



1 Expand $3(x + 4)$

(1 mark)

multiply both terms by 3

$$3 \times x = 3x$$

$$3 \times 4 = 12$$

$$\boxed{3x + 12}$$

2 Expand $7(2p - 1)$

(2 marks)

multiply both terms by 7

$$7 \times 2p = 14p$$

$$7 \times -1 = -7$$

$$\boxed{14p - 7}$$

3 Expand $-2(x - 5)$

(2 marks)

multiply both terms by -2

$$-2 \times x = -2x$$

$$-2 \times -5 = +10$$

$$\boxed{-2x + 10}$$

4 Expand $p(p - 6)$

(2 marks)

multiply both terms by p

$$p \times p = p^2$$

$$p \times -6 = -6p$$

$$\boxed{p^2 - 6p}$$

5 Priya says that $(5x - 3) - (2x - 7) = 3x - 10$

Priya is wrong. Explain the mistake she has made.

(1 mark)

Subtracting the bracket changes the sign of every term inside it

$$(5x - 3) - (2x - 7) = 5x - 3 - 2x + 7 = 3x + 4$$

Priya kept -7 as -7 instead of changing it to $+7$

6 a. Expand $4(2x - 5)$

b. Factorise $6y + 15$

(2 marks)

a) 4 times $2x = 8x$ and 4 times $-5 = -20$, so $8x - 20$

b) The highest common factor of $6y$ and 15 is 3

$$6y + 15 = 3(2y + 5)$$

Factorising reverses expanding: divide every term by the common factor to find what belongs inside the bracket, then expand again to check

7 Expand and simplify $2(3a + 1) + 4(a + 5)$

(3 marks)

expand each bracket

$$2(3a + 1) = 6a + 2$$

$$4(a + 5) = 4a + 20$$

collect like terms

$$= 6a + 2 + 4a + 20$$

$$= 10a + 22$$

$10a + 22$

8 a. Sam expands $3(2x + 4)$ and gets the answer $6x + 4$

Explain the mistake Sam has made.

b. Factorise fully $12x^2 + 18x$

(3 marks)

a) Every term inside the bracket must be multiplied by 3

$$3(2x + 4) = 6x + 12, \text{ not } 6x + 4$$

b) The highest common factor of $12x^2$ and $18x$ is $6x$

$$12x^2 + 18x = 6x(2x + 3)$$

9

A rectangle has a width of 4 cm and a length of $(x + 7)$ cm.

a. Write an expression for the area of the rectangle. Expand any brackets.

b. The area of the rectangle is 60 cm^2 . Work out the value of x .

(4 marks)

a)

$$\text{area} = 4 \times (x + 7)$$

$$= 4x + 28$$

$$\boxed{4x + 28}$$

b)

$$\begin{array}{rcl} 4x + 28 & = & 60 \\ -28 & & -28 \\ \hline 4x & = & 32 \\ \div 4 & & \div 4 \\ \hline x & = & 8 \end{array}$$

$$\boxed{x = 8}$$

10

a. Expand and simplify $3(x + 2) + 2(x - 5)$

b. Solve $5(x - 3) = 20$

(4 marks)

$$\text{a) } 3(x + 2) = 3x + 6 \text{ and } 2(x - 5) = 2x - 10$$

$$3x + 6 + 2x - 10 = 5x - 4$$

b) Divide both sides by 5

$$\begin{array}{rcl} x - 3 & = & 4 \\ +3 & & +3 \\ \hline x & = & 7 \end{array}$$

Check

$$5(7 - 3) = 20$$

11

a. Expand and simplify $5(2x + 1) - 3(x - 4)$

b. Factorise fully $18x^2 - 27x$

c. Simplify $(p^2)^5$

(5 marks)

$$\text{a) } 5(2x + 1) = 10x + 5 \text{ and } -3(x - 4) = -3x + 12$$

$$10x + 5 - 3x + 12 = 7x + 17$$

b) The highest common factor of $18x^2$ and $27x$ is $9x$

$$18x^2 - 27x = 9x(2x - 3)$$

c) Multiply the indices

$$p^{(2 \times 5)} = p^{10}$$

12

- a. Expand $3x(2x - 5)$
 b. Factorise fully $20a^2b - 8ab$
 c. Make x the subject of $y = 4x - 7$

(6 marks)

a) $3x$ times $2x = 6x^2$ and $3x$ times $-5 = -15x$, so $6x^2 - 15x$

b) The highest common factor of $20a^2b$ and $8ab$ is $4ab$

$$20a^2b - 8ab = 4ab(5a - 2)$$

c) Add 7 to both sides

$$\begin{array}{lcl} y + 7 & = & 4x \\ \div 4 & & \\ x & = & \frac{y + 7}{4} \quad \div 4 \end{array}$$