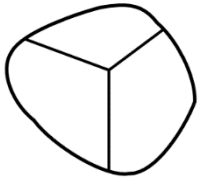
a)
Three **regular** polygons meet at a point.

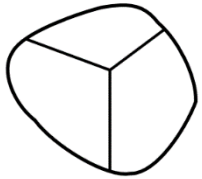
Two of the polygons are pentagons.
Find the number of sides of the third polygon.



What are the sizes of the known angles?	[Exterior angle sum of any polygon = 360°] Exterior angle $= \frac{360°}{5} = 72°$ [Interior + Exterior = 180°] Interior angle $= 180° - 72° = 108°$
What is the size of the unknown angle?	$108° + 108° = 216°$ $360° - 216° = 144°$
What is the size of the exterior angle of the regular polygon?	$180° - 144° = 36°$
How many sides has the polygon with this interior angle?	$\frac{360°}{36°} = 10$ The third polygon has 10 sides.

b)
Three **regular** polygons meet at a point.

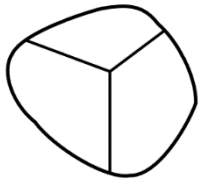
Two of the polygons are a pentagon and a decagon.
Find the number of sides of the third polygon.



What are the sizes of the known angles?	[Exterior angle sum of any polygon = 360°] Exterior angle (1) $= \frac{360°}{5} = 72°$ Exterior angle (2) $= \frac{360°}{10} = 36°$ [Interior + Exterior = 180°] Interior angle (1) $= 180° - 72° = 108°$ Interior angle (2) $= 180° - 36° = 144°$
What is the size of the unknown angle?	$108° + 144° = 252°$ $360° - 252° = 108°$
What is the size of the exterior angle of the regular polygon?	
How many sides has the polygon with this interior angle?	

c)
Three **regular** polygons meet at a point.

Two of the polygons are a square and a hexagon.
Find the number of sides of the third polygon.



What are the sizes of the known angles?	[Exterior angle sum of any polygon = 360°] Exterior angle (1) $= \frac{360°}{4} = 90°$ Exterior angle (2) $= \frac{360°}{6} = 60°$ [Interior + Exterior = 180°] Interior angle (1) $= 180° - 90° = 90°$ Interior angle (2) $= 180° - 60° = 120°$
What is the size of the unknown angle?	
What is the size of the exterior angle of the regular polygon?	
How many sides has the polygon with this interior angle?	

d)
Three **regular** polygons meet at a point.

Two of the polygons are dodecagons.
Find the number of sides of the third polygon.