Direct, inverse and transformed relationships

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A sample from this topic. The complete topic collection contains three different resources and worked solutions.

Read the worked example, then show each step in the practice questions. Show the mathematical steps. A calculator, graphing tool or CAS may be used to check results where useful.

What you will practise

• Variation

Useful starting skills: Year 10 algebra, percentages, statistical displays, geometry and trigonometry.

Direct variation $y=kx$ has a constant ratio y/x. Inverse variation $y=k/x$ has a constant product xy.

Nonlinear data may become linear when plotted against x^2, $1/x$ or $\log_{10}(x)$. Fit and interpret the transformed variable, then return to original units for predictions.

Worked example

y varies inversely with x and $y=6$ when $x=4$. Find y at $x=8$.

$k=xy=24$

$y=24/8=3$.

Answer: 3.

Try it yourself

Name: _____ Date: _____

1. y=kx and y=18 when x=3. Find k and y at x=7.

2. y=k/x, y=5 at x=6. Find y at x=10.

Answers and explanations

Check the method as well as the final answer. An alternative correct method is also valid.

1. k=6; y=42.

18/3=6; 6×7=42.

2. 3.

k=30; 30/10=3.

Curriculum reference: General Mathematics Units 1–2 — Variation

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