Interior and Exterior Angles - Worksheet

Skill

Group A - Finding the interior and exterior angles of regular polygons

Work out the size of one exterior and one interior angle of the following:

1) A regular 6 sided polygon **2)** A regular 36 sided polygon **3)** A regular 9 sided polygon

4) A regular 18 sided polygon **5)** A regular 12 sided polygon **6)** A regular 30 sided polygon

7) A regular 5 sided polygon **8)** A regular 20 sided polygon **9)** A regular 10 sided polygon

10) A regular 8 sided polygon **11)** A regular 15 sided polygon **12)** A regular 40 sided polygon

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Group B - Using the exterior angle to identify a polygon

The exterior angle of a regular polygon is given below. Find the number of sides:

1) 90° **2)** 36° **3)** 72°

4) 40° **5)** 120° **6)** 60°

7) 30° **8)** 45° **9)** 5°

10) 10° **11)** 6° **12)** 20°

Group C - Using the interior angle to identify a polygon

The interior angle of a regular polygon is given below. Find the number of sides:

1) 60° **2)** 120° **3)** 144°

4) 150° **5)** 108° **6)** 140°

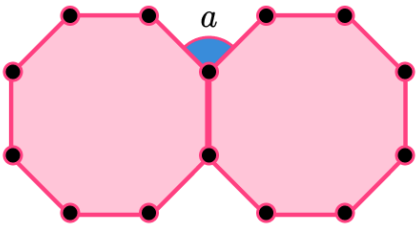
7) 90° **8)** 135° **9)** 160°

10) 165° **11)** 156° **12)** 162°

Interior and Exterior Angles - Worksheet

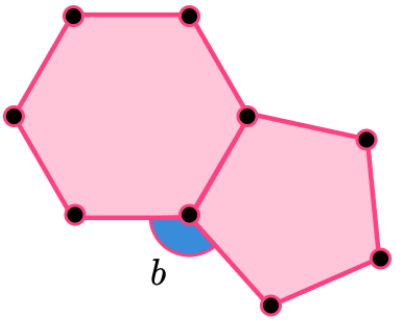
Applied

1) Two regular polygons are shown.



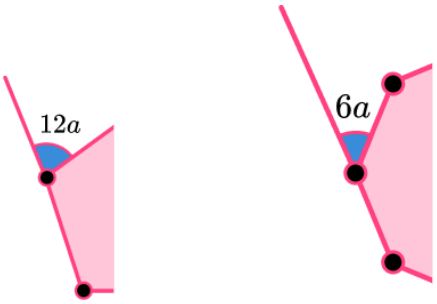
Calculate the labelled angle.

2) Two regular polygons are shown



Calculate the labelled angle.

3) The diagram shows parts of two regular polygons A and B.



A has 5 sides and exterior angle $12a$.
B has exterior angle $6a$.

Work out the number of sides polygon B has.

Interior and Exterior Angles - Exam Questions

1) **(a)** The exterior angle of a regular polygon is 30°.
Work out the number of sides of the polygon.

.....

(2)

(b) Calculate the interior angle of the polygon.

.....

(2)

(4 marks)

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2) The size of each interior angle of a regular polygon is 156°.
Work out the number of sides of the polygon.

.....

(3 marks)

Interior and Exterior Angles - Answers

3) The diagram shows a regular hexagon and a regular octagon.

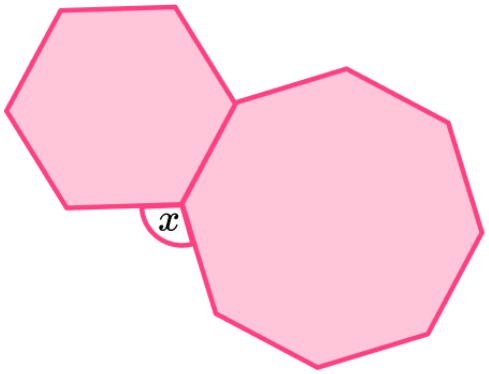


*Diagram **NOT** accurately drawn*

Calculate the size of the angle marked x.
You must show all your working.

.....

