

CHAPTER 18 Introducing Algebra

The two algebra chapters should be done in their entirety only by above average ability groups, but all pupils can have some introduction to equations at this stage. We have suggested some convenient stopping places. Equations are dealt with again in Book 2A.

EXERCISE 18a (p. 264)

Can be used for discussion.

1. $x - 3 = 4$, 7 3. $3 + x = 9$, 6 5. $2x = 8$, 4 7. $3x = 15$, 5 8. $6x = 24$, 4
 2. $x + 1 = 3$, 2 4. $x - 5 = 2$, 7 6. $7x = 14$, 2

EXERCISE 18b (p. 266)

Useful to point out here that any letter can be used.

- | | | | | |
|------|-------|--------|--------|--------|
| 1. 8 | 7. 6 | 13. -2 | 19. 10 | 25. 5 |
| 2. 9 | 8. 6 | 14. -5 | 20. 3 | 26. 12 |
| 3. 2 | 9. 5 | 15. -1 | 21. 8 | 27. 12 |
| 4. 7 | 10. 7 | 16. -1 | 22. 10 | 28. 3 |
| 5. 4 | 11. 3 | 17. -2 | 23. 9 | 29. 2 |
| 6. 5 | 12. 1 | 18. -4 | 24. 12 | 30. 9 |

EXERCISE 18c (p. 267)

- | | | | | |
|-------|--------|--------|--------|--------|
| 1. 2 | 10. 1 | 19. 10 | 27. 9 | 35. -7 |
| 2. 9 | 11. 4 | 20. 6 | 28. 17 | 36. 9 |
| 3. 3 | 12. -3 | 21. 11 | 29. 5 | 37. 4 |
| 4. 13 | 13. 4 | 22. 5 | 30. 16 | 38. 4 |
| 5. 3 | 14. 8 | 23. 11 | 31. 23 | 39. 4 |
| 6. 3 | 15. -1 | 24. 16 | 32. 4 | 40. -2 |
| 7. 7 | 16. 12 | 25. 12 | 33. 7 | 41. -2 |
| 8. -5 | 17. 10 | 26. 10 | 34. 9 | 42. 2 |
| 9. 0 | 18. 11 | | | |

EXERCISE 18d (p. 268)

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

EXERCISE 18e (p. 269)

- | | | | | |
|-------|-------------------|--------------------|--------------------|--------|
| 1. 4 | 7. 8 | 13. 6 | 19. $2\frac{2}{3}$ | 25. 0 |
| 2. 12 | 8. 16 | 14. $3\frac{1}{3}$ | 20. -5 | 26. 5 |
| 3. 2 | 9. $5\frac{1}{2}$ | 15. 5 | 21. 7 | 27. 20 |

4. 1	10. 13	16. -1	22. 2	28. 30
5. $1\frac{1}{5}$	11. 8	17. $\frac{2}{7}$	23. $1\frac{2}{3}$	29. 30
6. 3	12. 16	18. -1	24. 11	30. $\frac{1}{5}$

EXERCISE 18f (p. 270)

1. 4	10. $2\frac{2}{3}$	19. -1	27. -1	35. $\frac{1}{3}$
2. 3	11. 7	20. $1\frac{4}{5}$	28. 0	36. 6
3. 2	12. 5	21. 2	29. 2	37. -1
4. 6	13. 3	22. 2	30. $3\frac{1}{3}$	38. $\frac{1}{4}$
5. 3	14. 5	23. $1\frac{2}{3}$	31. $2\frac{3}{7}$	39. 5
6. 0	15. 2	24. $-1\frac{4}{5}$	32. 3	40. $\frac{6}{7}$
7. 6	16. 3	25. $\frac{1}{2}$	33. $2\frac{1}{5}$	41. -3
8. 5	17. 3	26. 4	34. -6	42. -1
9. -1	18. 0			

This is a convenient stopping place for average ability groups.

EXERCISE 18g (p. 271)

Good questions to discuss with above average ability groups but only the most able children should be allowed to work through these on their own.

