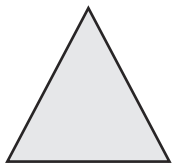

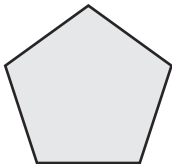
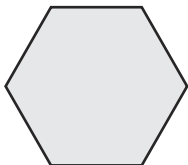
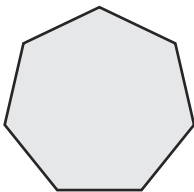
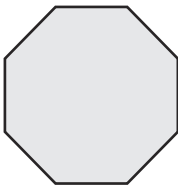
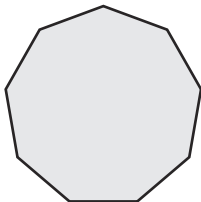
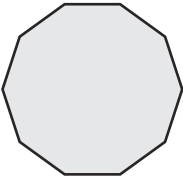


Your turn

1. Complete the table. The first one has been completed for you.

Note: each polygon is regular.

Polygon	Sum of Interior Angles	Interior Angle	Exterior Angle
 Triangle	$(n - 2) \times 180^\circ$ $(3 - 2) \times 180$ 180°	$180 \div 3$ 60°	$360 \div 3$ 120°
 Rectangle	$(n - 2) \times 180^\circ$ $(4 - 2) \times 180$ 360°	$360 \div 4$ or $180 - 90$ 90°	$360 \div 4$ 90°
 Pentagon	$(n - 2) \times 180^\circ$ $(5 - 2) \times 180$ 540°	$540 \div 5$ or $180 - 72$ 108°	$360 \div 5$ 72°
 Hexagon	$(n - 2) \times 180^\circ$ $(6 - 2) \times 180$ 720°	$720 \div 6$ or $180 - 60$ 120°	$360 \div 6$ 60°
 Heptagon	$(n - 2) \times 180^\circ$ $(7 - 2) \times 180$ 900°	$900 \div 7$ or $180 - 51.4$ 128.571428 128.6°	$360 \div 7$ 51.428571 51.4°
 Octagon	$(n - 2) \times 180^\circ$ $(8 - 2) \times 180$ 1080°	$1080 \div 8$ or $180 - 45$ 135°	$360 \div 8$ 45°
 Nonagon	$(n - 2) \times 180^\circ$ $(9 - 2) \times 180$ 1260°	$1260 \div 9$ or $180 - 40$ 140°	$360 \div 9$ 40°

 Decagon	$(n - 2) \times 180^\circ$ $(10 - 2) \times 180$ 1440°	$1440 \div 10$ or $180 - 36$ 144°	$360 \div 10$ 36°
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2. Work out the sum of the interior angles for a polygon with:

a. 20 sides

$$(20 - 2) \times 180$$

$$\mathbf{3240^\circ}$$

b. 45 sides

$$(45 - 2) \times 180$$

$$\mathbf{7740^\circ}$$

c. 100 sides

$$(100 - 2) \times 180$$

$$\mathbf{17\ 640^\circ}$$

3. The interior angles of a polygon add up to 2880° . Work out the number of sides the polygon has.

$$\mathbf{2880 \div 180 = 16}$$

$$\mathbf{16 + 2 = 18\ sides}$$

4. The interior angles of a polygon add up to 1980° . Work out the number of sides the polygon has.

$$\mathbf{1980 \div 180 = 11}$$

$$\mathbf{11 + 2 = 13\ sides}$$

5. The interior angles of a polygon add up to 3060° . Work out the number of sides the polygon has.

$$\mathbf{3060 \div 180 = 17}$$

$$\mathbf{17 + 2 = 19\ sides}$$

6. Calculate the size of each exterior angle in a regular polygon which has:

a. 6 sides

$$360 \div 6 = 60^\circ$$

b. 10 sides

$$360 \div 10 = 36^\circ$$

c. 15 sides

$$360 \div 15 = 24^\circ$$

d. 20 sides

$$360 \div 20 = 18^\circ$$

e. 50 sides

$$360 \div 50 = 7.2^\circ$$

7. A polygon has an exterior angle of 36° . Calculate the number of sides to the polygon.

$$360 \div 36 = 10 \text{ sides}$$

8. A polygon has an interior angle of 175° . Calculate the number of sides to the polygon.

$$180 - 175 = 5^\circ$$

$$360 \div 5 = 72 \text{ sides}$$

Challenge

A polygon has an interior angle that is five times larger than its exterior angle. How many sides does the polygon have?

$$x + 5x = 180$$

$$6x = 180$$

$$x = 30$$

$$360 \div 30 = 12 \text{ sides}$$