

CHAPTER 6 Straight Line Graphs

This chapter revises and slightly extends the work in Book 2A. The diagrams for Exercise 6a can be done on squared paper as can some of the graphs in Exercise 6b, but graph paper should be used fairly soon so that values can be read more accurately.

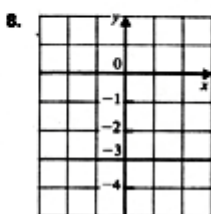
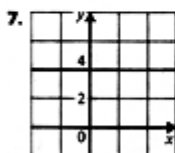
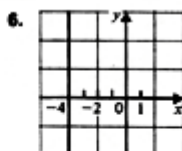
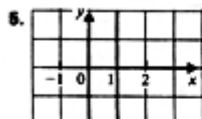
EXERCISE 6a (p. 94)

1. $x = 4$

2. $y = 5$

3. $y = -3$

4. $x = -2$

**EXERCISE 6b (p. 96)**

The graphs drawn for Numbers 5–8 are used for Numbers 17–20 so Numbers 17–20 can be done at the same time as Numbers 5–8.

1. $\frac{x}{y} \begin{array}{c|c|c|c} -2 & 0 & 4 & \\ \hline 2 & 4 & 8 & \end{array}$

3. $\frac{x}{y} \begin{array}{c|c|c|c} -3 & 0 & 3 & \\ \hline 7 & 4 & 1 & \end{array}$

2. $\frac{x}{y} \begin{array}{c|c|c|c} -2 & 0 & 3 & \\ \hline -3 & 1 & 7 & \end{array}$

4. $\frac{x}{y} \begin{array}{c|c|c|c} -1 & 0 & 3 & \\ \hline 5 & 2 & -4 & \end{array}$

13. a) $1\frac{1}{2}$ b) 0.4 c) -1.6

17. a) $-2\frac{1}{2}$ b) 4.4 c) 2.4

14. a) 0 b) -0.8 c) -3.4

18. a) 4.8 b) 1.2 c) -11.2

15. a) -2.6 b) -1.8 c) 1.2

19. a) -1.4 b) 1.4 c) 3.5

16. a) 3.6 b) 0.6 c) 1.2

20. a) 8.6 b) 2.8 c) 3

EXERCISE 6c (p. 99)

1. Yes, No

3. No, No

5. Yes, Yes

2. Yes, Yes

4. No, Yes

6. No, Yes

EXERCISE 6d (p. 100)

Squared paper can be used for this exercise.

1. Lines are parallel; coefficient of x is 2 in each equation2. Lines are parallel; coefficient of x is -3 in each equation3. Lines are parallel; coefficient of x is $\frac{1}{2}$ in each equation

4. Lines are parallel; coefficient of x is 1 in each equation
5. Lines (a) and (c) are parallel
6. Lines are parallel; coefficient of x is -1 in each equation

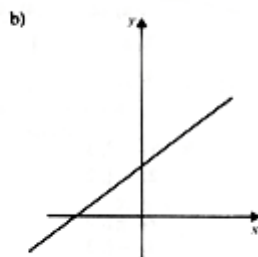
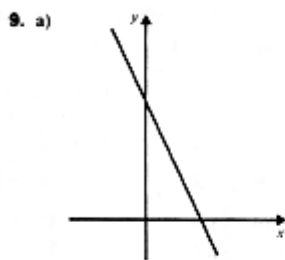
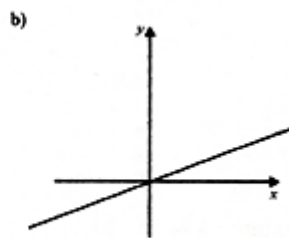
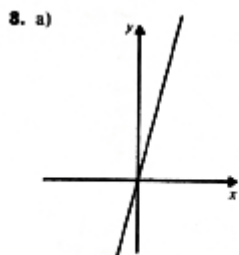
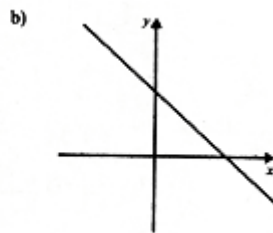
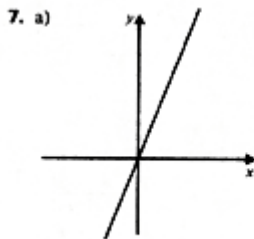
EXERCISE 6e (p. 103)

Squared paper can be used for this exercise. Number 8 provides another opportunity to emphasise that division by zero is not possible. In general, if a line is parallel to the y -axis avoid talking about the value of its gradient.

