

Geometry: 2D Shapes & Angles: Medium Practice Paper

6 Answers

Q#	Answer	Explanation
1	B	A rectangle folds onto itself across its middle in two ways, one fold up and down and one across, so it has 2 lines of symmetry. The square has 4, the kite has only 1, and the regular pentagon and hexagon have 5 and 6.
2	A	Turned half way round, the parallelogram fits onto itself, so its rotational symmetry is order 2. But it cannot be folded onto itself at all, so it has no lines of symmetry. The rectangle and rhombus are also order 2 but each has 2 lines of symmetry.
3	B	The three angles of any triangle must add up to exactly 180° . Adding each set gives 170, 180, 190, 190 and 190, so only 30° , 60° , 90° works.
4	A	Angle a sits below the top line and angle b sits above the bottom line, on opposite sides of the sloping line. A pair like this is called alternate angles, and because the two lines are parallel they are always equal, whatever the slope.
5	C	Imagine walking right round the outside of the shape. At each corner you turn through the exterior angle, and by the time you are back at the start facing the same way you have turned through one full circle. That is 360° , however many sides the shape has.
6	B	The interior angle and the exterior angle at a vertex sit next to each other on a straight line, so together they make 180° . That gives $180 - 140 = 40$ degrees.
7	B	For a shape to tessellate, whole interior angles must fit exactly round a point, so the interior angle has to divide into 360° . The hexagon's interior angle is 120° , and $120 \times 3 = 360$, so three hexagons meet neatly. The others leave a gap or overlap.
8	C	The three angles sit on a straight line, so they add up to 180° . Taking off the 40° leaves $180 - 40 = 140$ for the other two, which are $2x$ and $3x$, or $5x$ altogether. So $140 \div 5 = 28$.

9	C	From each of the 5 corners you can draw a diagonal to the 2 corners that are not next to it, giving $5 \times 2 = 10$. But every diagonal has been counted twice, once from each end, so the real number is $10 \div 2 = 5$.
10	B	The hour hand goes right round the clock, 360° , in 12 hours, so in one hour it turns $360 \div 12 = 30$ degrees. In 2 hours it turns $30 \times 2 = 60$ degrees.
11	D	Angles meeting at a point add up to 360° . The two known angles come to $90 + 135 = 225$, so x is $360 - 225 = 135$ degrees.
12	D	The two equal sides mean this is an isosceles triangle, so the two angles at the base are equal. They share what is left after the 50° , which is $180 - 50 = 130$ degrees, so each one is $130 \div 2 = 65$ degrees.
13	C	The four angles of a quadrilateral must add up to 360° . The five sets come to 340, 350, 360, 350 and 370, so only 100° , 80° , 110° , 70° is possible.
14	D	An octagon splits into 6 triangles, so its angles add up to $6 \times 180 = 1080$ degrees. The shape is regular, so all 8 angles are the same, giving $1080 \div 8 = 135$ degrees.
15	E	A kite's two diagonals do cross at right angles, and it can be folded onto itself in just one way, along the diagonal running between its two unequal corners. A rhombus also has diagonals crossing at right angles but it has 2 lines of symmetry, and a square has 4.