

## Using formulae

### Part 1: No calculator so show all working

The area of a rectangle is given by:  $A=l \times b$ ;  $l$ =length and  $b$ =breadth

You must...Find the area of the following rectangles (dimensions are in cm unless otherwise stated):

- a)  $l=4$   $b=3$       b)  $l=3.2$   $b=4$       c)  $l=2.5$   $b=11$       d)  $l=0.5$   $b=0.1$   
e)  $l=32$   $b=14$       f)  $l=1.1$   $b=0.5\text{m}$       g)  $l=3\text{m}$   $b=25\text{mm}$       h)  $l=0.6$   $b=0.3$

The area of a triangle is given by:  $A= \frac{1}{2}bh$ ;  $b$ =base,  $h$ =height

You should...Find the area of the following triangles (dimensions are in cm unless otherwise stated):

- a)  $b=4$   $h=10$       b)  $b=12$   $h=14$       c)  $b=6$   $h=0.5$       d)  $b=2\text{m}$   $h=3$   
e)  $b=13.2$   $h=0.5$       f)  $b=25\text{mm}$   $h=7\text{cm}$       g)  $b=1\text{km}$   $h=600\text{cm}$       h)  $b=0.1\text{mm}$   $h=0.5\text{cm}$

The area of a trapezium is given by:  $A= \frac{1}{2}(a+b)h$ ;  $a$  and  $b$  are the parallel sides,  $h$  is the height

You could...Find the area of the following trapezium (dimensions are in cm unless otherwise stated):

- a)  $a=3$   $b=6$   $h=2$       b)  $a=0.5$   $b=1.5$   $h=7$       c)  $a=0.25$   $b=17.75$   $h=62$   
d)  $a=14$   $b=0.5$   $h=2$       e)  $a=17$   $b=14$   $h=5$       f)  $a=4$   $b=0$   $h=6$

Physics: No calculator so show all working

The energy stored in a spring is given by  $E= \frac{1}{2} k x^2$  where  $x$  is the extension

Find the energy in the following springs

- a)  $k=6$   $x=4$       b)  $k=2$   $x=15$       c)  $k=14$   $x=15$       d)  $k=0.5$   $x=1$   
e)  $k=0.5$   $x=0.5$       f)  $k=0.1$   $x=7$       g)  $k=7$   $x=0.1$       h)  $k=0.2$   $x=0.1$

Extension: Calculator allowed, but show all steps and calculations

To find the hypotenuse of a right-angled triangle you do:  $h = \sqrt{a^2 + b^2}$

Find the hypotenuse for the following:

a)  $a=3$   $b=4$

b)  $a=5$   $b=12$

c)  $a=4$   $b=5$

d)  $a=11$   $b=3$

To find the area of a circle you do:  $A = \pi r^2$ ;  $r$ =the radius of the circle

Find the area for the following:

a)  $r=6$

b)  $r=2$

c)  $r=100$

d)  $r=25$

To find the radius of a circle, given the area, you do:  $r = \sqrt{\frac{A}{\pi}}$  ;  $A$ =the area

Find the radius for the following:

a)  $A=45$

b)  $A=70$

c)  $A=32$

d)  $A=300$