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Maths Paper 1 – Grade 7+

Prove that the product of two consecutive even numbers is a multiple of 4

The line L is a tangent to the circle $x^2 + y^2 = 34$ at the point A.
A is the point (2,6)

Find the equation of line L

Solve

$$x^2 > 3(x + 6)$$

Simplify

$$(x^2 + 2)^2 - (x^2 - 5)^2$$

$$f(x) = 4x + 7$$
$$g(x) = \sqrt{x + 4}$$

Show that $fg^{-1}(x) = 4x^2 - 9$

Solve

$$x^2 - 6x - 8 = 0$$

Give your answer in the form $a \pm \sqrt{b}$

1,2,3,4,5,6

Two numbers from the list above are selected and multiplied together.
Work out the probability that the result is an even number.

Express $\sqrt{75} + \frac{12}{\sqrt{3}}$ in the form $a\sqrt{3}$.
Where a is an integer

Solve

$$3^{4x} = \frac{1}{9}$$

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Examples/ Key words

Maths Paper 1 - Higher

Convert 3200 into standard form
$3200 = 3.2 \times 10^3$

Work out $4.2 \times 10^4 + 8 \times 10^3$.
Give your answer in standard form

42,000 + 8000 = 50,000
$50{,}000 = 5 \times 10^4$

To simplify a surd – always find the largest square number that it can be divided by.

E.g. $\sqrt{200} = \sqrt{100} \times \sqrt{2} = 10\sqrt{2}$

Estimate = make the question easier by rounding

Evaluate = work out the answer

Express = Write in the different way

Simplify = Change the appearance

Volume of a cube = base x height x depth or length^3

Surface area of a cuboid = The sum of the area of the 3 pairs of congruent rectangles

The volume of a shape is 20cm^3.
The mass of the shape is 120g.
Find the density.
Density = g:cm^3

120:20

6:1

Density = 6g/cm^3

Angles in regular polygons:
Sum of the interior angles = $(n-2) \times 180$
To find an interior angle = $\frac{total}{n}$ n= number of angles/sides.

Sum of the exterior angles = 360°
To find an exterior angle = $\frac{360}{n}$ n= number of angles/sides

Gradient of a curve = draw tangent of the curve and find the gradient

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

	0°	30°	45°	60°	90°
Sin	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
Cos	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0
Tan	0	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	Undefined

$x^{\frac{1}{3}} = \sqrt[3]{x}$ $\quad x^{\frac{2}{3}} = (\sqrt[3]{x})^2$

$x^{-\frac{1}{3}} = \frac{1}{\sqrt[3]{x}}$ $\quad x^{-4} = \frac{1}{x^4}$