1. 4
2. -2
3. 1
4. $-\frac{3}{4}$
5. $-\frac{9}{5}$
6. $\frac{2}{3}$
7. 0
8. y - axis. You find yourself dividing by zero
9. a) Parallel to the y -axis b) Zero gradient c) Zero gradient d) Parallel to the y -axis

EXERCISE 6f (p. 104)

1. 2
2. 1
3. 2
4. -2
5. 4
6. a) 4 b) -3 c) 1 d) $\frac{1}{2}$

**EXERCISE 6g (p. 106)**

- | | | |
|----------------------|-----------------------|----------------------------|
| 1. 2, 4 | 10. 3, -7 | 19. $y = 2x + 7$ |
| 2. 5, 3 | 11. -3, 7 | 20. $y = 3x + 1$ |
| 3. 3, -4 | 12. $\frac{1}{3}, 7$ | 21. $y = x + 3$ |
| 4. 1, -6 | 13. -0.4, 9 | 22. $y = 2x - 5$ |
| 5. -2, 3 | 14. 5, 4 | 23. $y = \frac{1}{2}x + 6$ |
| 6. -4, 2 | 15. 2, $2\frac{1}{2}$ | 24. $y = -2x + 1$ |
| 7. 5, 2 | 16. $\frac{1}{3}, -2$ | 25. $y = x - 2$ |
| 8. $\frac{1}{2}, -1$ | 17. $\frac{2}{5}, 1$ | 26. $y = \frac{1}{2}x + 4$ |
| 9. $-\frac{1}{3}, 4$ | 18. $-\frac{3}{4}, 2$ | |

EXERCISE 6h (p. 108)

- $y = 3x + 1, y = 5 + 3x, y = 3x - 4$
- $y = 2 - x, y = 4 - x, 2y = 3 - 2x, y = -x + 1, y = -x$
- $3y = x, y = \frac{1}{3}x + 2, y = \frac{1}{3} + \frac{1}{3}x, y = \frac{1}{3}x - 4$
- $y = \frac{1}{2}x + 2$ and $y = \frac{1}{2}x - 1$; $y = 2 - \frac{1}{2}x$ and $2y = 3 - x$
- 2; $y = 2x + 3$
- 3; $y = -3x + 1$
- $y = 4x$
- e.g. $y = 6 - x, y = -x, y = -2 - x$
- a) $y = 4x + 4$ b) $y = -3x + 4$ c) $y = \frac{1}{2}x + 4$
- a) $y = \frac{1}{3}x + 6$ b) $y = \frac{1}{3}x$ c) $y = \frac{1}{3}x - 3$
- a) $y = 2x + 2$ b) $y = 2x + 10$ c) $y = 2x - 4$
- $y = 3 + 2x$ and $y = 2x - 3$
- 3, 4; 4, -3; $y = -3x - 3$
- a) $y = -4x$ b) $y = -4x - 7$

EXERCISE 6i (p. 110)

- | | | |
|-------------------|-------------------|--------------------|
| 1. $-\frac{3}{5}$ | 4. -1 | 7. $-\frac{1}{3}$ |
| 2. $-\frac{1}{3}$ | 5. -2 | 8. -2 |
| 3. $\frac{1}{4}$ | 6. $-\frac{1}{3}$ | 9. -1 in each case |

EXERCISE 6j (p. 111)

- | | | |
|-------------------|-------------------|------------------|
| 1. $-\frac{3}{4}$ | 2. $-\frac{3}{5}$ | 3. $\frac{1}{2}$ |
|-------------------|-------------------|------------------|

4. -2

5. 2

6. $\frac{3}{4}$

7. a) $(2, 0), (0, 4)$ b) $(12, 0), (0, -9)$

8. a) $\frac{x}{6} + \frac{y}{5} = 1$ b) $\frac{x}{4} - \frac{y}{3} = 1$

9. $-\frac{1}{3}$

EXERCISE 6k (p. 112)

