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Questions

Maths Paper 3 - Higher

Make x the subject of the formula

(i) $y = 4x^2 + 1$

(ii) $4x + 8 = a(x + y)$

Solve simultaneously

$$y = x^2 + 5x + 1$$
$$y = 4x + 1$$

A restaurant offer 3 course meals.
There is a choice of 6 starters, 8 mains and 4 desserts.

How many different combinations are there?

A shirt has been decreased by 25%.
It now costs £76.50.

Work out the original cost of the shirt.

Simplify:

$$\frac{6x^2 - x - 2}{3x^2 + 4x - 4}$$

When a = $\begin{pmatrix} 4 \\ 3 \end{pmatrix}$ and b = $\begin{pmatrix} 6 \\ -1 \end{pmatrix}$

Work out 3a – 2b

Expand $(2x + 3y)(2x - 3y)$

Expand $2(4x - 3) - 3(x - 3)$

Factorise $a^2 - b^2$

Factorise $4a^2 - 16b^2$

Ben is twice as old as Allan.
Charles is 5 years older than Allan.

The sum of their ages is 161.
Work out their individual ages.

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Examples/ Key words

Maths Paper 3 - Higher

Depreciation – a percentage reduction. Use a multiplier to make the question easier to answer.

Multiplier – e.g. a car cost £10000 and depreciates by 23%.

100% - 23% = 77%

77 ÷ 100 = 0.77

10000 x 0.77 = 7700

Histograms:

Class width = the difference between the range of data

e.g. $0 < x \leq 5 = 5$

Frequency density = Frequency ÷ class width

Estimate = make the question easier by rounding

Evaluate = work out the answer

Express = Write in the different way

Simplify = Change the appearance

Frequency Polygons

Plot the midpoint (single value if there is no range of data) and frequency. Join the points together from left to right (do not join the last and first point together).

Trigonometry:

$$\sin(x) = \frac{o}{h}$$

$$\cos(x) = \frac{a}{h}$$

$$\tan(x) = \frac{o}{a}$$

Gradient of a straight line graph =

$$\frac{difference\ in\ y}{difference\ in\ x}$$

Or

$$\frac{y_2 - y_1}{x_2 - x_1}$$

Area of a trapezium = $\frac{1}{2}(a + b) \times h$

Similar Triangles:

If finding a missing side. Look for a scale factor.

If finding an area = square the scale factor

If finding a volume = cube the scale factor

Pythagoras' theorem = $a^2 + b^2 = c^2$

C is always opposite the right angle