Geometry: 2D Shapes & Angles: Hard Practice Paper 1 Answers

Q#	Answer	Explanation
1	A	The three angles lie on a straight line, so 2x + 3x + 4x = 180°. That gives 9x = 180°, so x = 20°.
2	C	The angles of a triangle add up to 180°, so x + 2x + 3x = 180°. That gives 6x = 180° and x = 30°. The largest angle is 3x = 3 × 30° = 90°.
3	D	Each exterior angle is 180° − 162° = 18°. Exterior angles always add up to 360°, so the number of sides is 360° ÷ 18° = 20.
4	E	Angles around a point add up to 360°, so (x + 10°) + 2x + (3x − 10°) = 360°. The +10° and −10° cancel, leaving 6x = 360°, so x = 60°.
5	B	The two marked angles are co-interior, so they add up to 180°. That gives 3x + 2x = 180°, so 5x = 180° and x = 36°.
6	D	An exterior angle equals the two interior angles it is not next to added together, so 55° + B = 130° and B = 75°. (Checking: angle C = 180° − 130° = 50°, and 55° + 75° + 50° = 180°.)
7	C	For a regular polygon the order of rotational symmetry, the number of lines of symmetry and the number of sides are all the same. Order 9 means 9 sides and 9 lines of symmetry.
8	E	Using (n − 2) × 180° = 2340°, divide both sides by 180° to get n − 2 = 13, so n = 15.
9	C	The minute hand is at 8, which is 240° round from the 12. The hour hand is two thirds of the way from 2 to 3, at 2 × 30° + 20° = 80°. The gap is 240° − 80° = 160°.
10	B	The ratio has 3 + 4 + 5 + 6 = 18 parts sharing 360°, so one part is 20°. The largest angle is 6 parts: 6 × 20° = 120°.
11	D	The two marked angles sit on a straight line, so 3x + (x + 40°) = 180°. That gives 4x = 140° and x = 35°. The larger angle is 3x = 3 × 35° = 105°.

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12	A	The 8 angles at the centre together make a full turn of 360°, so each one is 360° ÷ 8 = 45°.
13	B	The two angles together make one full turn, so the other angle is 360° − 250° = 110°.
14	D	The two squares are right angles of 90° each. The angles of a quadrilateral add up to 360°, so 2x + 90° + 90° + 4x = 360°. That leaves 6x = 180°, so x = 30°.
15	E	The exterior angle would be 180° − 108° = 72°, and 360° ÷ 72° = 5 sides. A 5-sided regular polygon is a pentagon.

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