1. $-\frac{3}{5}, 3$

8. $-\frac{3}{5}, 3$

15. $-2, 4$

2. $-\frac{1}{3}, 2$

9. $\frac{1}{2}, -2$

16. $-\frac{2}{5}, 3$

3. $\frac{1}{4}, -2$

10. $-3, 6$

17. $-\frac{1}{2}, 5$

4. $\frac{1}{3}, -2$

11. $-\frac{4}{3}, 4$

18. $2, \frac{5}{2}$

5. $3, 6$

12. $\frac{4}{3}, -4$

19. $2, -4$

6. $-\frac{1}{3}, 2$

13. $4, 2$

20. $-1, -3$

7. $-\frac{3}{4}, 3$

14. $-1, 4$

21. $-\frac{3}{4}, 3$

EXERCISE 6l (p. 114)

1. $-\frac{4}{3}, 4; y = -\frac{4}{3}x + 4$

5. $\frac{7}{2}, -4; y = \frac{7}{2}x - 4$

9. $\frac{5}{3}, -4; y = \frac{5}{3}x - 4$

2. $-2, 7; y = -2x + 7$

6. $\frac{1}{3}, -1; y = \frac{1}{3}x - 1$

10. $-1, -5; y = -x - 5$

3. $\frac{3}{5}, 1; y = \frac{3}{5}x + 1$

7. $\frac{1}{6}, 1; y = \frac{1}{6}x + 1$

11. $2, 12; y = 2x + 12$

4. $-\frac{4}{3}, 2; y = \frac{4}{3}x + 2$

8. $\frac{4}{5}, -3; y = \frac{4}{5}x - 3$

12. $\frac{5}{6}, 6; y = \frac{5}{6}x + 6$

13. AB, $5y = 2x + 20$; AC, $5x + 3y = 12$

14. $3, y = 3x - 11$

18. $5, y = 5x - 21$

22. $\frac{1}{5}, y = \frac{1}{5}x - \frac{6}{5}$

15. $-3, y = -3x + 7$

19. $-1, y = -x + 3$

23. $-\frac{5}{2}, y = -\frac{5}{2}x + \frac{19}{2}$

16. $\frac{5}{2}, y = \frac{5}{2}x - \frac{1}{2}$

20. $-1, y = -x + 1$

17. $2, y = 2x + 7$

21. $2, y = 2x - 11$

24. $-\frac{5}{4}, \frac{x}{4} + \frac{y}{5} = 1$ or $y = -\frac{5}{4}x + 5$

28. $3, y = 3x - 10$

29. $-1, y = -x + 4$

25. $-\frac{2}{3}, \frac{x}{3} + \frac{y}{2} = 1$ or $y = -\frac{2}{3}x + 2$

30. $-\frac{7}{2}, y = -\frac{7}{2}x - 6$

31. $-1, y = -x + 3$

26. $-\frac{2}{3}, \frac{x}{3} - \frac{y}{2} = 1$ or $y = \frac{2}{3}x - 2$

32. $\frac{5}{2}, -\frac{x}{2} + \frac{y}{5} = 1$ or $y = \frac{5}{2}x + 5$

27. $-3, \frac{x}{2} + \frac{y}{6} = 1$ or $y = -3x + 6$

33. $\frac{2}{11}, y = \frac{2}{11}x + \frac{21}{11}$

34. $1, y = x - 1$

35. $-\frac{1}{4}, y = -\frac{1}{4}x + \frac{11}{4}$

EXERCISE 6m (p. 116)

1. $y = 3x - 16$
2. Square
3. Rhombus
4. $(\frac{1}{2}, 3)$
5. Midpoint is (5, 3); $y = -2x + 13$
6. $2y = -x + 4$
7. Square

EXERCISE 6n (p. 117)

1. 2
2. (0,4)
3. (4,0)
4. 12
5. $y = 5x$
6. (12,0)
7. Yes
8. $\frac{3}{5}$

EXERCISE 6p (p. 117)

1. -3
2. No
3. $y = -4x$
4. (0, 4)
5. (0, 6), (6, 0)
6. $-\frac{3}{2}$
7. $y = \frac{1}{2}x$
8. (2, 0), (0, 3)