

Geometry: 2D Shapes & Angles: Hard Practice Paper 5 Answers

Q#	Answer	Explanation
1	B	The angles lie on a straight line, so $(x + 15^\circ) + 2x + (3x + 15^\circ) = 180^\circ$. Collecting terms gives $6x + 30^\circ = 180^\circ$, so $6x = 150^\circ$ and $x = 25^\circ$.
2	C	The angles of a triangle add up to 180° , so $3x + 4x + 5x = 180^\circ$. That gives $12x = 180^\circ$ and $x = 15^\circ$. The largest angle is $5x = 5 \times 15^\circ = 75^\circ$.
3	D	Each exterior angle is $180^\circ - 165^\circ = 15^\circ$, and the exterior angles add up to 360° . So the number of sides is $360^\circ \div 15^\circ = 24$.
4	E	Angles around a point add up to 360° , so $x + 2x + 3x + 4x = 360^\circ$. That gives $10x = 360^\circ$ and $x = 36^\circ$. The largest angle is $4x = 4 \times 36^\circ = 144^\circ$.
5	C	The two marked angles are alternate angles, so they are equal: $5x = 2x + 45^\circ$. Taking $2x$ from both sides gives $3x = 45^\circ$, so $x = 15^\circ$.
6	A	The angles add up to 180° , so $3x + 5x + 84^\circ = 180^\circ$. That gives $8x = 96^\circ$, so $x = 12^\circ$.
7	B	The exterior angles always add up to 360° . With 24 equal ones, each is $360^\circ \div 24 = 15^\circ$.
8	D	Using $(n - 2) \times 180^\circ = 3240^\circ$, divide both sides by 180° to get $n - 2 = 18$, so $n = 20$.
9	E	The minute hand is at 10, which is 300° from the 12. The hour hand is five sixths of the way past 3, at $3 \times 30^\circ + 25^\circ = 115^\circ$. The gap is $300^\circ - 115^\circ = 185^\circ$, so the angle between them (the shorter way round) is $360^\circ - 185^\circ = 175^\circ$.
10	D	The ratio has $1 + 2 + 2 + 3 = 8$ parts sharing 360° , so one part is 45° . The largest angle is 3 parts: $3 \times 45^\circ = 135^\circ$.
11	C	The two marked angles lie on a straight line, so $7x + 2x = 180^\circ$. That gives $9x = 180^\circ$ and $x = 20^\circ$. The smaller angle is $2x = 2 \times 20^\circ = 40^\circ$.
12	A	A regular polygon looks the same as many times in a full turn as it has sides, so an order of 12 means it has 12 sides.

13	D	Angles around a point add up to 360° . Here $45^\circ + 62^\circ = 107^\circ$, so the reflex angle is $360^\circ - 107^\circ = 253^\circ$.
14	D	The angles of a quadrilateral add up to 360° , so $2x + 4x + 2x + 4x = 360^\circ$. That gives $12x = 360^\circ$, so $x = 30^\circ$.
15	C	The exterior angles add up to 360° , so the number of sides is $360^\circ \div 45^\circ = 8$. An 8-sided regular polygon is an octagon.