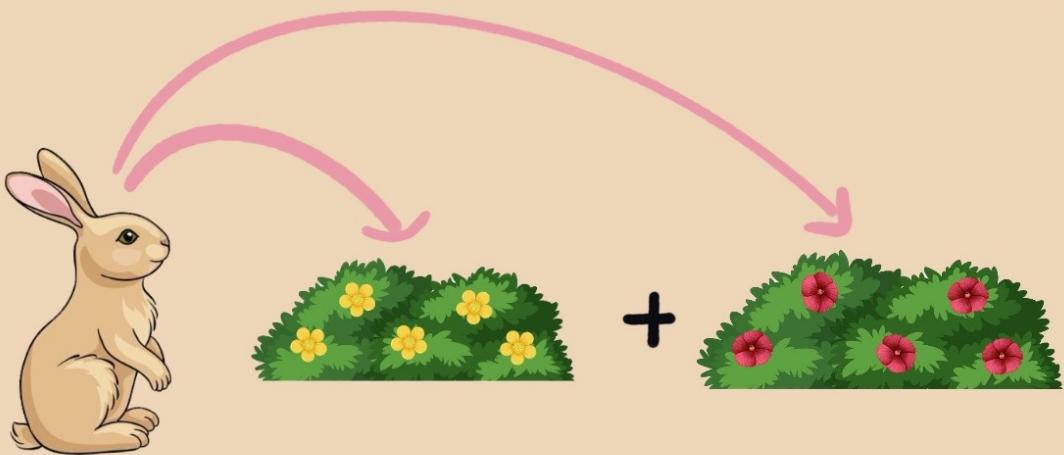


# Expanding Brackets



Expand the brackets

$$2(x + 8)$$

$$2x + 16$$

$$6y(9 - y)$$

$$54y - 6y^2$$

Expand the brackets and simplify

$$12(4x + 8) - 6x$$

$$48x + 96 - 6x$$

$$42x + 96$$

$$7(a - 11) + 2(3 + a)$$

$$7a - 77 + 6 + 2a$$

$$9a - 71$$

1. Expand  $4(y + 2)$



4y + 8.....  
(1)

2. Expand  $2(h - 4)$



2h - 8.....  
(1)

3. Expand  $5(2w + 3)$



10w + 15.....  
(1)

4. Expand  $3(2y - 1)$



6y - 3.....  
(1)

5. Expand  $5(2x + 7)$



10x + 35.....  
(1)

6. Expand  $3(10 - 3y)$



30 - 9y.....  
(1)

7. Expand  $6(3 - 2x)$



18 - 12x.....  
(1)

8. Expand  $2(3w - 5y)$



$6w - 10y$   
(1)

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



$8m - 12p$   
(1)

10. Multiply out  $x(x + 3)$



$x^2 + 3x$   
(1)

11. Expand  $a(a - 9)$



$a^2 - 9a$   
(1)

12. Expand  $y(3y + 5)$



$3y^2 + 5y$   
(1)

13. Expand  $5y(2y + 1)$



$10y^2 + 5y$   
(2)

14. Expand  $3x(3x - 2)$



$9x^2 - 6x$   
(2)

15. Expand  $8x(2x - 5)$



$16x^2 - 40x$   
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(1)

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16. Multiply out  $-3(y + 2)$



$$\underline{-3y - 6} \dots\dots\dots\dots$$

(1)

17. Expand  $6x(y - 2)$



$$\underline{6xy - 12x} \dots\dots\dots\dots$$

(2)

18. Expand  $9e(2f - 3)$



$$\underline{18ef - 27e} \dots\dots\dots\dots$$

(2)

19. Expand  $-2(y - 4)$



$$\underline{-2y + 8} \dots\dots\dots\dots$$

(1)

20. Expand and simplify  $3(x + 5) + 2(x + 1)$



$$\begin{aligned} &3x + 15 + 2x + 2 \\ &\underline{5x + 17} \end{aligned}$$

$$\underline{5x + 17} \dots\dots\dots\dots$$

(2)

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



$$\underline{4x - 4 + 6x + 15}$$

$$\underline{10x + 11} \dots\dots\dots\dots$$

(2)

22. Expand  $y(y^2 + 3)$



$$\underline{y^3 + 3y}$$

$$\underline{y^3 + 3y} \dots\dots\dots\dots$$

(1)

