Planner

# Lines, shapes and coordinates

- Investigating properties of parallel lines
- Recognising and naming different types of quadrilateral
- Recognising line symmetry
- Plotting coordinates in 4 quadrants

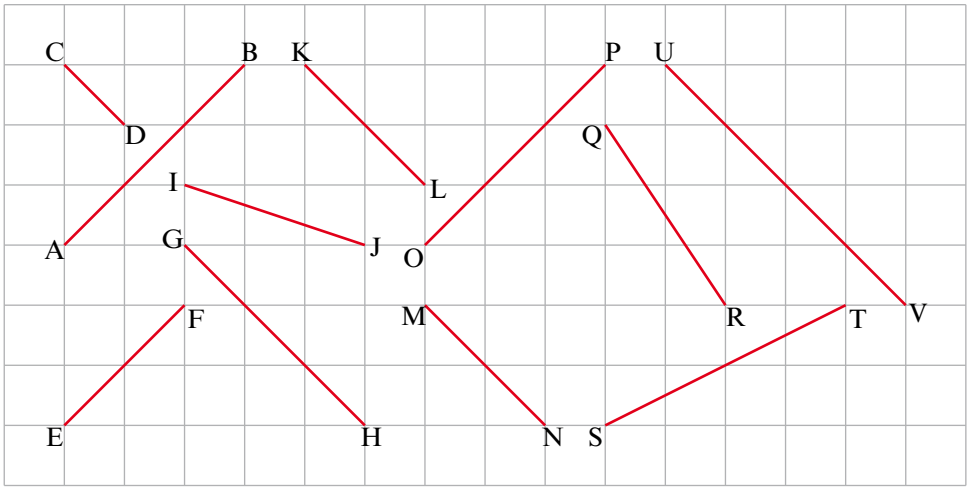
Keywords

You should know

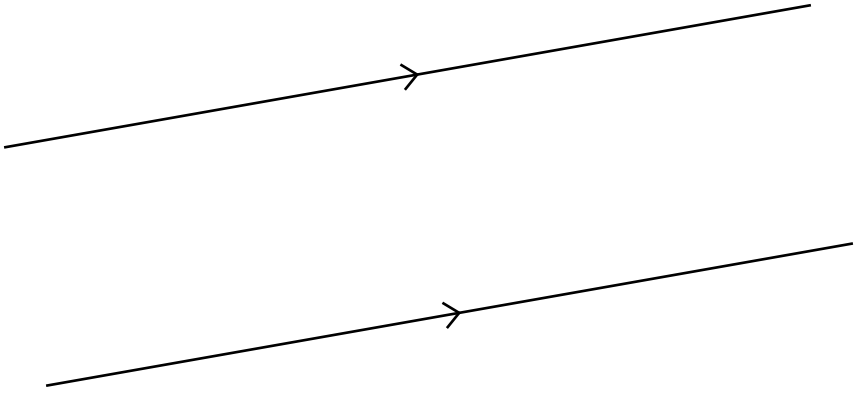
explanation 1a explanation 1b

**1** List all of the lines in the diagram that are

**a** parallel to AB **b** parallel to CD **c** perpendicular to CD




**2** Measure the distance between this pair of parallel lines to the nearest 0.1 cm.



**3** **a** AB, CD and EF are line segments.

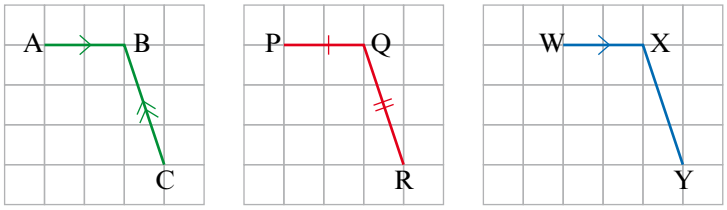
- AB is parallel to CD
- CD is parallel to EF

What can you say about AB and EF?

**b** J, K and L are points. If JK is parallel to KL, what can you say about J, K and L?

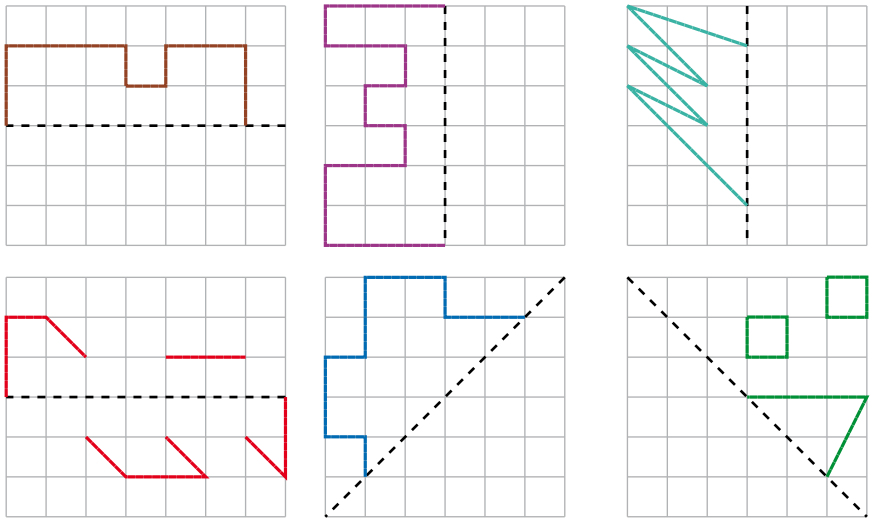
explanation 2

**4** The diagram shows three partly completed quadrilaterals. ABCD is a parallelogram, PQRS is a kite and WXYZ is a trapezium. Copy and complete the diagrams.

