

## Solving Equations

## Exercise A

Solve the following equations:

- |                               |                         |                       |                       |
|-------------------------------|-------------------------|-----------------------|-----------------------|
| 1. $2x - 5 = 11$              | 2. $3x - 7 = 20$        | 3. $2x + 6 = 20$      | 4. $5x + 10 = 60$     |
| 5. $8 = 7 + 3x$               | 6. $12 = 2x - 8$        | 7. $-7 = 2x - 10$     | 8. $3x - 7 = -10$     |
| 9. $12 = 15 + 2x$             | 10. $5 + 6x = 7$        | 11. $100x - 1 = 98$   | 12. $7 = 7 + 7x$      |
| 13. $\frac{x}{100} + 10 = 20$ | 14. $1000x - 5 = -6$    | 15. $-4 = -7 + 3x$    | 16. $2x + 4 = x - 3$  |
| 17. $x - 3 = 3x + 7$          | 18. $5x - 4 = 3 - x$    | 19. $4 - 3x = 1$      | 20. $5 - 4x = -3$     |
| 21. $7 = 2 - x$               | 22. $3 - 2x = x + 12$   | 23. $6 + 2a = 3$      | 24. $a - 3 = 3a - 7$  |
| 25. $2y - 1 = 4 - 3y$         | 26. $7 - 2x = 2x - 7$   | 27. $7 - 3x = 5 - 2x$ | 28. $8 - 2y = 5 - 5y$ |
| 29. $x - 16 = 16 - 2x$        | 30. $x + 2 = 3 \cdot 1$ | 31. $-x - 4 = -3$     | 32. $-3 - x = -5$     |

## Exercise B

Solve the following equations:

- |                                       |  |                            |                                 |
|---------------------------------------|--|----------------------------|---------------------------------|
| 1. $\frac{x}{5} = 7$                  | 2. $\frac{x}{10} = 13$   | 3. $7 = \frac{x}{2}$       | 4. $\frac{x}{2} = \frac{1}{3}$  |
| 5. $\frac{3x}{2} = 5$                 | 6. $\frac{4x}{5} = -2$   | 7. $7 = \frac{7x}{3}$      | 8. $\frac{3}{4} = \frac{2x}{3}$ |
| 9. $\frac{5x}{6} = \frac{1}{4}$       | 10. $-\frac{3}{4} = \frac{3x}{5}$                              | 11. $\frac{x}{2} + 7 = 12$ | 12. $\frac{x}{3} - 7 = 2$       |
| 13. $\frac{x}{5} - 6 = -2$            | 14. $4 = \frac{x}{2} - 5$                                      | 15. $10 = 3 + \frac{x}{4}$ | 16. $\frac{a}{5} - 1 = -4$      |
| 17. $-\frac{x}{2} + 1 = -\frac{1}{4}$ | 18. $-\frac{3}{5} + \frac{x}{10} = -\frac{1}{5} - \frac{x}{5}$ |                            |                                 |

## Exercise C

Solve the following equations.

- |                                     |                                      |
|-------------------------------------|--------------------------------------|
| 1. $x + 3(x + 1) = 2x$              | 2. $1 + 3(x - 1) = 4$                |
| 3. $2x - 2(x + 1) = 5x$             | 4. $2(3x - 1) = 3(x - 1)$            |
| 5. $4(x - 1) = 2(3 - x)$            | 6. $4(x - 1) - 2 = 3x$               |
| 7. $4(1 - 2x) = 3(2 - x)$           | 8. $3 - 2(2x + 1) = x + 17$          |
| 9. $4x = x - (x - 2)$               | 10. $7x = 3x - (x + 20)$             |
| 11. $5x - 3(x - 1) = 39$            | 12. $3x + 2(x - 5) = 15$             |
| 13. $7 - (x + 1) = 9 - (2x - 1)$    | 14. $10x - (2x + 3) = 21$            |
| 15. $3(2x + 1) + 2(x - 1) = 23$     | 16. $5(1 - 2x) - 3(4 + 4x) = 0$      |
| 17. $7x - (2 - x) = 0$              | 18. $3(x + 1) = 4 - (x - 3)$         |
| 19. $3y + 7 + 3(y - 1) = 2(2y + 6)$ | 20. $4(y - 1) + 3(y + 2) = 5(y - 4)$ |

## Exercise D

Solve the following equations.

1.  $\frac{7}{x} = 21$

4.  $\frac{9}{x} = -3$

7.  $\frac{x+1}{3} = \frac{x-1}{4}$

10.  $\frac{3x+1}{5} = \frac{2x}{3}$

13.  $2 = \frac{18}{x+4}$

16.  $\frac{6}{x} - 3 = 7$

19.  $4 - \frac{4}{x} = 0$

2.  $30 = \frac{6}{x}$

5.  $11 = \frac{5}{x}$

8.  $\frac{x+3}{2} = \frac{x-4}{5}$

11.  $\frac{5}{x-1} = \frac{10}{x}$

14.  $\frac{5}{x+5} = \frac{15}{x+7}$

17.  $\frac{9}{x} - 7 = 1$

20.  $5 - \frac{6}{x} = -1$

3.  $\frac{5}{x} = 3$

6.  $-2 = \frac{4}{x}$

9.  $\frac{2x-1}{3} = \frac{x}{2}$

12.  $\frac{12}{2x-3} = 4$

15.  $\frac{4}{x} + 2 = 3$

18.  $-2 = 1 + \frac{3}{x}$

21.  $\frac{x}{3} + \frac{x}{4} = 1$

## Exercise E

Solve the equations.

1.  $(x+3)(x-1) = (x+4)(x-3)$

3.  $(x+5)^2 = (x+6)(x+3)$

5.  $(2x+1)(x+3) = x(2x-5)$

7.  $(2x+1)^2 = (4x-1)(x+1)$

9.  $(x+1)^2 + (x+2)^2 = (2x+1)(x+1)$

2.  $x(x+7) = (x-3)(x-1)$

4.  $(3x+1)(x-1) = 3x(x-2)$

6.  $(x+3)^2 = (x-2)^2$

8.  $(x-3)(x+3) = x^2 - 18x$

10.  $(x+2)^2 + (2x-1)^2 = 5x(x+1)$

## Exercise F

Solve the following equations:

1.  $x^2 + 4 = (x+1)(x+3)$

3.  $(x+3)(x-1) = x^2 + 5$

5.  $(x-2)(x+3) = (x-7)(x+7)$

7.  $2x^2 + 3x = (2x-1)(x+1)$

9.  $x^2 + (x+1)^2 = (2x-1)(x+4)$

2.  $x^2 + 3x = (x+3)(x+1)$

4.  $(x+1)(x+4) = (x-7)(x+6)$

6.  $(x-5)(x+4) = (x+7)(x-6)$

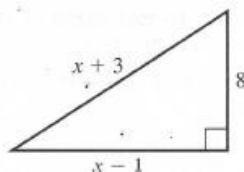
8.  $(2x-1)(x-3) = (2x-3)(x-1)$

10.  $x(2x+6) = 2(x^2-5)$

In Questions 11 and 12, form an equation in  $x$  by means of Pythagoras' Theorem, and hence find the length of each side of the triangle.

(All the lengths are in cm.)

11.



12.

