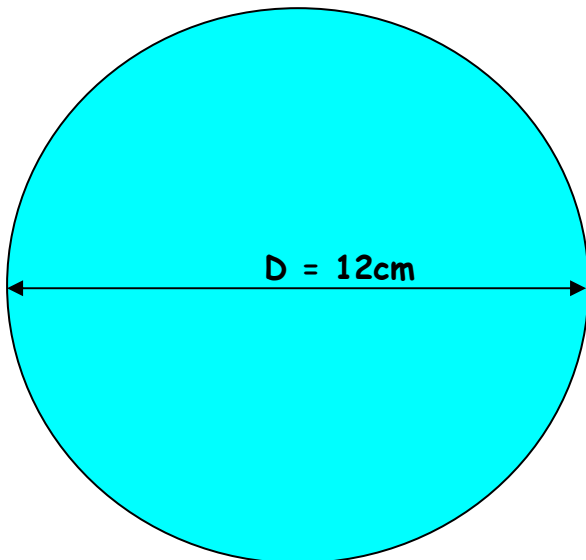## Circle

You should be able to: Find the circumference of a circle.
Find the area of a circle.
Know that a tangent to a circle meets at a right angle

Example 1: Find the circumference of the following circle.

D = 12cm

$C = \pi D$
$C = \pi \times 12$
$C = 37.7\text{cm}$

You must remember the above formula when finding the circumference of a circle. D stands for the diameter. If you are told the radius and asked to find the circumference, remember to double it so that you are working with the diameter.
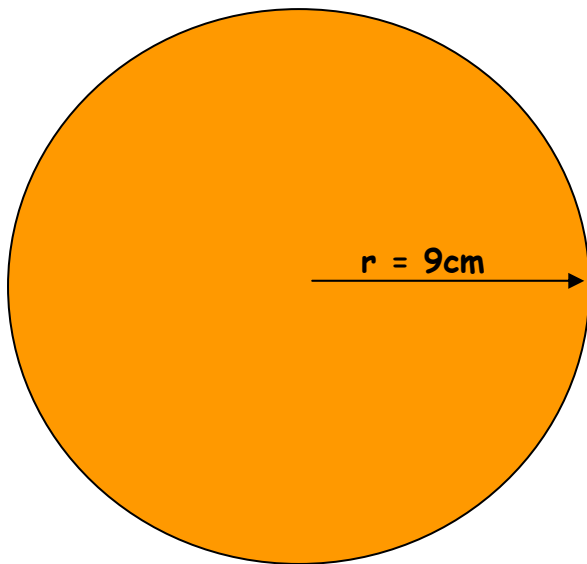
Example 2: Find the diameter of the following circle.

C = 42m
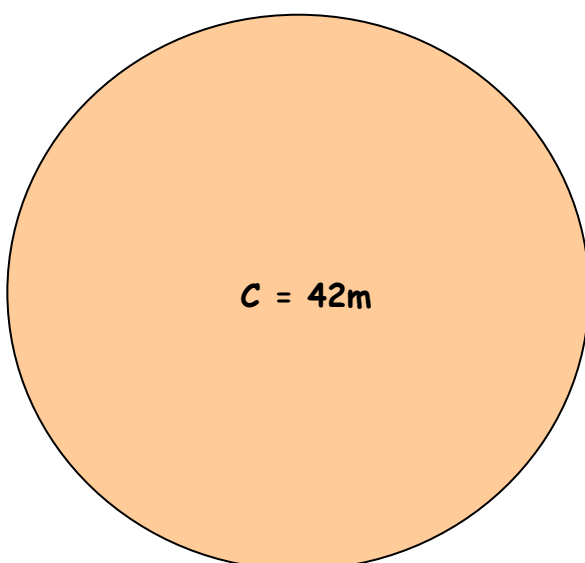
$D = \dfrac{C}{\pi}$
$D = \dfrac{42}{\pi}$
$C = 13.4\text{m}$

Here we are using the same formula, turned round so that we can now work out the diameter when we know the circumference. Remember if you are being asked to find the radius when you know the circumference, just half your answer once you have found the diameter.

