

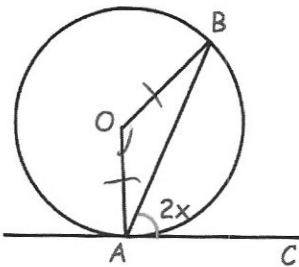


There are 12 students in Class A and 15 students in Class B. Class A and Class B sat a test.

The mean score for the 12 students in Class A was 30  $30 \times 12 = 360$   
The mean score for all 27 students was  $y$  total score =  $27y$

Find an expression in terms of  $y$  for the mean score for the students in Class B.

$$\frac{27y - 360}{15}$$



A and B are points on the circumference of a circle, centre O. CA is a tangent to the circle. Angle CAB =  $2x$

Prove that angle AOB =  $4x$

Give reasons for each stage of your working.

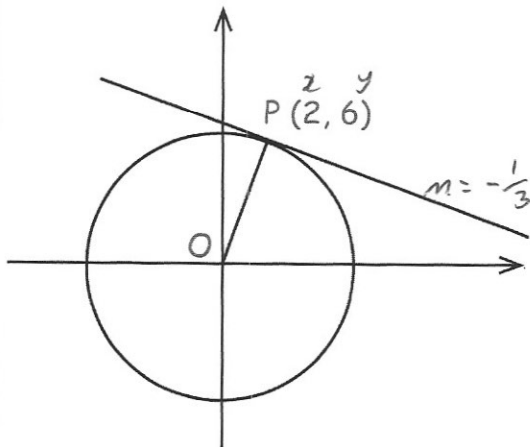
$$\angle OAC = 90 \text{ (tangent/radius meet at } 90^\circ)$$

$$\angle OAB = 90 - 2x \text{ as } \angle OAC \text{ is a right angle.}$$

$$\angle OBA = 90 - 2x \text{ as } \triangle OAB \text{ is isosceles}$$

$\therefore$

$$\angle AOB = 4x \text{ as the angles in a triangle add to } 180^\circ.$$



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

Find the area of the circle

$$\text{radius is } \sqrt{40}$$

$$\pi \times (\sqrt{40})^2 = 40\pi$$

Find the equation of the tangent

$$\text{gradient of } OP = 3$$

$$\text{tangent gradient} = -\frac{1}{3}$$

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

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

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

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