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Engaging Learners

Questions

Maths Paper 2 - Higher

Leo invests £3500 at 6% compound interest per annum. Work out the amount of interest Leo receives after 5 years.

The gradient of a radius of a circle is -3. The tangent to the circle passes through the point (6,2). Work out the equation of the tangent

Factorise

(a) $x^2 + 8x + 16$

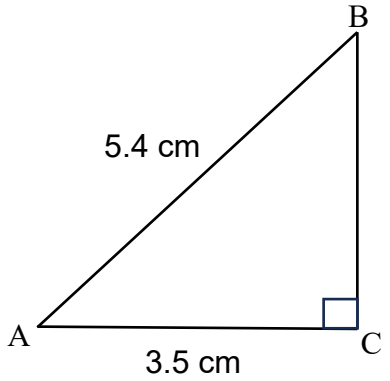
(b) $x^2 - 8x + 7$

$x = 3.2$ when rounded to 1 decimal place
$y = 1.42$ when rounded to 2 decimal places

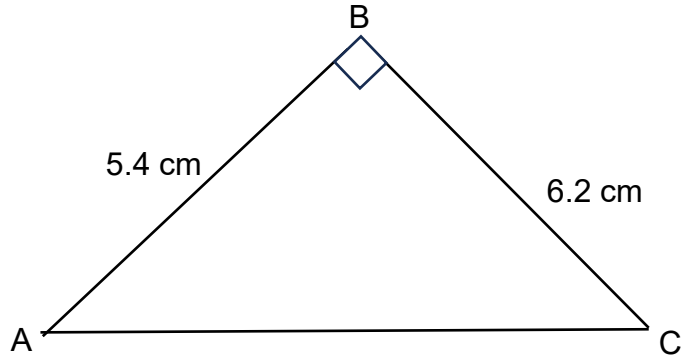
(a) Work out the LB of xy

(b) Work out the UB of $\frac{x}{y}$

Work out the length of BC



Work out the size of angle BAC



Solve

$3x^2 + 4x - 10 = 0$

Express 60 as a product of prime factors

Find the HCF of 60 and 90

Solve

$$\frac{2x}{12} = \frac{18}{4}$$

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Find the nth term of

$4,9,14,19 \ldots$

There are 3 starters, 5 mains and 6 desserts on a menu.

How many different 3 course combinations are possible?

Convert $0.4\dot{3}$ into a fraction

Complete the table

Time (t)	Frequency	Cumulative frequency
$0 \leq t < 1$	5	
$1 \leq t < 2$	8	
$2 \leq t < 3$	1	
$3 \leq t < 4$	12	

y is directly proportional to x.
When $y = 15$ and $x = 30$
Work out the value of y when $x = 5$

y is inversely proportional to x.
When $y = 15$ and $x = 30$
Work out the value of y when $x = 5$

A number, n, is rounded to 1d.p.
The result is 43.2.
Complete the error interval

$\_\_\_ \leq n < \_\_\_$

$f(x) = 8x^2$ $\quad$ $g(x) = x + 2$

(a) Work out $gf(3)$
(b) Work out $fg(x)$

$f(x) = 8x^2$ $\quad$ $g(x) = x + 2$

(a) Work out $f^{-1}(x)$
(b) Work out $g^{-1}(x)$

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Examples/ Key words

Maths Paper 2 - 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

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

The 5 values required for a boxplot are:

- Lowest value
- Lower quartile
- Median
- Upper quartile
- Highest Value

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

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

When drawing a cumulative frequency graph, use the end point of the range

Circle Theorem Tips:

- Radius and tangent = 90°
- Radius and chord = alternate segment theorem
- 2 radii = an isosceles triangle