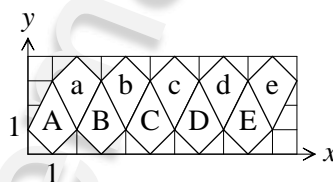


- 3 Two sides of a rectangle have equations  $x = 4$  and  $y = -6$ . One vertex of the rectangle is  $(-3, 8)$ .
- Write down the equations of the other two sides of the rectangle.
  - Find the equations of the diagonals of the rectangle.
- 4 The diagonals of a rhombus have equations  $x = -2$  and  $y = 5$ .
- Write down the coordinates of the point of intersection of these diagonals. The points  $(0, 5)$  and  $(-2, 8)$  are vertices of this rhombus.
  - Write down the coordinates of the other two vertices.
- 5 The diagram shows the first few of a sequence of kites, placed together and extending to the right. The kites are labelled consecutively A, a, B, b, ...
- Write down the equations of the diagonals of the kites labelled E and e.
  - Write down the equations of the diagonals of the kites that will appear later in the sequence with labels G and j.



- \* 6 A triangle is formed by the lines  $PQ$  with equation  $3x + 2y = 12$ ,  $QR$  with equation  $y = 6$ , and  $PR$  with equation  $x = 4$ . Find the equation of the angle bisector of angle  $PRQ$ .

### 3.3 Parallel lines

In this exercise you will learn how to:

- use the fact that parallel lines have equal gradients *or* that lines with equations of the form  $ax + by + c_1 = 0$  and  $ax + by + c_2 = 0$  are parallel
- find the equation of a line through a given point parallel to a given line

- 1 Write down the equation of the line:
- through the point  $(0, 1)$  and parallel to the line  $y = 4x + 5$
  - through the point  $(0, -2)$  and parallel to the line  $2x - y = 5$
  - through the point  $(1, 2)$  and parallel to the line  $x + y = 8$
  - through the point  $(-2, -3)$  and parallel to the line  $3x + 2y - 1 = 0$
  - through the point  $(0, 0)$  and parallel to the line  $6x - y = 7$
- 2 Find the equation of the line through the points  $(a, 4)$  and  $(7, a)$  which is parallel to the line  $y = 2x + 14$ .
- 3 In the rhombus  $ABCD$  the side  $AB$  has equation  $y = 1 - x$  and vertex  $C$  is  $(1, -6)$ . Write down the equation of the side  $CD$ .
- 4 In the rectangle  $KLMN$  the side  $KL$  has equation  $2x + 5y = 17$  and vertex  $N$  is  $(-1, 3)$ . Write down the equation of the side  $MN$ .