

Chapter 2

Check in

- 1 a 4 b -5 c 3 d -1 e -7
 2 a -15 b 12 c -2 d 5 e 1
 3 a 15 b 13 c 11 d 21
 4 a 9^9 b 8^8 c 5 d 3^8
 5 a Perimeter = $6x + 8$, area = $12x$
 b Perimeter = $12 + 4y$, area = $12y$
 6 a $3(3m + 2)$ b $5(3t - 1)$ c $13(2 - y)$ d $6(4x + 3y)$

Exercise 2A

- 1 a a^5 b q^8 c r^{10} d s^{15} e p^8
 f j^{19} g a^{m+n} h p^{a+b} i m^{a+b+c}
 j x^{a+m+c}
 2 a q b b^3 c y^4 d $4p^4$ e $3x^4$
 f $2y^5$ g $5n^3$ h $\frac{10}{x^2}$
 3 a $8a^7$ b $6c^9$ c $6p$ d $2q^4$
 4 a x^6 b x^6 c x^9 d $16x^8$ e x^{-8}
 f $81x^8$
 5 a^{mn}
 6 a x^3 b p^9 c y^{-4} d q^3
 7 a $\frac{1}{p^5}$ b $\frac{1}{x^3}$ c $\frac{1}{q^9}$ d y^0 e $\frac{1}{k^6}$

8 Students' own examples. For example:

- a $3x^{10} \times 4x^6 = 12x^{16}$ b $(2m^3)^4 = 16m^{12}$
 c $36y^8 \div 12y^6 = 3y^2$ d $3 \times x^0 = 3$
 e $2x^{-3} = \frac{2}{x^3}$

9 They are all wrong.

- a $(3p)^3 = 27p^9$ b $8m^8 \div 2m^2 = 4m^6$
 c $4t^4 \times 4t^4 = 16t^8$ d $8y^0 = 8$

- 10 a lm^2 b $\frac{x^5z}{y}$

- 11 a $\frac{p^2}{q^3}$ b $\frac{x^3}{yz}$ c k^3m^2

- 12 a $2p^6q^3$ b p c $3p^3$ d $\frac{2pq^5}{3}$

- 13 $x^2 \times x^3$ $\frac{x^{10}}{x^3} \times \frac{x^2}{x \times x}$
 $\frac{x^4}{x^2 \times x} \times x^2$ $x^{11} \times x^2 \div x^{10}$
 $x^4 \times x^2 \times x$ $x^7 \div x^2$
 $x^5 \div x^8$ $x^4 \div \frac{(x^4)^2}{x}$

- 14 $\frac{p^{30}}{(p^2 \times p^8)^2} = p^{10}$ $\frac{(p^5 \times p^3)^2}{(p \times p^3)^2} = p^{12}$ $\frac{(p^4 \times p^2)^3}{p^5} = p^{13}$

- 15 a p^6 b x c A^6 d m^{10} e x^5
 f y g $4T$ h h^{15} i $2g^3$

Exercise 2B

1 a $8x$ b $10a$ c $12b$ d $-3y$ e $9a$
f $3b$ g $-8p$ h $17ab$ i $9a^2$ j $7b^2$
k $11x^2$ l $2y^3$

2 a $4ab^2 + 5ba^2$
b p^2 (the 1 is not needed but not actually incorrect)
c $6x^2$

3 a $2xy - 3z$ b $2ab + 6pq$ c $7a^2 - 2b^2$ d $3a^3 + 4a$

4 a $2p + 6q$ b $3z - z^3$ c $7a^2 - 2b^2$ d $8pq - 3p^2$

5 a $-21y$ b $30p$ c $-12pq$ d $15y^2$

e $6a^3$ f $40x^3$

6 a $3a$ b 2 c 2.5 d $4p$ e 3

f $4p$ g $\frac{5}{x}$ h $\frac{1}{2y}$ i a j a

k $\frac{7b^3}{3a^2}$ l $\frac{4x}{y}$

7 a $22xy$ b $17p^2q + 7lm$ c $pqr + 6abx + mny$

d $4pq - 13ab$ e $4x^2y^2 + 9xy$

8 a $4mn$ b $-3l^2m^2$ c $-16pqr$ d $-15m$

e $8p^3q^4$ f $\frac{7ab^2}{2}$ g $\frac{2n^2}{3l^2}$