1. $4x-8 = 20, 7$ 3. $3x+6 = 21, 5$ 5. $3x+7 = 28, 7$ 7. $2x+6 = 20, 7$ 9. $3x-9 = 18, 9$
 2. $6x-12 = 30, 7$ 4. $x+8 = 10, 2$ 6. $2x+6 = 24, 9$ 8. $2x+10 = 24, 7$ 10. $2x+9 = 31, 11\text{cm}$

EXERCISE 18h (p. 273)

1. 4	11. 1	20. -4	29. 2	38. $\frac{3}{10}$
2. 1	12. 3	21. 3	30. -2	39. -1
3. 3	13. 1	22. -3	31. 1	40. 3
4. 5	14. 2	23. $1\frac{1}{3}$	32. 0	41. $2\frac{1}{2}$
5. 7	15. 3	24. 1	33. 2	42. 1
6. $-\frac{3}{4}$	16. 2	25. 1	34. -2	43. $\frac{1}{4}$
7. 6	17. 2	26. 2	35. $\frac{2}{3}$	44. 2
8. 5	18. 1	27. $\frac{1}{2}$	36. 3	45. $-1\frac{2}{3}$
9. 7	19. 6	28. 2	37. $-\frac{1}{2}$	46. $1\frac{1}{3}$
10. 2				

EXERCISE 18i (p. 275)

A lot of discussion is necessary to get over the idea of “a term of an expression” and what is meant by “like terms” and “unlike terms”.

1. $10x$	3. $2x$	5. $-2x$	7. 7	9. 1
2. $4x$	4. 2	6. $8y$	8. -23	10. 0

EXERCISE 18j (p. 275)

- | | | | | |
|--------------|--------------|----------------|----------------|--------------------|
| 1. $7x + 7$ | 6. $8x + 8y$ | 11. $3x - 12$ | 15. $7 - 5x$ | 19. $15x$ |
| 2. $5x + 5$ | 7. $8x + 2y$ | 12. $3y - x$ | 16. $3 - 2x$ | 20. $4x - 7y + 4z$ |
| 3. $4x - 5$ | 8. $4x + 8y$ | 13. $-6x - 6y$ | 17. $10x - 2y$ | 21. $9x + y - 11$ |
| 4. $5c - 2a$ | 9. $8x + 3$ | 14. $1 - 4x$ | 18. $11x - 9y$ | 22. -1 |
| 5. $8x - 2y$ | 10. $8x - 8$ | | | |

EXERCISE 18k (p. 276)

- | | | | | |
|-------------------|---------------------|--------------------|-------------------|--------------------|
| 1. 1 | 7. 2 | 13. $1\frac{2}{3}$ | 19. $\frac{2}{3}$ | 25. 1 |
| 2. 1 | 8. $4\frac{1}{2}$ | 14. -6 | 20. 2 | 26. 2 |
| 3. 4 | 9. 2 | 15. 2 | 21. 1 | 27. $-\frac{5}{8}$ |
| 4. $1\frac{6}{7}$ | 10. $-1\frac{1}{5}$ | 16. -1 | 22. 7 | 28. -3 |
| 5. 3 | 11. $\frac{1}{2}$ | 17. 3 | 23. 2 | 29. $\frac{1}{2}$ |
| 6. 6 | 12. 2 | 18. -6 | 24. 5 | 30. 10 |

EXERCISE 18l (p. 277)

- | | | | | |
|--------------------|------|---------|-------------|-------------------|
| 1. $\frac{2}{3}$ | 3. 2 | 4. -1 | 5. $9x - y$ | 6. $1\frac{1}{3}$ |
| 2. $x + 4 = 10, 6$ | | | | |

EXERCISE 18m (p. 277)

- | | | | | |
|---------|-------------------|------|-------------------|-------------|
| 1. 2 | 3. $1\frac{1}{2}$ | 4. 4 | 5. $4\frac{1}{3}$ | 6. $6a + 1$ |
| 2. $7c$ | | | | |

EXERCISE 18n (p. 277)

- | | | | |
|-------------------|------|------------------------|---------|
| 1. $5\frac{1}{2}$ | 3. 2 | 5. $14 - x = 8 + x; 3$ | 6. $3b$ |
| 2. 0 | 4. 0 | | |

EXERCISE 18p (p. 278)

- | | | | | |
|---------|-------------------|------|------------------|---------|
| 1. 4 | 3. $-\frac{2}{5}$ | 4. 2 | 5. $2a + 5c - d$ | 6. -2 |
| 2. $-x$ | | | | |