

Quadrilaterals and Polygons – Answers

Angles in Polygons

- 1) (a) 720° (b) 900° (c) 1440°
- 2 (a) 360° (b) 360° (c) 360°
- 3) (a) 40° (b) 9° (c) 20°
- 4) (a) 150° (b) 156° (c) 172°
- 5) (a) 20 (b) 30 (c) 8
- 6) $x = 36^\circ$

Quadrilateral questions

- 1) Kite, Isosceles Trapezium
- 2) Square, Rectangle, Isosceles Trapezium
- 3) None
- 4) Diagonals cross at right angles
- 5) All 4 sides equal in length, or 2 lines of symmetry, or both diagonal bisect the corner angles, or ...
- 6) Square
- 7) In a parallelogram the equal angles are at opposite corners, in an isosceles trapezium they are at adjacent corners.

Diagonals of a polygon

- 1) 14
- 2) (i) 4 (ii) 7 (iii) This would count each diagonal twice
- 3) (i) $n - 3$ (ii) n (iii) $\frac{n(n-3)}{2}$

True, False and “Iffy” Shape statements

A All squares are rectangles.
Definitely True

B A triangle can have two obtuse angles.
Definitely false

C The diagonals of a rectangle cross at right angles.
Iffy
Could change to: The diagonals of a **square** cross at right angles.

D If A is 20 cm from B and B is 10 cm from C, then A is 30 cm from C.
Iffy
Could change to:
“If A is 20 cm from B and B is 10 cm from C, **and B lies on a straight line joining A and C**, then A is 30 cm from C.”

E When you double the sides of a square you double the area.
Definitely false

F A parallelogram has rotation symmetry of order 4.
Iffy
Could change to: A **square** has rotational symmetry of order 4.

G Cutting a kite along a diagonal produces two identical triangles.
Iffy
Could change to: Cutting a **rhombus** along a diagonal produces two identical triangles.

H A parallelogram is a rectangle.
Iffy
Could change to: A parallelogram **with right angles in the corners** is a rectangle.

I Doubling the radius of a circle doubles its area.
Definitely false

J The longest side of a triangle is shorter than the sum of the lengths of the other two sides.
Definitely True

K If two rectangles both have area 24 cm^2 , they must also have the same perimeter.
Iffy
Could change to:
If two rectangles both have area 24 cm^2 , they **could** also have the same perimeter.

L A rhombus is a parallelogram.
Definitely True

M Four straight lines cross at six different points.
Iffy
Could change to: Four straight lines cross at **a maximum of** six different points.

N If two lines are perpendicular to a third line, they must be parallel to each other.
Definitely True

O Any parallelogram can be cut into two pieces which fit together to make a rectangle.
Definitely True

P Every quadrilateral can be used to tessellate the plane.
Definitely True