(4 marks)

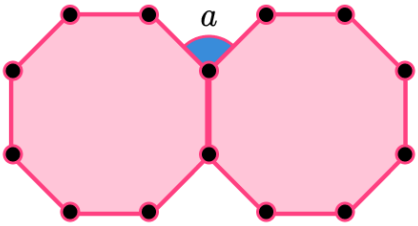
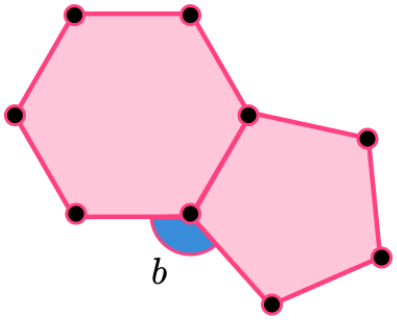
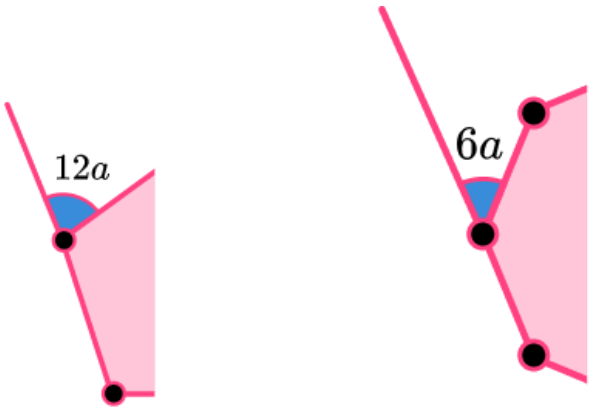
Interior and Exterior Angles - Answers

	Question	Answer
	Skill Questions	
Group A	Work out the size of one exterior and one interior angle of the following: **1)** A regular 6 sided polygon **2)** A regular 36 sided polygon **3)** A regular 9 sided polygon **4)** A regular 18 sided polygon **5)** A regular 12 sided polygon **6)** A regular 30 sided polygon **7)** A regular 5 sided polygon **8)** A regular 20 sided polygon **9)** A regular 10 sided polygon **10)** A regular 8 sided polygon **11)** A regular 15 sided polygon **12)** A regular 40 sided polygon	(Exterior angle, interior angle) **1)** 60°, 120° **2)** 10°, 170° **3)** 40°, 140° **4)** 20°, 160° **5)** 30°, 150° **6)** 12°, 168° **7)** 72°, 108° **8)** 18°, 162° **9)** 36°, 144° **10)** 45°, 135° **11)** 24°, 156° **12)** 9°, 171°
Group B	The exterior angle of a regular polygon is given below. Find the number of sides: **1)** 90° **2)** 36° **3)** 72° **4)** 40° **5)** 120° **6)** 60° **7)** 30° **8)** 45°	**1)** 4 sides **2)** 10 sides **3)** 5 sides **4)** 9 sides **5)** 3 sides **6)** 6 sides **7)** 12 sides **8)** 8 sides

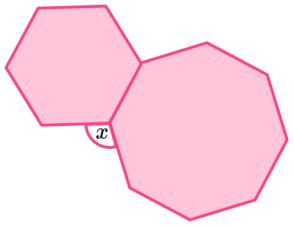
Interior and Exterior Angles - Answers

Group B contd	**9)** 5° **10)** 10° **11)** 6° **12)** 20°	**9)** 72 sides **10)** 36 sides **11)** 60 sides **12)** 18 sides
Group C	The interior angle of a regular polygon is given below. Find the number of sides: **1)** 60° **2)** 120° **3)** 144° **4)** 150° **5)** 108° **6)** 140° **7)** 90° **8)** 135° **9)** 160° **10)** 165° **11)** 156° **12)** 162°	 **1)** 3 sides **2)** 6 sides **3)** 10 sides **4)** 12 sides **5)** 5 sides **6)** 9 sides **7)** 4 sides **8)** 8 sides **9)** 18 sides **10) 24** sides **11)** 15 sides **12)** 20 sides

Interior and Exterior Angles - Answers

	Question	Answer
	Applied Questions	
1)	Two regular polygons are shown.  Calculate the labelled angle.	$90°$
2)	Two regular polygons are shown  Calculate the labelled angle.	$132°$
3)	The diagram shows parts of two regular polygons A and B.  A has 5 sides and exterior angle $12a$. B has exterior angle $6a$. Work out the number of sides polygon B has.	10 sides

Interior and Exterior Angles - Mark Scheme

	Question	Answer	
	Exam Questions		
1) (a)	The exterior angle of a regular polygon is 30°. Work out the number of sides of the polygon.	(a) $360 \div 30$ 12 sides	(1) (1)
(b)	Calculate the interior angle of the polygon.	(b) $180 - 30$ 150°	(1) (1)
2)	The size of each interior angle of a regular polygon is 156°. Work out the number of sides of the polygon.	$180 - 156 (= 24)$ $360 \div 24 (= 15)$ 15 sides	(1) (1) (1)
3)	The diagram shows a regular hexagon and a regular octagon.  Diagram NOT accurately drawn Calculate the size of the angle marked x. You must show all your working.	$360 \div 6 (= 60)$ $360 \div 8 (= 45)$ $60 + 45$ 105°	(1) (1) (1) (1)