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$A = \pi r^2$
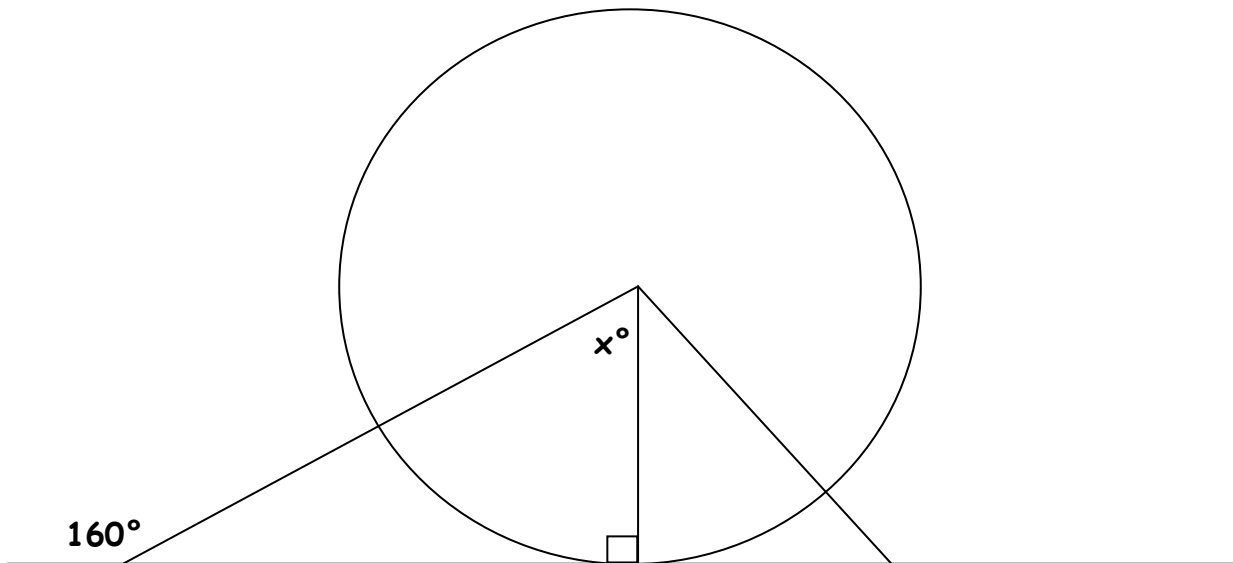
$A = \pi \times 9^2$

$A = \pi \times 81$

$A = 254.47\,cm^2$

To find the area of a circle, we must know what the radius is. This formula should be memorised. Don't forget to give your units in cm² or m² etc.
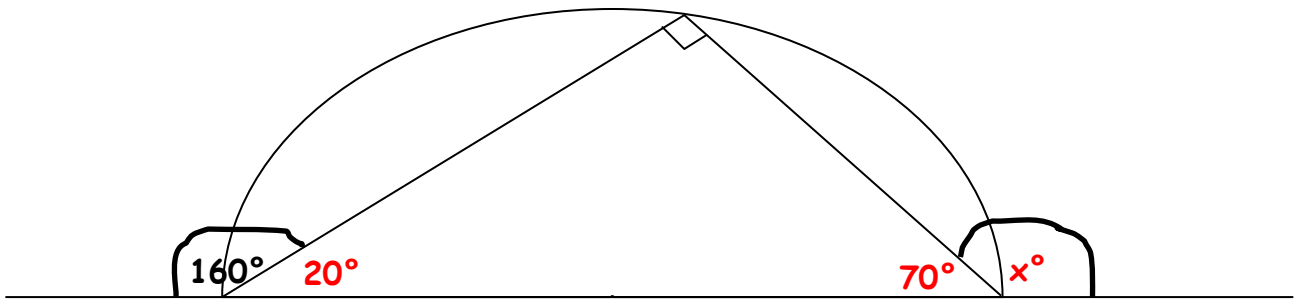
Example 4: Find the missing angle marked x

160°

The tangent to the circle cuts the circle at one point and is a right angle to the radius (marked in green). This creates the possibility of being able to use Pythagoras and Trigonometry to find various items around the circle.

Since we know that there are 180° in a straight angle, the angle beside 160° is 20°. Therefore since there are 180° in a triangle, and we know 20° + 90°(because of the right angle), x must equal 70°

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160° 20°   70° x°

In a semi-circle, you should know that two lines meet at a right angle. This again creates a right angled triangle. You should therefore use your knowledge of angles to find the missing angle.

Here, the missing angle is 110°. We can get this from only knowing the 160° angle and using our knowledge of angles.

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