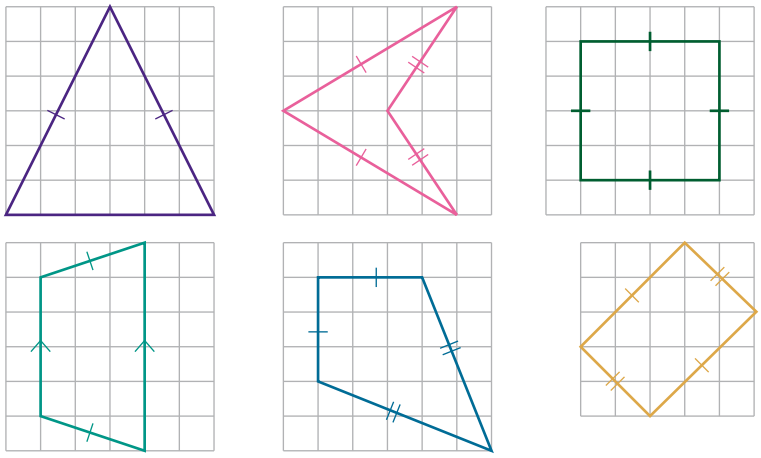



explanation 3 online

**5** Copy and complete each diagram so that the dotted line is a line of symmetry.



**6** Copy these diagrams and draw any lines of symmetry.
Write down the name of each shape.



**7** **a** Draw a triangle with 3 lines of symmetry. What is this triangle's special name?

**b** Draw a trapezium with no lines of symmetry.

**c** How many lines of symmetry can a parallelogram have?

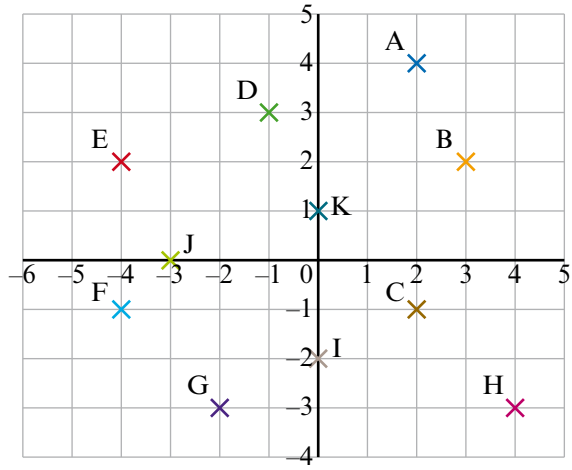
**d** How many lines of symmetry does a rhombus have?

**e** Draw a right-angled isosceles triangle. Draw any lines of symmetry.

**f** Is it possible to draw a triangle with exactly 2 lines of symmetry? Explain your answer.

explanation 4a | explanation 4b | online

**8** Write down the coordinates of each of the labelled points.



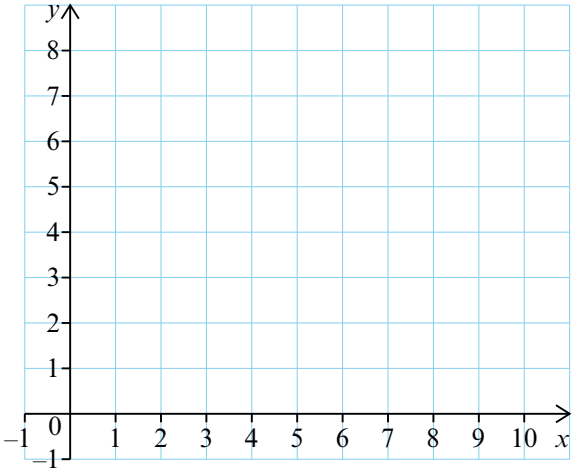
**9** **a** Plot the points P(0, 5), Q(6, 6), R(8, 1), S(2, 0) and join them in order with straight lines.

**b** Write down the coordinates of the mid-point of

**i** P and R **ii** Q and S

**c** What do you notice about your answers to part **b**?

**d** Draw the diagonals of PQRS. What do you notice about the point where they cross?




**10** Draw $x$- and $y$-axes labelled from −6 to 6.

**a** Plot the following points and join them in order with straight lines.

(−4, −5) (4, 3) (−4, 3) (0, 6) (4, 3) (4, −5) (−4, −5) (−4, 3) (4, −5)

**b** How many lines of symmetry does the shape have?

**c** How many pairs of parallel sides are there?

**d** How many triangles does the shape contain?

**e** How many of the triangles are right angled?

**f** What are the coordinates of the point where the diagonals of the square cross?

**11** Draw $x$- and $y$-axes labelled from −6 to 6.

**a** Plot the points (1, 1) (−1, −1) and (−1, 1)

**b** What are the coordinates of a fourth point that would make a square?

**c** What are the coordinates of a fourth point that would make a parallelogram?

**d** What are the coordinates of a fourth point that would make a kite?

**e** What are the coordinates of a fourth point that would make an arrowhead?

**12** Calculate the area of each of the possible shapes found in question **11**.