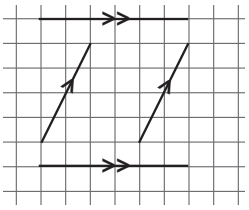
Unit 14: Geometry – properties of shapes (2)

Lesson 1: Recognising and drawing parallel lines

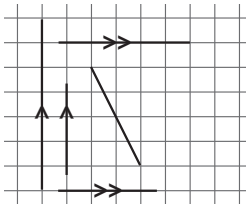
→ pages 78–80

1. Pairs of parallel sides labelled as shown (single/ double arrows can be either way round)

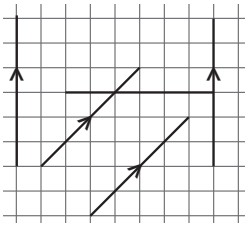
a)



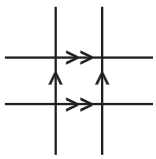
c)



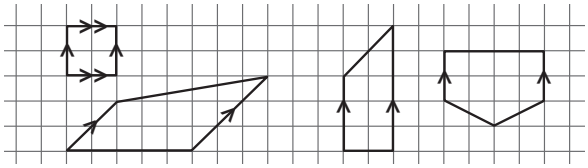
b)



d)



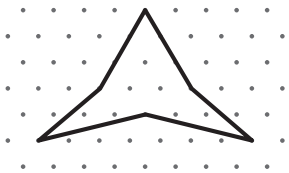
2.



3. Answers will vary. Check lines drawn are parallel.

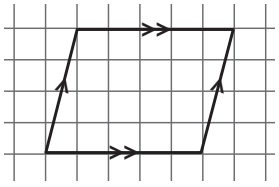
4. FE is parallel to AD and BC.
BF would be parallel to CD.
No. EC is not parallel to any lines in the shape.

5. a) BE is parallel to CD and AF.
b) CA is parallel to DF.
BC is parallel to AD and FE
c) Answers will vary; for example:



Reflect

Answers will vary; for example: parallelogram



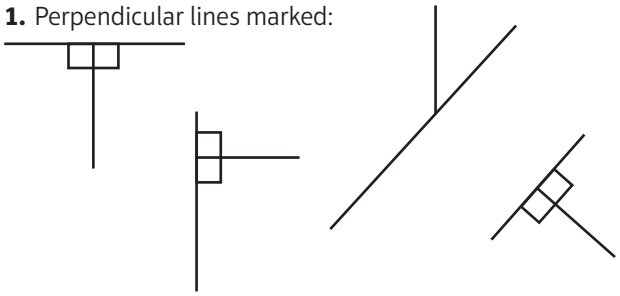
Explanations will vary; for example:

You can make sure that lines are parallel by using the grid lines. The parallel sides marked with one arrow both move 4 squares up for every 1 square across, which means that they are parallel.

Lesson 2: Recognising and drawing perpendicular lines

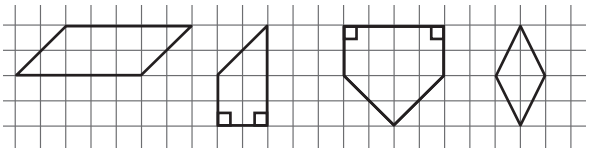
→ pages 81–83

1. Perpendicular lines marked:



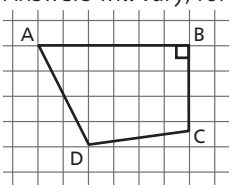
2. Check children have drawn perpendicular lines.

3.



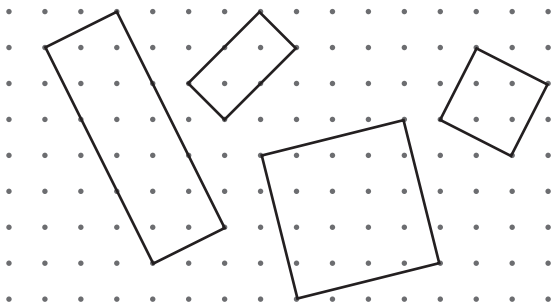
4. a) False; the angle between the two lines is clearly smaller than 90°
b) False; the angle between the two lines is clearly greater than 90°
c) True; EF is perpendicular to AF
d) False, CD is perpendicular to DE

5. Answers will vary; for example:



AB is perpendicular to BC

6.



Reflect

Explanations may vary; for example:

Parallel lines never cross over and always stay the same distances apart. Perpendicular lines meet at right angles, i.e. 90°.

