Name:

Exam Style Questions

Angles - Polygons

Corbettmaths

Ensure you have: Pencil, pen, ruler, protractor, pair of compasses and eraser

You may use tracing paper if needed

Guidance

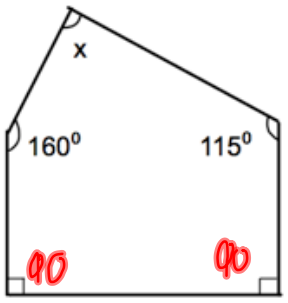
1. Read each question carefully before you begin answering it.
2. Don't spend too long on one question.
3. Attempt every question.
4. Check your answers seem right.
5. Always show your workings

Revision for this topic

www.corbettmaths.com/contents

Video 32

1.



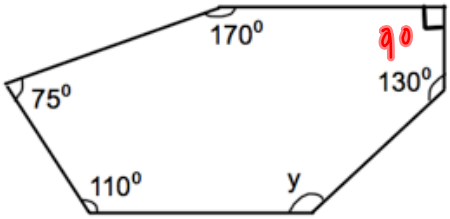
(a) Calculate the size of angle x.

160
115
90
+ 90
455

540
- 455
85

x = 85 °

(2)



(b) Calculate the size of angle y.

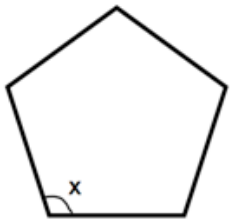
170
110
130
75
90
575

720
- 575
145

y = 145 °

(2)

2. Shown below is a regular pentagon.

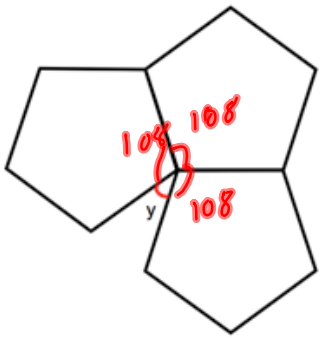


(a) Find the size of each interior angle.

$540 \div 5 = 108$

x = 108 °

(2)



Three identical regular pentagons are joined as shown above.

$$\begin{array}{r} 108 \\ 108 \\ +\ 108 \\ \hline 324 \end{array}$$

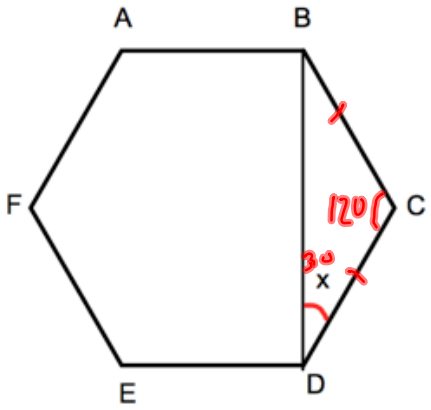
(b) Work out the size of angle y.

$$\begin{array}{r} 360 \\ -\ 324 \\ \hline 36 \end{array}$$

y = 36 °

(2)

3. Shown below is a regular hexagon ABCDEF.



Calculate angle x.

720 ÷ 6 = 120

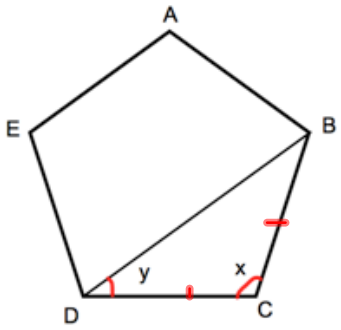
180 − 120 = 60

60 ÷ 2 = 30

x = 30 °

(3)

4. Shown below is a regular pentagon ABCDE.



(a) Work out angle x.

540 ÷ 5 = 108

x = 108 °

(2)

(b) Work out angle y.

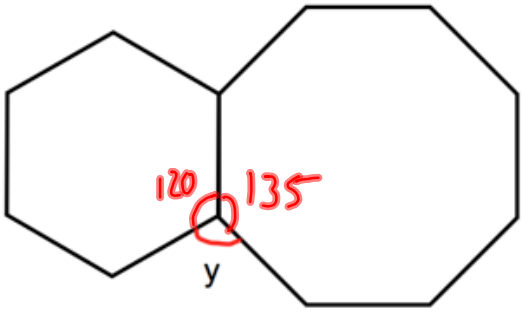
180 - 108 = 72

72 ÷ 2 = 36

y = 36 °

(2)

5. Shown is a regular hexagon and a regular octagon.



Calculate the size of angle y.

$720 \div 6 = 120$

$1080 \div 8 = 135$

$120 + 135 = 255$

$360 - 255 = 105$

y = 105 °

(3)

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6. A regular polygon has 12 sides.

Work out the size of each interior angle.

exterior angle : $360 \div 12 = 30°$

interia angle: $180 - 30 = 150$

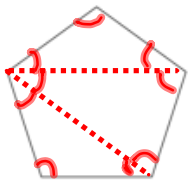
or $(12 - 2) \times 180 = 1800$

$1800 \div 12 = 150$

150 °

(2)

7.



Explain why the sum of the interior angles in a regular pentagon is 540°.

