GCSE 7+ Session 6
Independent Practice
Angles and Circles

KING'S MATHS SCHOOL

Revise, refresh, recall *the core knowledge and skills:*

1 Copy and complete this table, filling in the empty cells.

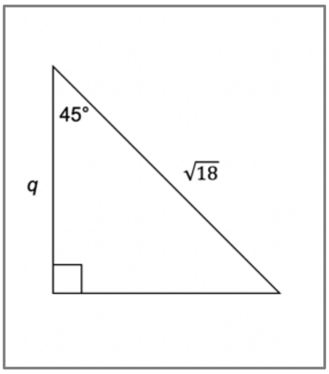
Name of **regular** polygon	Number of sides	Size of **each** exterior angle	Size of **each** interior angle
Pentagon	5		
Hexagon			
			135°
		36°	
Dodecagon	12		
24-gon	24		165°
30-gon	30		
			176°
			179°

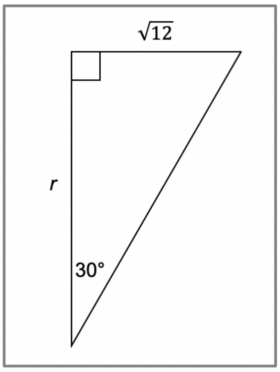
Agree or challenge:

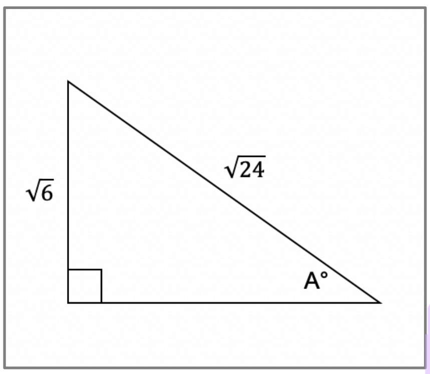
a) the size of each interior angle of a regular polygon is directly proportional to the number of sides of the polygon

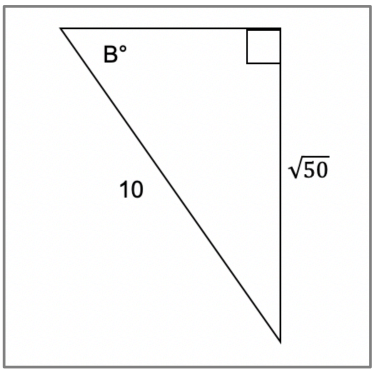
b) the size of each exterior angle of a regular polygon is inversely proportional to the number of sides of the polygon

2 Work out the unknown sides or angles in these right-angled triangles:



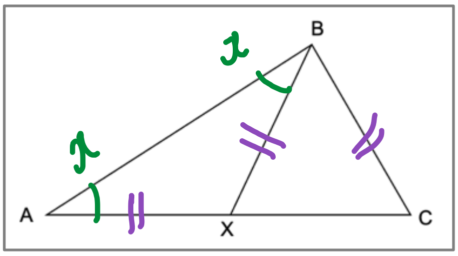






3 AX = BX = BC.

Prove that angle BCX is twice angle ABX.



When $A\hat{B}X = x$

$\Rightarrow X\hat{A}B = x$ (isosceles Δ)

$\Rightarrow A\hat{X}B = 180 - 2x$

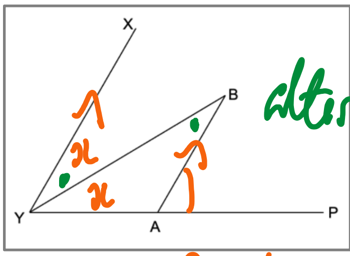
$\Rightarrow B\hat{X}C = 2x$

$\Rightarrow B\hat{C}X = 2x$ (isosceles Δ)

$\Rightarrow B\hat{C}X$ is twice $A\hat{B}X$ □

4 XY is parallel to BA. YB bisects angle XYP.

Prove that AY = AB.



$X\hat{Y}B = B\hat{Y}A$ (YB is bisector)

Let $X\hat{Y}B = x$

$\Rightarrow Y\hat{B}A = x$ (alternate angle with $X\hat{Y}B$)

$\Rightarrow B\hat{Y}A = Y\hat{B}A$

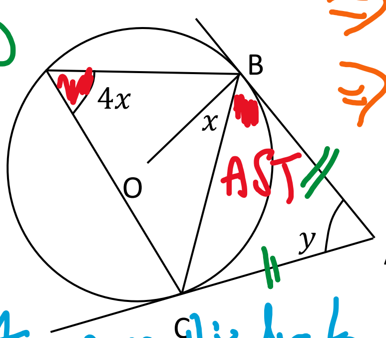
$\Rightarrow$ isosceles △

$\Rightarrow AY = AB$ □

5 Work out x and y.

O is the centre of the circle.

AB and AC are tangents.



$A\hat{B}C = 90 - x$ (tangent perpendicular to radius)

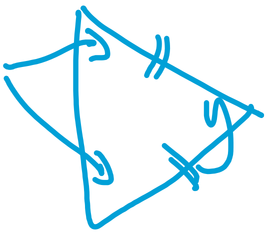
$A\hat{B}C$ also $= 4x$ (Alternate segment theorem)

$\Rightarrow 90 - x = 4x$

$\Rightarrow 90 = 5x$

$\Rightarrow x = 18°$

$4x = 72°$



$y = 180° - 72° - 72° = 36°$