Test - Angles in polygons

Year: Year 9 · Duration: 45 minutes · /20

Name:	Date:	**Mark: /20**

Question	1	2	3	4	5	Total
marks	4	4	4	4	4	**20**
Mark						

Show your working.

Question 1 (4 marks)

Question 1 – Interior and exterior angles

Answer each part and show your working.

a. Find the sum of the interior angles of a hexagon. (1 mark)
b. Find each interior angle and each exterior angle of a regular octagon. (2 marks)
c. A regular polygon has exterior angles of 24°. How many sides does it have? (1 mark)

Question 2 (4 marks)

Question 2 – Missing angles

A pentagon has angles 120°, 100°, 110°, x and x.

a. Write down the sum of the interior angles of a pentagon. (1 mark)
b. Write an equation for x. (1 mark)
c. Solve it to find x. (2 marks)

Question 3 (4 marks)

Question 3 – Tiling patterns

Priya is designing a floor pattern with regular polygons.

a. Show that regular hexagons fit together at a point with no gaps. (2 marks)
b. Explain why regular decagons cannot be used alone to tile a floor. (2 marks)

Question 4 (4 marks)

Question 4 – Problem: the robot path

A robot moves forward 1.5 m and then turns left through 36°. It repeats this until it is back at its start.

a. How many times does it repeat the command? (1 mark)
b. What is the interior angle of the shape it traces? (1 mark)
c. Find the total distance travelled. (1 mark)
d. The program is changed to a turn of 45°. What shape is traced now? (1 mark)

Question 5 (4 marks)

Question 5 – Problem: is it possible?

Jake says: "I have drawn a regular polygon with an interior angle of 130°."

a. Work out the exterior angle of his polygon. (1 mark)
b. Show that Jake cannot be correct. (2 marks)
c. A regular polygon has an interior angle of 135°. How many sides does it have? (1 mark)