

GCSE Maths: Interior and exterior angles of polygons (Foundation): worksheet

GCSE Maths - Angles, Polygons and Symmetry - Foundation - Lesson 17.6

Name: _____

Date: _____

Score: _____

22 questions. Write your answers in the spaces. Answers and step-by-step help are free at websink.site/gcse/maths/ch17-angles-polygons-symmetry/foundation/interior-and-exterior-angles-of-polygons/

Exercise 17G Angles in polygons: sums and missing angles

Non-calculator

1 Work out the sum of the interior angles of each polygon.

(a) a pentagon

Answer: _____

(b) a hexagon

Answer: _____

(c) a octagon

Answer: _____

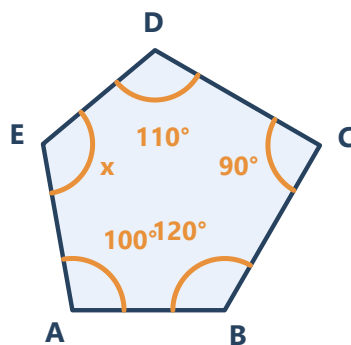
(d) a decagon

Answer: _____

(e) a dodecagon

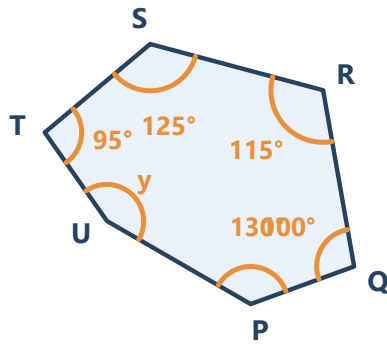
Answer: _____

2 The diagram shows a pentagon. Work out the size of angle x . Give a reason for your answer.



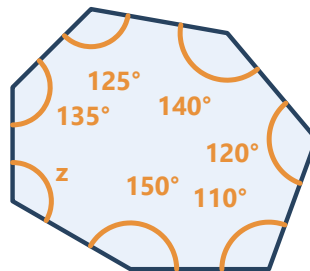
Answer: _____

3 The diagram shows a hexagon. Work out the size of angle y . Give a reason for your answer.



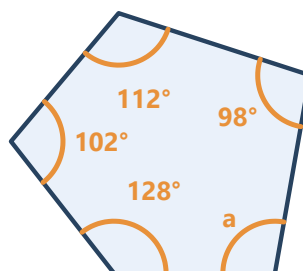
Answer:

- 4 The diagram shows a heptagon. Work out the size of angle z . Give a reason for your answer.



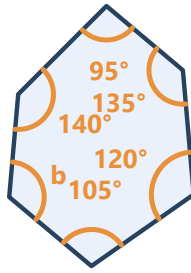
Answer:

- 5 The diagram shows a pentagon. Work out the size of angle a . Give a reason for your answer.



Answer:

- 6 The diagram shows a hexagon. Work out the size of angle b .



Answer:

- 7** The sum of the interior angles of a polygon is 1260° . How many sides does the polygon have?

Answer:

- 8** Work out the size of each interior angle of these regular polygons.

(a) a regular pentagon

Answer:

(b) a regular hexagon

Answer:

(c) a regular octagon

Answer:

(d) a regular decagon

Answer:

(e) a regular dodecagon

Answer:

- 9** Is it possible for the interior angles of a polygon to add up to 900° ? Give a reason. If so, how many sides does it have?

Answer:

- 10** A hexagon has five interior angles of 130° . Work out the sixth angle.

Answer:

- 11** Zoe says: "A hexagon has 6 sides, so the sum of its interior angles is $6 \times 180 = 1080^\circ$." Explain her mistake and give the correct answer.

Answer:

- 12** A polygon has 20 sides. Work out the sum of its interior angles.

Answer:

- 13** How many triangles can a decagon (10 sides) be split into from one corner? Hence work out the sum of its interior angles.

Answer:

Exercise 17H Regular polygons and exterior angles Non-calculator

1 Work out the size of each exterior angle of these regular polygons.

(a) a regular triangle

Answer:

(b) a regular quadrilateral

Answer:

(c) a regular pentagon

Answer:

(d) a regular hexagon

Answer:

(e) a regular octagon

Answer:

(f) a regular decagon

Answer:

2 Each exterior angle of a regular polygon is given. Work out the number of sides.

(a) 60°

Answer:

(b) 45°

Answer:

(c) 40°

Answer:

(d) 30°

Answer:

(e) 20°

Answer:

(f) 15°

Answer:

3 Work out the number of sides of a regular polygon with each interior angle given.

(a) 120°

Answer:

(b) 144°

Answer:

(c) 150°

Answer:

(d) 160°

Answer:

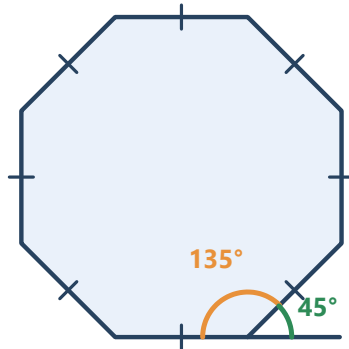
(e) 168°

Answer:

- 4** Work out the size of the interior angle of a regular polygon with 15 sides.

Answer:

- 5** A stop sign is a regular octagon. Work out (a) the size of each exterior angle (b) the size of each interior angle.



- (a)** each exterior angle

Answer:

- (b)** each interior angle

Answer:

- 6** Can a regular polygon have an exterior angle of 50° ? Give a reason.

Answer:

- 7** A regular pentagon and a regular hexagon are placed with one corner at a point so that they do not overlap. Work out the angle that is left to complete a full turn.

Answer:

- 8** Three regular polygons meet at a point so that there are no gaps: a square, a regular hexagon and a regular n -sided polygon. Work out n .

Answer:

- 9** Why can you tile a floor with regular hexagons but not with regular pentagons? (Tiles must meet at a point with no gaps and no overlaps.)

Answer: