Geometry: 2D Shapes & Angles: Hard Practice Paper 6 Answers

Q#	Answer	Explanation
1	B	The three angles lie on a straight line, so they add up to 180°. Taking off the 20° leaves 180 − 20 = 160 degrees for 5x and 3x together, which is 8x. So x is 160 ÷ 8 = 20.
2	D	The three angles add up to 180°, and together they make 4x + 5x + 6x = 15x. So x is 180 ÷ 15 = 12 degrees. The largest angle is 6x, which is 12 × 6 = 72 degrees.
3	C	The exterior angle sits next to the interior angle on a straight line, so it is 180 − 156 = 24 degrees. Since the exterior angles add up to 360°, the number of sides is 360 ÷ 24 = 15.
4	B	Angles meeting at a point add up to 360°, and here they come to 3x + 4x + 5x = 12x. So x is 360 ÷ 12 = 30.
5	E	The two marked angles lie between the parallel lines on the same side of the sloping line, so they add up to 180°. That gives x + 30 together with 2x making 3x + 30 equal to 180, so 3x is 150 and x is 50.
6	C	An exterior angle of a triangle equals the two opposite interior angles added together. So x and 2x + 20 make 3x + 20, and that equals 125. Taking off the 20 leaves 3x equal to 105, so x is 35.
7	A	At the shared corner three angles fill the full turn: the pentagon's, the square's and the gap between them. The pentagon's interior angle is 108° and the square's is 90°, which come to 198°, so the angle between them is 360 − 198 = 162 degrees.
8	C	A polygon splits into triangles numbering 2 fewer than its sides, and each triangle holds 180°. So the number of triangles is 2880 ÷ 180 = 16, and the number of sides is 16 + 2 = 18.
9	B	The twelve angles meeting at the centre fill one full turn of 360°, and they are all equal because the polygon is regular. So each one is 360 ÷ 12 = 30 degrees.

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10	C	From each of the 6 corners a diagonal reaches the 3 corners that are not next to it, giving 6 × 3 = 18. Each diagonal has been counted twice, once from each end, so the true number is 18 ÷ 2 = 9.
11	C	The ratio divides the quadrilateral's 360° into 3 + 4 + 5 + 8 = 20 equal shares, so one share is 360 ÷ 20 = 18 degrees. The largest angle is 8 shares, which is 18 × 8 = 144 degrees.
12	B	At 20 minutes past, the minute hand points at the 4, which is 120° from the top. The hour hand has gone a third of the way from 4 to 5, so it sits at 120 + 10 = 130 degrees. The angle between them is 130 − 120 = 10 degrees.
13	D	All the angles at a point add up to 360°. The two known angles come to 48 + 76 = 124, so the third is 360 − 124 = 236 degrees, which is indeed more than 180° and so reflex.
14	B	The four angles of any quadrilateral add up to 360°, and here they come to 2x + 2x + 3x + 3x = 10x. So x is 360 ÷ 10 = 36. That makes the two smaller angles 72° each and the two larger ones 108° each.
15	B	The exterior angles of any polygon add up to 360°, and in a regular polygon they are all equal. So each one is 360 ÷ 40 = 9 degrees.

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