Geometry: 2D Shapes & Angles: Hard Practice Paper 3 Answers

Q#	Answer	Explanation
1	C	The angles lie on a straight line, so (3x − 20°) + (2x + 10°) + (x + 40°) = 180°. Collecting terms gives 6x + 30° = 180°, so 6x = 150° and x = 25°.
2	A	The angles of a triangle add up to 180°, so x + (x + 30°) + 70° = 180°. That gives 2x + 100° = 180°, so 2x = 80° and x = 40°.
3	B	Each exterior angle is 180° − 144° = 36°, and the exterior angles add up to 360°. So the number of sides is 360° ÷ 36° = 10.
4	E	The square is a right angle of 90°. Angles around a point add up to 360°, so 90° + 2x + 4x + 30° = 360°. That leaves 6x = 240°, so x = 40°.
5	C	The two marked angles are corresponding angles, so they are equal: 2x + 20° = 3x − 10°. Taking 2x from both sides gives 20° = x − 10°, so x = 30°.
6	B	The two equal angles share 180° − 96° = 84° between them, so each one is 84° ÷ 2 = 42°.
7	D	The exterior angles always add up to 360°. With 20 equal ones, each is 360° ÷ 20 = 18°.
8	D	Using (n − 2) × 180° = 2160°, divide both sides by 180° to get n − 2 = 12, so n = 14.
9	A	The minute hand is at 2, which is 60° from the 12. The hour hand is a sixth of the way past 11, at 11 × 30° + 5° = 335°. Going the short way round, the gap is 360° − 335° + 60° = 85°.
10	B	The ratio has 2 + 3 + 4 + 6 = 15 parts sharing 360°, so one part is 24°. The smallest angle is 2 parts: 2 × 24° = 48°.
11	E	The two marked angles lie on a straight line, so 5x + x = 180°. That gives 6x = 180° and x = 30°. The larger angle is 5x = 5 × 30° = 150°.
12	D	A regular polygon has one line of symmetry for each side. A decagon has 10 sides, so it has 10 lines of symmetry.

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13	D	Angles around a point add up to 360°. Here 55° + 70° = 125°, so the reflex angle is 360° − 125° = 235°, which is indeed bigger than 180°.
14	A	The two squares are right angles of 90° each. The angles of a quadrilateral add up to 360°, so x + 90° + 90° + 2x = 360°. That leaves 3x = 180°, so x = 60°.
15	B	The exterior angles add up to 360°, so the number of sides is 360° ÷ 72° = 5. A 5-sided regular polygon is a pentagon.

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