Geometry: 2D Shapes & Angles: Hard Practice Paper 2 Answers

Q#	Answer	Explanation
1	C	The angles lie on a straight line, so (x + 30°) + 2x + (x + 10°) = 180°. Collecting terms gives 4x + 40° = 180°, so 4x = 140° and x = 35°.
2	B	The angles of a triangle add up to 180°, so 2x + 3x + 4x = 180°. That gives 9x = 180° and x = 20°. The smallest angle is 2x = 2 × 20° = 40°.
3	D	The exterior angles of any polygon add up to 360°, so the number of sides is 360° ÷ 15° = 24.
4	A	Angles around a point add up to 360°, so 160° + 2x + 3x = 360°. That gives 5x = 200°, so x = 40°.
5	E	The two marked angles are alternate angles, so they are equal: 4x + 5° = 5x − 10°. Taking 4x from both sides gives 5° = x − 10°, so x = 15°.
6	D	An exterior angle equals the two opposite interior angles added together. They are equal, so each is 140° ÷ 2 = 70°.
7	C	Each exterior angle is 360° ÷ 18 = 20°. The interior angle sits next to it on a straight line, so it is 180° − 20° = 160°.
8	A	Using (n − 2) × 180° = 1620°, divide both sides by 180° to get n − 2 = 9, so n = 11.
9	B	The minute hand is at 4, which is 120° from the 12. The hour hand is a third of the way past 5, at 5 × 30° + 10° = 160°. The gap is 160° − 120° = 40°.
10	D	The ratio has 3 + 5 + 7 = 15 parts sharing 180°, so one part is 12°. The largest angle is 7 parts: 7 × 12° = 84°.
11	E	The two marked angles are vertically opposite, so they are equal: 3x + 15° = 5x − 25°. Adding 25° and taking 3x from both sides gives 40° = 2x, so x = 20°.

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12	B	Each angle at the centre is 360° ÷ 6 = 60°, and the two sides from the centre are equal, so the other two angles are equal as well. That makes all three angles 60°, so each triangle is equilateral.
13	D	The angle and its reflex angle together make a full turn, so the reflex angle is 360° − 78° = 282°.
14	C	The angles of a quadrilateral add up to 360°, so x + 2x + x + 2x = 360°. That gives 6x = 360°, so x = 60°.
15	D	The exterior angle would be 180° − 135° = 45°, and 360° ÷ 45° = 8 sides. An 8-sided regular polygon is an octagon.

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