

3 Exercise: Algebra – Answers

1. (i) 8, (ii) 13, (iii) -8 , (iv) 21, (v) 5, (vi) $\frac{129}{38}$.
2. (i) $10x$, (ii) $5x$, (iii) $5a + 4$, (iv) $2b + c + c^2$.
3. (i) $-8y + 4z$, (ii) $3x^3 - 2x^2$, (iii) $4a^2 + 12ab + 9b^2$, (iv) $2x^3 + 11x^2 - 18$.
4. (i) $-x^2 + 4x + 7$, (ii) $-x^2 + 3x - 3$, (iii) $2x - 1$.
5. (i) $3(x + 4)$, (ii) $6(a + 3)$, (iii) $2(b^2 + 3b + 4)$, (iv) $x(x - 9)$, (v) $2a^2(2a + 3)$.
6. (i) 6, (ii) $\frac{1}{2a}$, (iii) $4c^3$, (iv) $\frac{x^3z}{y}$, (v) 2.
7. (i) $\frac{x}{z}$, (ii) $\frac{4xz}{y^2}$, (iii) $\frac{12a^4}{b}$, (iv) $\frac{3a^2b^3}{c^2}$, (v) $72p$, (vi) $2p^3$, (vii) $\frac{f^3g^4}{4}$, (viii) $\frac{4g^2}{f}$.
8. (i) $\frac{8d}{15}$, (ii) $\frac{q}{4}$, (iii) $\frac{21k}{8}$, (iv) $\frac{a+b}{ab}$, (v) $\frac{2+3x}{x^2}$, (vi) $\frac{4+3c-2c^2-c^3}{c^3}$, (vii) $\frac{6x+10}{(x+1)(x+2)}$,
(viii) $\frac{4x^2+3x+2}{x^2(x+1)}$.
9. (i) $C = 0$, $C = 30$, $C = 100$, (ii) $F = 59$, $F = 86$, $F = 167$
10. (i) $V = 9.6845$, (ii) $h = 11.4765$, (iii) $r = 4.0159$.
11. (i) $x = \frac{y+2}{5}$, $x = 0.706$, (ii) $x = \frac{7-3y}{2}$, $x = 1.205$, (iii) $x = \frac{2}{y-3}$, $x = -1.3605$,
(iv) $x = 2 \pm \sqrt{y}$, $x = 3.2369$ and $x = 0.7631$, (v) $x = y^2 + 4y + 3$, $x = 11.4609$,
(vi) $x = \frac{5}{y} - 1$, $x = 2.2680$, (vii) $x = \frac{y+2}{y-1}$, $x = 6.6604$, (viii) $x = -1 \pm \sqrt{y-1}$, $x = -1.7280$
and $x = -0.2720$.
12. (i) $x = 5$, (ii) $a = 2$, (iii) $c = 6$, (iv) $d = \frac{12}{7}$, (v) $y = 5$, (vi) $x = -2$, (vii) $x = -3$,
(viii) $x = 6$, (ix) $x = 2$, (x) $x = 7$, (xi) $x = 2$.
13. (i) $5 + 50x + 75y + 90z$, (ii) £780, (iii) 12 medium hampers.
14. 20g of cashew nuts, 40g hazelnuts, 80g peanuts. 84p a bag

5.1 Exercise: Graphs – Answers

- $y = (1 - x^3)^{1/3}$.
- $y = x$ is perpendicular to $y = -x$, $y = -x$ is perpendicular to $y = x$,
 $y = 2x$ is perpendicular to $y = -\frac{x}{2}$, $y = mx$ is perpendicular to $y = -\frac{x}{m}$.
- (i) $y = \pm\sqrt{4 - x^2}$, (ii) circle of radius r centred at $(0, 0)$, (iii) circle of radius r centred at (a, b) .
- (i) $x = 6, y = 4$, (ii) $x = 2, y = 1$, (iii) $a = 4, b = 2$, (iv) $x = 2, y = 0$, (v) $c = 2, d = -2$,
(vi) $p = -1, q = -\frac{3}{2}$, (vii) $a = -\frac{5}{3}, b = -\frac{1}{3}$, (viii) $x = -\frac{5}{4}, y = -\frac{11}{4}$, (ix) $x = \frac{13}{5}, y = \frac{7}{5}$.
- a poster costs £1.50 and a book costs £3.50.
- a bag of screws costs 89p and a bag of nails costs 59p.
- width is 9cm, length is 16cm.
- 1756 adults and 744 children.