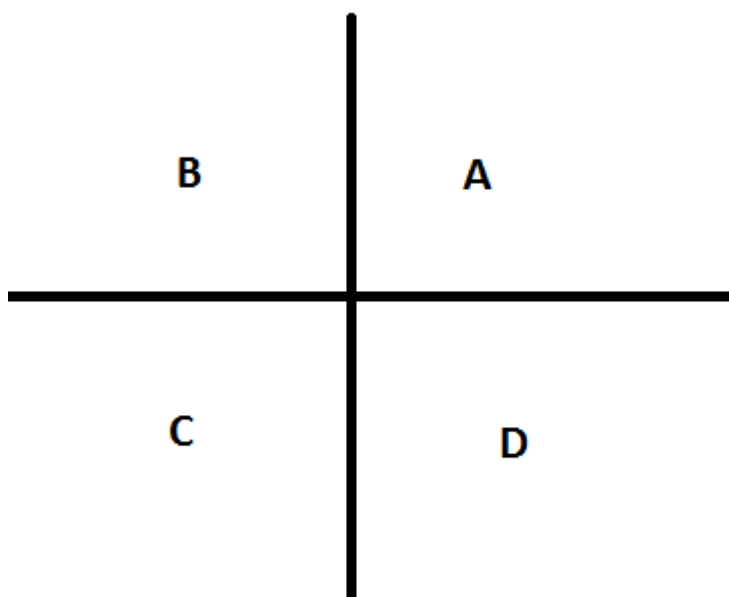
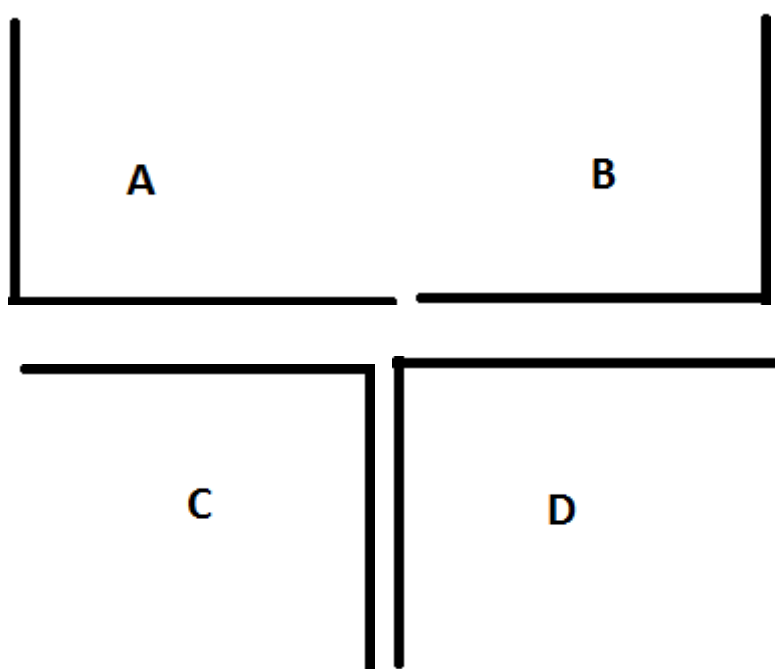


## SAMPLE MATHS COMPETENCY TEST

### Cartesian Sign Convention



- a) In which quadrant of the graph pictured above would the point  $(3, -4)$  appear?
- b) If you are graphing data points and the x-axis values are negative and the y-axis values are negative, which of the following four graphs would you use?



### Scientific Notation

Write the following numbers without scientific notation:

c)  $4.15 \times 10^2$

d)  $1.267 \times 10^{-3}$

Write the following numbers in scientific notation:

e) 1,245

f) 0.00416

### Conversion of Units

Convert the following to metres:

g) 12cm

h) 345mm

Convert the following to millimetres:

i) 3.1m

j) 0.55m

### Rearranging Formulae

Rearrange the following formulae to make “a” the subject:

k)

$$d = \frac{a + c}{b}$$

l)

$$b = d(a^2 + c)$$

m)

$$\frac{-b}{a} = \frac{c}{-d}$$

## Fractions

Write the reciprocals of the following numbers:

n) 5

o)  $\frac{5}{6}$

Calculate the answers to the sums below:

p)

$$\frac{2}{5} + \frac{1}{3}$$

q)

$$\frac{3}{5} - \frac{3}{6}$$

## Proportionality

r) If £6 buys €7.54, how many Euros will £7 buy?

s) If the size of a letter on an eye test chart is in proportion to the distance the chart is viewed from. The top letter in a chart viewed at 6m is 87.2mm. What size would the top letter be in a chart viewed from 4m?

