

Straight Line Graphs

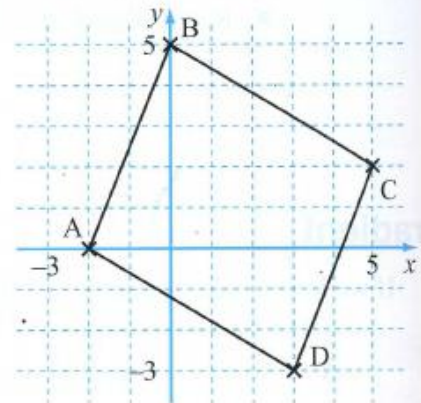
Exercise A

1 Find the gradient of the line joining

- | | | |
|--------------------------|-------------------------|--------------------------|
| (a) (1, 3) and (2, 6) | (b) (1, 3) and (3, 7) | (c) (2, 5) and (6, 7) |
| (d) (3, 9) and (9, 11) | (e) (1, 4) and (3, 2) | (f) (2, 5) and (5, -1) |
| (g) (6, 2) and (2, 10) | (h) (3, -2) and (-3, 2) | (i) (-2, -4) and (-1, 2) |
| (j) (2, -3) and (-2, 6). | | |

2 Find the gradient of the line joining:

- | | |
|-------------|--------------|
| (a) A and B | (b) B and C |
| (c) C and D | (d) D and A. |

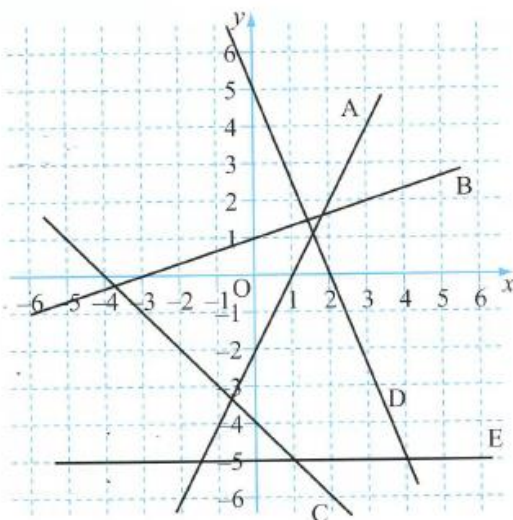


Exercise B

Sketch the following straight lines. Use a new pair of axes for each question. Draw about six sketches on one page of your book.

- | | |
|-------------------------------|--------------------------------|
| 1 Gradient 2, y-intercept 3. | 2 Gradient 1, y-intercept -3. |
| 3 Gradient 2, y-intercept 0. | 4 Gradient -1, y-intercept 4. |
| 5 Gradient -3, y-intercept 0. | 6 Gradient -2, y-intercept -2. |

7 Give the gradient and y-intercept of each line.



Exercise C

Write down the gradient and intercept of each of the following lines:

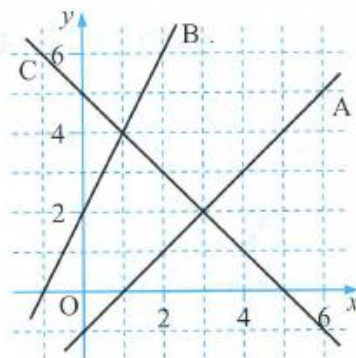
- | | | |
|--------------------------|---------------------------|--------------------------|
| 1 $y = 2x - 3$ | 2 $y = 3x + 2$ | 3 $y = -x - 4$ |
| 4 $y = \frac{1}{2}x + 3$ | 5 $y = -\frac{2}{3}x - 4$ | 6 $y = 2 - 3x$ |
| 7 $y = 4 - 7x$ | 8 $y = 2x - 1$ | 9 $y = 3 - \frac{1}{2}x$ |

In questions 10 to 15 make y the subject and write down the gradient and intercept of the corresponding line:

