Year 9 Angles and Pythagoras – Developing

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Answers and worked solutions · 10 questions

A. Use angle facts and Pythagoras

1. 15 sides

The exterior angles add up to 360°

n = 360 ÷ 24 = 15

2. x = 63°

Angle sum: (6 – 2) × 180 = 720°; known angles 128 + 99 + 150 + 132 + 148 = 657°

x = 720 – 657 = 63°

3. x = 64°

At the upper crossing, the angle in the same position as x is 64° (angles on a straight line add up to 180°)

Corresponding angles are equal, so x = 64°

4. x = 60°

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5. B = 63°, D = 107°

AB is parallel to DC, so co-interior angles add up to 180°

D = 180 – 73 = 107° (with A)

B = 180 – 117 = 63° (with C)

6. angle BAC = 55°

AB = BC (all sides of a rhombus are equal), so triangle ABC is isosceles

Base angles BAC and BCA are equal

BAC = (180 – 70) ÷ 2 = 55°

7. 5.8 units

Across 5, up/down 3: $d^2 = 5^2 + 3^2 = 34$

d = 5.8

8. 72° at the centre; interior angle 108°

The 5 angles at the centre are equal: 360 ÷ 5 = 72°

Each exterior angle is also 72°

Interior angle = 180 – 72 = 108°

9. x = 14.3 cm

Shorter side: $x^2 = 20^2 – 14^2 = 400 – 196 = 204$

x = √204 = 14.3 (1 d.p.) cm

10. 841 is the square of the hypotenuse; take the square root: √841 = 29 cm.

Error: forgot the square root

$c^2 = 841$

c = √841 = 29 cm