant **k**, (2) substitute the given pair of values to find **k** and write the full formula, and (3) substitute the new value to find the unknown.

Example 1: **y** is directly proportional to x^2. When **x = 3**, **y = 45**. Find **y** when **x = 5**.

Solution:

Write equation: $y = kx^2$

Substitute x = 3, y = 45: $45 = k \times 3^2 \rightarrow 45 = 9k \rightarrow \mathbf{k = 5}$

Formula: $y = 5x^2$

When x = 5: $y = 5 \times 5^2 = 5 \times 25 = 125$

Answer: y = 125

Example 2: **y** is inversely proportional to **x**. When **x = 4**, **y = 15**. Find **x** when **y = 12**.

Solution:

Write equation: $y = \frac{k}{x}$

Substitute x = 4, y = 15: $15 = \frac{k}{4} \rightarrow k = 15 \times 4 = \mathbf{60}$

Formula: $y = \frac{60}{x}$

When y = 12: $12 = \frac{60}{x} \rightarrow x = 60 \div 12 = 5$

Answer: x = 5

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1st Class Maths	Qs	Ans	**PMT (AQA)**	Qs	Ans
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