

Chapter 1 Answers

Exercise 1A

- 1** $7x + y$
3 $8m + n - 7p$
5 $6x^2$
7 $2x^2 + 6x + 8$
9 $6x^2 - 12x - 10$
11 $8x^2 + 3x + 13$
13 $3x^2 + 14x + 19$
15 $a + 4b + 14c$
17 $20 - 6x$
- 2** $10t - 2r$
4 $3a + 2ac - 4ab$
6 $2m^2n + 3mn^2$
8 $9x^2 - 2x - 1$
10 $10c^2d + 8cd^2$
12 $a^2b - 2a$
14 $8x^2 - 9x + 13$
16 $9d^2 - 2c$
18 $13 - r^2$

Exercise 1B

- 1** x^7
3 $6x^5$
5 k^5
7 $5x^8$
10 $2p^{-7}$
13 $27x^8$
16 $32y^6$
- 2** $3x^{-2}$
4 p^2
6 y^{10}
8 $2a^3$
11 $6a^{-9}$
14 $24x^{11}$
17 $4a^6$
- 3** $2p^2$
5 $3a^2b^{-2}$
7 $6a^{12}$
9 $63a^{12}$
12 $6a^{12}$

Exercise 1C

- 1** $9x - 18$
3 $-12y + 9y^2$
5 $-3x^2 - 5x$
7 $4x^2 + 5x$
9 $-10x^2 + 8x$
11 $4x - 1$
13 $3x^3 - 2x^2 + 5x$
15 $-10y^2 + 14y^3 - 6y^4$
17 $11x - 6$
19 $-2x^2 + 26x$
- 2** $x^2 + 9x$
4 $xy + 5x$
6 $-20x^2 - 5x$
8 $-15y + 6y^3$
10 $3x^3 - 5x^2$
12 $2x - 4$
14 $14y^2 - 35y^3 + 21y^4$
16 $4x + 10$
18 $7x^2 - 3x + 7$
20 $-9x^3 + 23x^2$

Exercise 1D

- 1** $4(x + 2)$
3 $5(4x + 3)$
5 $4(x^2 + 5)$
7 $x(x - 7)$
9 $x(3x - 1)$
11 $5y(2y - 1)$
13 $x(x + 2)$
15 $4x(x + 3)$
17 $3xy(3y + 4x)$
19 $5x(x - 5y)$
21 $5y(3 - 4z^2)$
23 $xy(y - x)$
- 2** $6(x - 4)$
4 $2(x^2 + 2)$
6 $6x(x - 3)$
8 $2x(x + 2)$
10 $2x(3x - 1)$
12 $7x(5x - 4)$
14 $y(3y + 2)$
16 $5y(y - 4)$
18 $2ab(3 - b)$
20 $4xy(3x + 2y)$
22 $6(2x^2 - 5)$
24 $4y(3y - x)$

Exercise 1E

- 1** $x(x + 4)$
3 $(x + 8)(x + 3)$
5 $(x + 8)(x - 5)$
7 $(x + 2)(x + 3)$
9 $(x - 5)(x + 2)$
11 $(2x + 1)(x + 2)$
13 $(5x - 1)(x - 3)$
15 $(2x - 3)(x + 5)$
17 $(x + 2)(x - 2)$
19 $(2x + 5)(2x - 5)$
21 $4(3x + 1)(3x - 1)$
23 $2(3x - 2)(x - 1)$
- 2** $2x(x + 3)$
4 $(x + 6)(x + 2)$
6 $(x - 6)(x - 2)$
8 $(x - 6)(x + 4)$
10 $(x + 5)(x - 4)$
12 $(3x - 2)(x + 4)$
14 $2(3x + 2)(x - 2)$
16 $2(x^2 + 3)(x^2 + 4)$
18 $(x + 7)(x - 7)$
20 $(3x + 5y)(3x - 5y)$
22 $2(x + 5)(x - 5)$
24 $3(5x - 1)(x + 3)$