23. Expand  $2w(3w^2 - 5)$



$$\underline{6w^3 - 10w}$$

24. Expand  $y^2(8 - 2y)$



$$8y^2 - 16y^3 \quad (2)$$

25. Expand  $2x^2(7x + 3)$



$$14x^3 + 6x^2 \quad (2)$$

26. Expand  $4x^2(2x - 5)$



$$8x^3 - 20x^2 \quad (2)$$

27. Expand  $a(3a + 2ac)$



$$3a^2 + 2a^2c \quad (1)$$

28. Expand and simplify  $7(x + 4) + 5(3 - 2x)$



$$7x + 28 + 15 - 10x$$

$$-3x + 43 \quad (2)$$

29. Simplify  $19w - (5 - 4w)$



$$19w - 5 + 4w$$

$$23w - 5 \quad (2)$$

30. Expand and simplify  $2(7y - 3x) - 8(x - 4y)$



$$14y - 6x - 8x + 32y$$

$$46y - 14x \quad (2)$$

31. Expand  $w^5(w^4 + 3)$



$$w^9 + 3w^5 \quad (2)$$

1 (a) Expand  $7(2x + 7)$

$14x + 49$

(1)

(b) Factorise  $3y + 12$

$3(y + 4)$

(1)

2 (a) Expand  $5a(a - 6)$

$5a^2 - 30a$

(2)

(b) Solve  $4(b + 2) = 24$

$$\begin{aligned} b+2 &= 6 \\ b &= 4 \end{aligned}$$

$b = 4$

(2)

3 (a) Factorise fully  $12m + 8m^2$

$4m(3 + 2m)$

(2)

(b) Solve  $3(n - 5) = 27$

$n - 5 = 9$

$n = 14$

(2)

4 (a) Expand  $8(3s - 2)$

24s - 16

(1)

(b) Factorise  $4t + 20$

4(t+5)

(1)

5 (a) Factorise fully  $5a^2b + 15ab^2$

5ab(a+3b)

(2)

(b) Solve  $6(c - 8) = 42$

$$\begin{aligned}6c - 48 &= 42 \\6c &= 90 \\c &= \frac{30}{2}\end{aligned}$$

c = 15

(2)

6 (a) Factorise  $18x + 24$

6(3x+4)

(1)

(b) Expand  $3(2y - 4)$

6y - 12

(1)

7 (a) Expand  $p(p - 3)$

$$p^2 - 3p \quad (1)$$

(b) Factorise  $16q + 8$

$$8(2q+1) \quad (1)$$

8 (a) Factorise fully  $6x^2 - 4xy$

$$2x(3x - 2y) \quad (2)$$

(b) Solve  $2(w - 4) = 13$

$$2w - 8 = 13$$

$$2w = 21$$

$$w = \frac{21}{2} = 10\frac{1}{2}$$

$$w = \frac{10}{2} \quad (2)$$

9 (a) Factorise  $x^2 - 9x$

$$x(x - 9) \quad (1)$$

(b) Expand  $6(5y + 1)$

$$30y + 6 \quad (1)$$

10 (a) Expand  $3(5x - 8)$

$$15x - 24$$

(1)

(b) Factorise  $18y + 15$

$$3(6y + 5)$$

(1)

11 (a) Expand  $7(2h - 3)$

$$14h - 21$$

(1)

(b) Expand and Simplify  $4(g + 5) + 3(g - 2)$

$$4g + 20 + 3g - 6$$

$$7g + 14$$

(2)

12 (a) Factorise fully  $7xy + 21x$

$$7x(y + 3)$$

(2)

(b) Solve  $6(p + 3) = 42$

$$p+3 = 7$$

$$p = 4$$

$$p = 4$$

(2)

13 (a) Expand  $a(a + b)$

$$a^2+ab$$

(1)

(b) Factorise  $15y - 6$

$$3(5y-2)$$

(1)

14 (a) Expand  $9x(3y - 8)$

$$27xy - 72x$$

(2)

(b) Expand and Simplify  $7(t - 4) + 5(t - 2)$

$$7t - 28 + 5t - 10$$

$$12t - 38$$

(2)

15 (a) Factorise fully  $30x^3 + 12x$

$$6x(5x^2 + 2)$$

(2)

(b) Solve  $5(f - 2) = 22$

$$5f - 10 = 22$$

$$5f = 32$$

$$f = 6 \frac{2}{5}$$

$$f = 6 \frac{2}{5}$$

(2)

