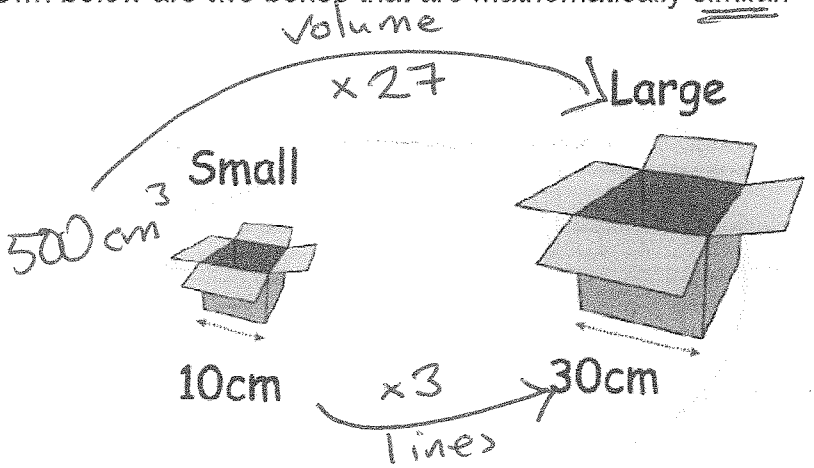
M8 =17 days to go!

Keyword

7. Shown below are two boxes that are mathematically similar.



The volume of the small box is 500cm³
Work out the volume of the larger box.

Lines SF = ×3
Area SF = $\times 3^2$
Volume SF = $\times 3^3 = \times 27$

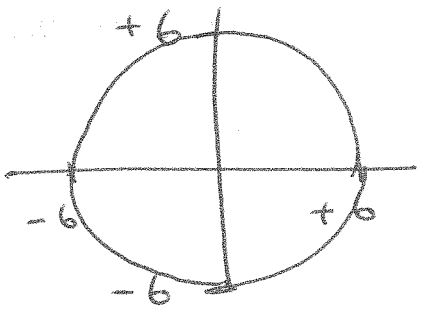
Hint
Look at units

.....cm³
(2)

2. A circle has centre (0, 0) and radius 6.

(a) Write down the equation of the circle.

$x^2 + y^2 = 6^2$



.....
(2)

(b) Does the point (–3 , 5) lie on the circle?

Put into $x^2 + y^2$

$(-3)^2 + 5^2$

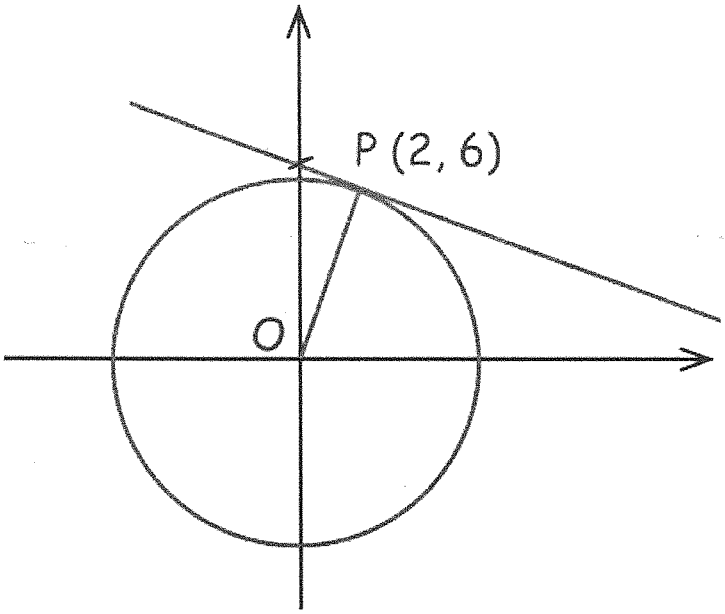
$9 + 25$

34

No inside the circle.

.....
(2)

2. The diagram shows the circle $x^2 + y^2 = 40$ with a tangent at the point (2, 6)



(a) Find the gradient of the line OP.

$m = \frac{\text{rise}}{\text{run}} = 3$

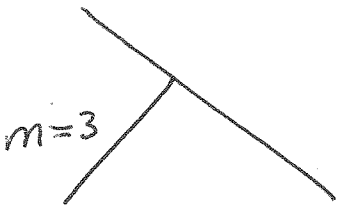
positive gradient

$m = 3$

.....

(1)

(b) Find the gradient of the tangent



Gradients $3 \times -\frac{1}{3} = -1$

Gradient = $-\frac{1}{3}$

.....

(1)

(c) Find the equation of the tangent

$y = mx + c$

$y = (-\frac{1}{3})x + c$

Put into this the point (2,6)

$6 = (-\frac{1}{3})(2) + c$

$6 = -\frac{2}{3} + c$

$6\frac{2}{3} = c$

$y = (-\frac{1}{3})x + 6\frac{2}{3}$

Does this look correct?

.....

(2)