## Degrees and Minutes

Write the following in degrees:

t)  $4^{\circ}25'$

u)  $6^{\circ}32'$

Write the following in degrees and minutes:

v)  $4.75^{\circ}$

w)  $6.2^{\circ}$

## Logs

Get the log of the following numbers:

x) 5

y) 50

Get the antilog of the following numbers:

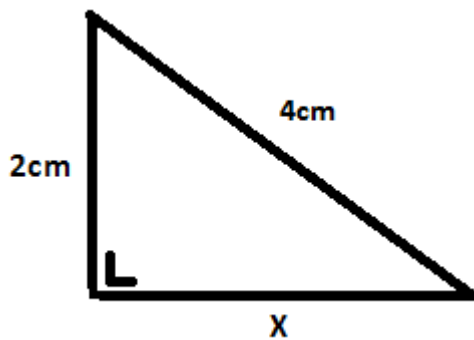
z) 8

A) 0.25

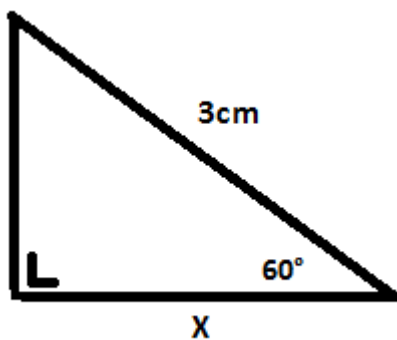
## Trigonometry

Find the length of the third side of the triangle marked “x”.

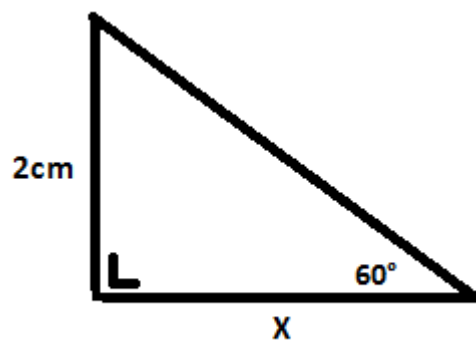
B)



C)

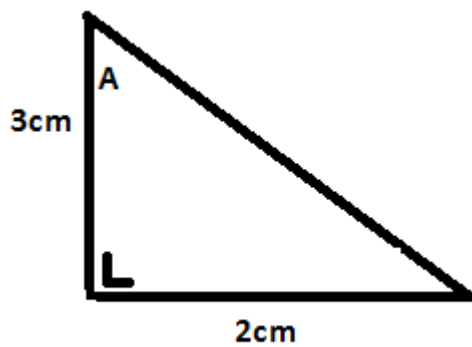


D)



Calculate the angle "A".

E)



### Arithmetic & Geometric Progressions

What term comes next in the series:

F) 14, 17, 20

G) 2, 6, 18

## Quadratic Equations

Using the formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Solve the following quadratic equations:

H)  $x^2 - 6x + 3 = 0$

I)  $2x^2 + 5x + 1 = 0$

## Simultaneous Equations

Calculate x and y using the following equations:

J)  $3x + 2y = 7$   
 $x + 3y = 9$

K)  $2x - y + 9 = 0$   
 $2x + 3y = 2$

## Graphs

L) Find the slope of the line that contains the points (2,3) and (7,1)

M) Find the slope of the line that contains the points (-2,3) and (7,-1)

N) Find the y-axis intercept for a line with a slope of 3.5 if the point (5,2) lies on the line.

O) Find the y-axis intercept for a line with a slope of -3.5 if the point (5,2) lies on the line.

### Degrees and Radians

P) Convert  $10^\circ$  to radians

Q) Convert 2 radians to degrees

### Geometry of a Circle

R) Calculate the radius of a circle whose circumference is 14cm.

S) Calculate the circumference of a circle whose radius is 1.75cm.

### Use of a Calculator

T) Calculate:  $\frac{-7.25}{1-[0.012(-7.25)]}$ .

U) Calculate:  $\frac{1}{1-[0.013(-10)]} \times \frac{1}{1-[(0.007/1.5)(6.5)]}$ .