

Q Expressions: Simplifying, Expanding, Factorising

3 Simplify $4m + 7k - m + 3k$.

..... [2]

3 Simplify.

$$3x - 2y + x + y$$

..... [2]

1 Simplify.

$$3a + 7b - 4a + b$$

..... [2]

2 Simplify.

$$4y^2 + 3y - y^2 + 2y$$

..... [2]

1 Simplify.

$$7c - 5d + c + 3d$$

..... [2]

5 Expand.

$$3(2x - 1)$$

..... [1]

3 Expand.

$$3(x - 2y)$$

..... [1]

6 Expand.

$$3x(2x^4 - 5)$$

..... [2]

9 Expand $3p^2(4 - 3p)$.

..... [2]

4 Expand.

$$x(3 + x^2)$$

..... [2]

4 Simplify fully.

(a) $3a - 6b - 2a + b$

..... [2]

(b) $7(x - 3) - 2(2x - 1)$

..... [2]

10 Expand and simplify.

$$2(t + w) + 3(w - t)$$

..... [2]

13 Expand and simplify.

$$6(t - q) - 2(t - 3q)$$

..... [2]

10 Expand and simplify.

(a) $2x - x(5 - x^2)$

..... [2]

8 Expand and simplify.

$$4(2a + 5b) - 3(6b - 3a)$$

..... [2]

- 9 Expand the brackets and simplify.

$$5x(2 - 3x) - 3x(3x - 2)$$

..... [2]

- 4 Factorise $x^3 - 2x$.

..... [1]

- 6 Factorise completely.

$$4 - 8x$$

..... [1]

- 9 Factorise completely.

$$12a^3 - 21a$$

..... [2]

- 9 Factorise completely.

(a) $21a^2 + 28ab$

..... [2]

12 Factorise completely.

$$x^3y^2 - xy$$

..... [2]

9 Factorise completely.

$$14xy - 7y^2$$

..... [2]

5 Factorise completely.

$$8g - 2g^2$$

..... [2]

13 Factorise completely.

(a) $18px - 27p$

..... [2]

12 Factorise completely.

(a) $4x^2y - 6xy^2$

..... [2]

5 Factorise completely.

(a) $42mk - 35m$

..... [2]

10 Factorise.

(a) $8x + 14$

..... [1]

(b) $8ax^2 - 6bx^3$

..... [2]

2 Simplify.

$y \times 27 - y \times 77$

..... [1]

- 9 (a) Factorise completely.

$$3x^2 - 12xy$$

..... [2]

- (b) Expand and simplify.

$$(m - 3)(m + 2)$$

..... [2]

- 4 (a) Factorise.

$$2p^2 - pq$$

..... [1]

- (b) Expand the brackets and simplify.

$$(p - 7)(p + 3)$$

..... [2]

- 12 Expand the brackets and simplify.

$$(4x - 3y)(4x + 3y)$$

..... [2]

3 Find the value of $x^2 - x$ when $x = -3$.

..... [1]

5 $y = mx + c$

Find the value of y when $m = -3$, $x = -2$ and $c = -8$.

$y =$ [2]

4 $v = u - 9.8t$

Find the value of v when $u = 4$ and $t = -7$.

$v =$ [2]

3 $v = u + at$

Find the value of v when $u = 30$, $a = -2$ and $t = 7$.

$v =$ [2]

3 $P = 2a + b^2 - 3c$

Find P when $a = 5$, $b = -4$ and $c = -3$.

$P = \dots\dots\dots$ [2]

4 $V = 4mp^2$

(a) Find V when $m = 10$ and $p = -3$.

$V = \dots\dots\dots$ [2]

(b) Find the positive value of p when $V = 3200$ and $m = 2$.

$p = \dots\dots\dots$ [2]

9 $P = \frac{2wy^2}{3}$

Find the positive value of y when $P = 108$ and $w = 8$.

$y = \dots\dots\dots$ [3]

- 6 Maria buys n pencils that cost p cents each.
She pays with a \$ y note.

Find, in terms of n , p and y , the amount of change Maria receives.
Give your answer in cents.

..... cents [2]

- 5 A taxi fare, \$ F , consists of a fixed charge of \$ x plus \$0.65 per kilometre travelled.
Find a formula for F for a journey of y kilometres.

..... [2]

- 12 One solution of the equation $ax^2 + b = 181$ is $x = 8$.
 a and b are both positive integers **greater than 1**.

(a) Find the value of b .

$b =$ [2]

(b) Write down the other solution of the equation $ax^2 + b = 181$.

$x =$ [1]

- 5 Petra repairs cars.
The cost of a repair is a fixed charge of \$ C plus a charge of \$ h per hour.

Find an expression, in terms of C , h and n , for the total cost, \$ T , of a repair that takes Petra n hours.

$$T = \dots\dots\dots [2]$$

- 3 Complete these statements.

(a) When $x = \dots\dots\dots$, $x + 3 = 8$. [1]

(b) When $7y = 63$, $10y = \dots\dots\dots$ [1]

(c) Show that $(2n - 5)^2 - 13$ is a multiple of 4 for all integer values of n .

[3]