- | | | |
|-----------------------|-----------------------|----------------------|
| 10 $2x + y - 6 = 0$ | 11 $y - 3x + 7 = 0$ | 12 $y - 2x = 8$ |
| 13 $3x + 6y - 10 = 0$ | 14 $2x - 5y + 12 = 0$ | 15 $3y - 9x + 2 = 0$ |

Exercise D

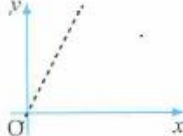


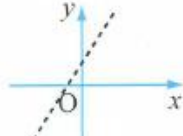


- 1 Use the gradient and intercept to write down the equation of the lines A, B and C.



Sketch each of the following lines:

- | | | |
|--------------------------|--------------------------|---------------------|
| 2 $y = x + 2$ | 3 $y = 2x - 4$ | 4 $y = 3 - 2x$ |
| 5 $y = \frac{3}{4}x - 1$ | 6 $y = 2 - \frac{1}{3}x$ | 7 $y - 2x + 2 = 0$ |
| 8 $2x + 4y + 1 = 0$ | 9 $3y - 9x - 1 = 0$ | 10 $2x - y + 6 = 0$ |

In questions 11 to 16 match each sketch with the correct equation from the list below.

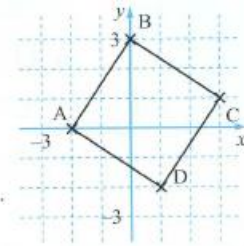
- | | | |
|--|--|--|
| 11  | 12  | 13  |
| 14  | 15  | 16  |

- | | | |
|------------------|------------------|------------------|
| (a) $y = -x - 4$ | (b) $y = 2x - 1$ | (c) $y = 2x + 3$ |
| (d) $y = 3x$ | (e) $y = 3 - x$ | (f) $y = 5$ |

- 17 Write down the equations of the line A, B, C, D and E in question 7 of Exercise 2M

Exercise E

- 1 (a) Find the gradient of each side of the square shown.
 (b) What do you notice about the gradient of AB and the gradient of BC?



Repeat with different squares.

- (c) Copy and complete: 'For perpendicular lines the product of the gradients is \square .'

- 2 Write down the equation of any line which is parallel to

(a) $y = 2x - 1$ (b) $y = 7x + 3$

- 3 Write down the gradient of a line which is perpendicular to a line of gradient

(a) 3 (b) -1 (c) $\frac{1}{4}$ (d) $-\frac{1}{2}$

- 4 Write down the equation of any line which is perpendicular to

(a) $y = 2x + 1$ (b) $y = -\frac{1}{4}x$ (c) $y = \frac{1}{3}x + 7$

- 5 Here are the equations of several straight lines.

A $y = 3x - 1$ B $y = x - 3$ C $y = \frac{1}{2}x + 1$ D $y = 3x + 5$
 E $y = -2x$ F $y = -x + 7$ G $y = 1 + 4x$ H $y = 4x$

- (a) Find two pairs of lines which are parallel.
 (b) Find two pairs of lines which are perpendicular.

- 6 Find the equation of the line passing through the two points given.

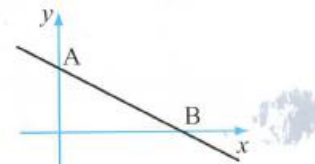
A sketch graph may be helpful.

(a) (0, 4) and (2, 8) (b) (0, -2) and (4, 10) (c) (0, 5) and (5, 10)
 (d) (0, 0) and (3, 9) (e) (0, -2) and (-4, 4) (f) (0, 1) and (-2, -4)

- 7 The sketch shows the graph of $2y + x = 8$.

Find

- (a) the coordinates of A.
 (b) the equation of the line which is the reflection of the line AB in the y axis.



- 8 LMN is a right-angled triangle with vertices at L(1, 3), M(3, 5) and N(6, n). Given angle LMN is 90° , find n.