Exercise 1F

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|-------------------------------|---------------------------|--------------------------|
| 1 a x^5 | b x^{-2} | c x^4 |
| d x^3 | e x^5 | f $12x^0 = 12$ |
| g $3x^{\frac{1}{2}}$ | h $5x$ | i $6x^{-1}$ |
| 2 a ± 5 | b ± 9 | c 3 |
| e $\pm \frac{1}{3}$ | f $\frac{1}{-125}$ | g 1 |
| i $\pm \frac{125}{64}$ | j $\frac{9}{4}$ | h ± 6 |
| | | k $\frac{5}{6}$ |
| | | l $\frac{64}{49}$ |

Exercise 1G

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|------------------------|------------------------|------------------------|
| 1 $2\sqrt{7}$ | 2 $6\sqrt{2}$ | 3 $5\sqrt{2}$ |
| 4 $4\sqrt{2}$ | 5 $3\sqrt{10}$ | 6 $\sqrt{3}$ |
| 7 $\sqrt{3}$ | 8 $6\sqrt{5}$ | 9 $7\sqrt{2}$ |
| 10 $12\sqrt{7}$ | 11 $-3\sqrt{7}$ | 12 $9\sqrt{5}$ |
| 13 $23\sqrt{5}$ | 14 2 | 15 $19\sqrt{3}$ |

Exercise 1H

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|---|---|
| 1 $\frac{\sqrt{5}}{5}$ | 2 $\frac{\sqrt{11}}{11}$ |
| 3 $\frac{\sqrt{2}}{2}$ | 4 $\frac{\sqrt{5}}{5}$ |
| 5 $\frac{1}{2}$ | 6 $\frac{1}{4}$ |
| 7 $\frac{\sqrt{13}}{13}$ | 8 $\frac{1}{3}$ |
| 9 $\frac{1 - \sqrt{3}}{-2}$ | 10 $\frac{2 - \sqrt{5}}{-1}$ |
| 11 $\frac{3 + \sqrt{7}}{2}$ | 12 $3 + \sqrt{5}$ |
| 13 $\frac{\sqrt{5} + \sqrt{3}}{2}$ | 14 $\frac{(3 - \sqrt{2})(4 + \sqrt{5})}{11}$ |
| 15 $\frac{5(2 - \sqrt{5})}{-1}$ | 16 $5(4 + \sqrt{14})$ |
| 17 $\frac{11(3 - \sqrt{11})}{-2}$ | 18 $\frac{5 - \sqrt{21}}{-2}$ |
| 19 $\frac{14 - \sqrt{187}}{3}$ | 20 $\frac{35 + \sqrt{1189}}{6}$ |
| 21 -1 | |

Mixed exercise 1I

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|--|------------------------------|--|------------------|
| 1 a y^8 | b $6x^7$ | c $32x$ | d $12b^9$ |
| 2 a $15y + 12$ | c $16x^2 + 13x$ | b $15x^2 - 25x^3 + 10x^4$ | |
| 3 a $x(3x + 4)$ | c $x(x + y + y^2)$ | d $9x^3 - 3x^2 + 4x$ | |
| 4 a $(x + 1)(x + 2)$ | c $(x - 7)(x + 5)$ | b $2y(2y + 5)$ | |
| c $(x - 7)(x + 5)$ | e $(5x + 2)(x - 3)$ | d $2xy(4y + 5x)$ | |
| 5 a $3x^6$ | b ± 2 | b $3x(x + 2)$ | |
| 6 a $\frac{4}{9}$ | b $\frac{3375}{4913}$ | d $(2x - 3)(x + 1)$ | |
| 7 a $\frac{\sqrt{7}}{7}$ | b $4\sqrt{5}$ | f $(1 - x)(6 + x)$ | |
| 8 a $\frac{\sqrt{3}}{3}$ | c $-3\sqrt{3} - 6$ | c $6x^2$ | |
| | | d $\frac{1}{2}x^{-\frac{1}{3}}$ | |
| | | b $\sqrt{2} + 1$ | |
| | | d $\frac{30 - \sqrt{851}}{-7}$ | |