Lesson 3: Reasoning about parallel and perpendicular lines

➜ pages 84–86

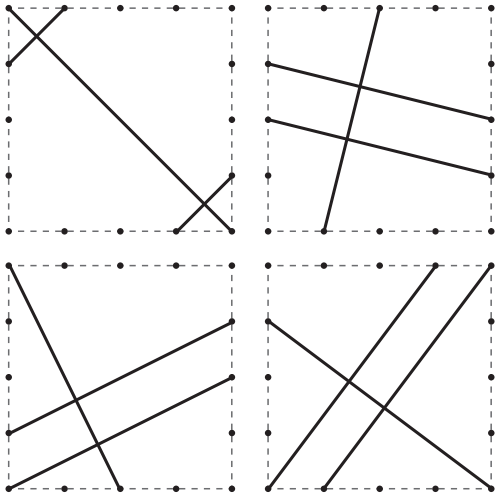
1. a) Angle a = 135°
Angle b = 45°
Angle c = 135°
Angle d = 45°
b) The two diagonal lines are parallel.
They both cross the horizontal line at angles of 135° and 45°.

2. Answers will vary but the line should cross both parallel lines at the same angle.

3. a) square c) kite
b) rhombus d) rectangle

4. a) Diagonals do not cross at right angles.
b) Diagonals do not cross at right angles.
c) Diagonals do not cross at right angles.
d) Diagonals do not cross at right angles.

5. Answers will vary; for example:



Reflect

Answers will vary; for example:

Fold the paper in half so that vertical edges match exactly. Open it up again and now fold the paper in half so that horizontal edges match exactly. The two fold lines are perpendicular.

Look for children demonstrating an understanding that perpendicular means at right angles.

Lesson 4: Regular and irregular polygons

➜ pages 87–89

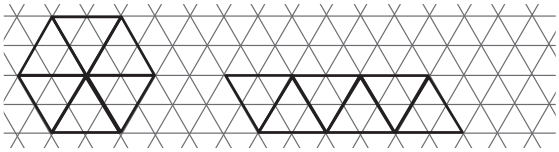
1. Shapes and descriptions joined:
Angles different, sides same ➜ rhombus
Angles same, sides different ➜ rectangle
Angles same, sides same ➜ square
Angles different, sides different ➜ parallelogram
Circled: square (only regular quadrilateral)

2. irregular irregular regular irregular

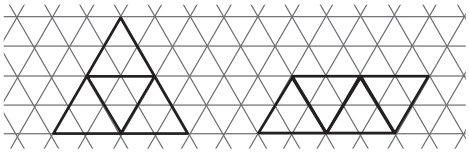
3. This is not a regular shape because the sides are not all the same length.

4. a) C and F b) C, E and F

5. a) Regular shape will be regular hexagon; irregular shape will vary; for example:



b) Regular shape will be equilateral triangle; irregular shape will vary; for example:

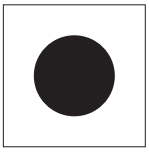


Reflect

A shape is irregular if the sides are not all the same length or if the angles are not all the same.

Lesson 5: Reasoning about 3D shapes

➜ pages 90–92

1. a)  b)  c) 

2. a) Circled: 1st and 3rd
b) Circled: 1st and 2nd

3. They could be looking at shape D.

4. a) Equilateral triangle (drawn)
b) Equilateral triangle (drawn)
c) Equilateral triangle (drawn)

5. Drawings of
a) circle c) rectangle
b) rectangle d) rectangle

Reflect

Views can be rectangles or triangles.

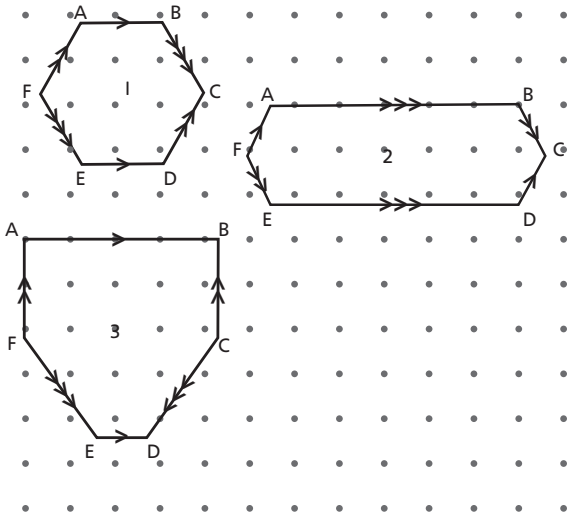
End of unit check

➜ pages 93–95

My journal

1. Answers and diagrams will vary; check that perpendicular lines are at 90° and parallel lines are equidistance apart.
Explanation should include using a protractor to perpendicular lines are at 90° and parallel lines stay the same distance apart.

2. Answers will vary; for example:



Shape 1: parallel lines: AB and DE; BC and EF; CD and AF. No perpendicular lines.

Shape 2: parallel lines: AB and DE; BC and EF; CD and AF. No perpendicular lines.

Shape 3: parallel lines: AB and DE; AF and BC.
Perpendicular lines: AF and AB; AB and BC.

Power puzzle

Note: angles of diagonals should be 45° and right angles should be 90°. Sides of squares should be the same length.