The sum of the angles in each triangle is 180°. There are three triangles that form the pentagon, so 3 x 180 = 540°

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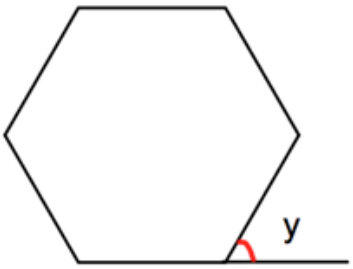
(2)

8. Shown below is a regular hexagon, with an exterior angle labeled y.



Work out the size of each exterior angle.

360 ÷ 6 = 60°

y = 60 °

(2)

9. A regular polygon has 24 sides.

Work out the size of each exterior angle.

$360 \div 24 = 15°$

15 °

(2)

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10. Each exterior angle of a regular polygon is 20°.

Work out the number of sides of the polygon.

$360 \div 20 = 18$ sides

18 sides

(2)

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11. Each interior angle of a regular polygon is 174°.

Work out the number of sides of the polygon.

$180 - 174 = 6$

$360 \div 6 = 60$ sides

60 sides.

(2)

12. The interior angle of a regular polygon is 135°

Work out the number of sides of the polygon.

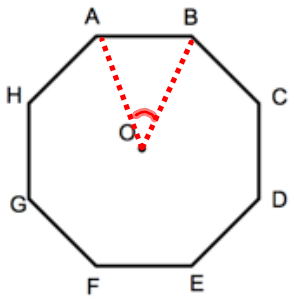
$180 - 135 = 45°$

$360 \div 45 = 8$ sides

8

(2)

13. ABCDEFGH is a regular octagon.



(a) Calculate the size of angle AOB.

$360 \div 8 = 45$

45 °

(2)

(b) Calculate the size of angle ABC.

$1080 \div 8 = 135°$

135 °

(2)

14. Martin has drawn a regular nonagon (9 sided polygon).

(a) What size is each exterior angle?

$360 \div 9 = 40^\circ$

40 .....°

(2)

(b) What size is each interior angle?

$180 - 40 = 140^\circ$

140 .....°

(2)

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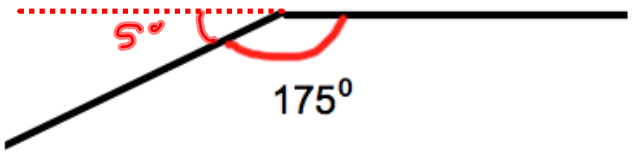
15. Shown below is an interior angle from a regular polygon.



Calculate the number of sides the polygon has.

$360 \div 5 = 72$

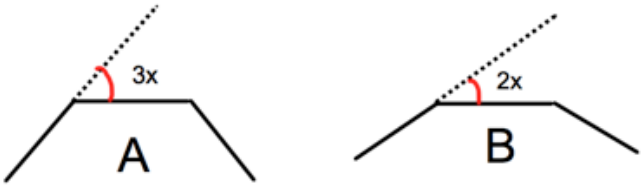
72 sides

(2)

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

A has 10 sides and exterior angle 3x.
B has exterior angle 2x.

Not to scale



Work out the number of sides regular polygon B has.

$360 \div 10 = 36°$

$3x = 36$

$x = 12°$

$2 \times 12 = 24$

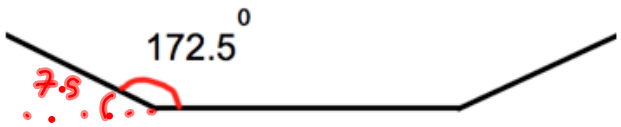
$360 \div 24 = 15$ sides

15

.....

(5)

17. The diagram below shows part of a regular polygon.



(a) Calculate the size of each exterior angle.

7.5 °

(1)

(b) Calculate the number of sides the polygon has.

360 ÷ 7.5

48 sides

(2)

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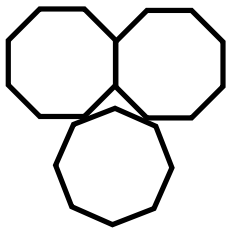
18. Explain why a regular octagon will **not** tessellate.

Since 360 is not divisible by 135 (the size of each angle) it is not possible for octagons to "fit together" without a gap.



(3)

19. Work out the sum of the interior angles for a 40 sided polygon.

$(40-2)\times 180$

$= 38 \times 180 =$

6840 °

(2)

20. The sum of the interior angles in a polygon is 7380°.

Calculate the number of sides the polygon has.

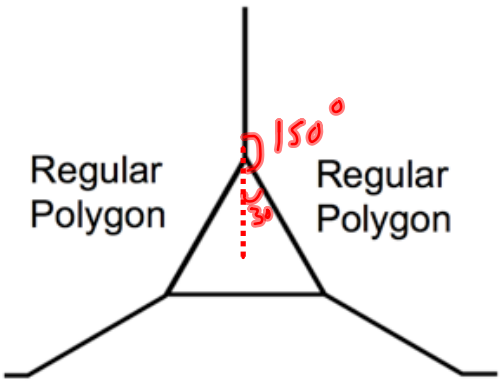
$7380 \div 180 = 41$

$41 + 2 = 43$

43 sides

(2)

21. Shown below are two identical regular polygons and an equilateral triangle.



Calculate the number of sides each regular polygon has.

Interior angle $= 150°$

exterior angle $= 30°$

$360 \div 30$

12 sides

(3)

22. A regular polygon has interior angles that are 5 times larger than each of its exterior angles.

Calculate how many sides it has.

interior + exterior = 180

$5x + x = 180$

$6x = 180$

$x = 30$

$360 \div 30 = 12$

12 sides

.....

(3)