16 (a) Expand  $x(8x + 1)$

$$\underline{8x^2 + x} \quad (1)$$

(b) Factorise  $18 + 63y$

$$\underline{9(2 + 7y)} \quad (1)$$

17 (a) Expand  $2x^2(4x - 9)$

$$\underline{8x^3 - 18x^2} \quad (2)$$

(b) Expand and Simplify  $6(y + 3) - 5(y - 4)$

$$6y + 18 - 5y + 20$$

$$\underline{y + 38} \quad (2)$$

18 (a) Factorise fully  $30a^2 + 40ab$

$$\underline{10a(3a + 4b)} \quad (2)$$

(b) Solve  $3(g + 9) = 21$

$$g + 9 = 7$$

$$g = -2$$

$$g = \underline{-2} \quad (2)$$

19 (a) Expand  $n(5n + 1)$

$$5n^2 + n$$

(1)

(b) Factorise  $18m + mn$

$$m(18+n)$$

(1)

20 (a) Expand  $3x(7x^2 - y)$

$$21x^3 - 3xy$$

(2)

(b) Expand and Simplify  $3(6y + 5) - 2(4y - 1)$

$$10y + 17$$

(2)

21 (a) Factorise fully  $18a^2bc + 30abc^2$

$$6abc(3a + 5c)$$

$$6abc(3a + 5c)$$

(2)

(b) Expand and Simplify  $4(2y - 7) - 3(5y - 3)$

$$8y - 28 - 15y + 9$$

$$-7y - 19$$

(2)

1 Expand and Simplify  $(x + 2)(x + 4)(x + 1)$

$$(x^2 + 4x + 2x + 8)(x + 1)$$

$$(x^2 + 6x + 8)(x + 1)$$

$$x^3 + 6x^2 + 8x + x^2 + 6x + 8$$

$$x^3 + 7x^2 + 14x + 8$$

2 Expand and Simplify  $(x - 3)(x + 5)(x - 2)$

$$(x^2 + 5x - 3x - 15)(x - 2)$$

$$(x^2 + 2x - 15)(x - 2)$$

$$x^3 + 2x^2 - 15x - 2x^2 - 4x + 30$$

$$x^3 - 19x + 30$$

$$x^3 - 19x + 30$$

3 Expand and Simplify  $(x + 2)(x + 1)(x + 5)$

$$(x^2 + 2x + x + 2)(x + 5)$$

$$(x^2 + 3x + 2)(x + 5)$$

$$x^3 + 3x^2 + 2x + 5x^2 + 15x + 10$$

$$x^3 + 8x^2 + 17x + 10$$

$$x^3 + 8x^2 + 17x + 10$$

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4 Expand and Simplify  $\underline{(x+4)(x+5)(x-4)}$

$$(x^2 - 16)(x + 5)$$
$$x^3 - 16x + 5x^2 - 80$$

$$x^3 + 5x^2 - 16x - 80$$

5 Expand and Simplify  $(x+3)(x-1)^2$

$$(x+3)(x^2 - 2x + 1)$$
$$x^3 - 2x^2 + x + 3x^2 - 6x + 3$$

$$x^3 + x^2 - 5x + 3$$

6 Expand and Simplify  $(x+5)(x-3)(2x-1)$

$$(x^2 - 3x + 5x - 15)(2x - 1)$$
$$(x^2 + 2x - 15)(2x - 1)$$
$$2x^3 + 4x^2 - 30x - x^2 - 2x + 15$$

$$2x^3 + 3x^2 - 32x + 15$$

7 Expand and Simplify  $(2x + 1)(x + 2)(x + 3)$

$$(2x^2 + 4x + x + 2)(x + 3)$$

$$(2x^2 + 5x + 2)(x + 3)$$

$$2x^3 + 5x^2 + 2x + 6x^2 + 15x + 6$$

$$\underline{2x^3 + 11x^2 + 17x + 6}$$

8 Expand and Simplify  $(2x - 3)(x - 2)(3x - 1)$

$$(2x^2 - 4x - 3x + 6)(3x - 1)$$

$$(2x^2 - 7x + 6)(3x - 1)$$

$$6x^3 - 21x^2 + 18x - 2x^2 + 7x - 6$$

$$\underline{6x^3 - 23x^2 + 25x - 6}$$

9 Expand and Simplify  $(x - 2)(3x + 2)(x + 5)$

$$(3x^2 + 2x - 6x - 4)(x + 5)$$

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

$$3x^3 - 4x^2 - 4x + 15x^2 - 20x - 20$$

$$\underline{3x^3 + 11x^2 - 24x - 20}$$

10 Expand and Simplify  $(3x + 1)(x + 2)(x - 4)$

$$(3x^2 + 6x + x + 2)(x - 4)$$

$$(3x^2 + 7x + 2)(x - 4)$$

$$3x^3 + 7x^2 + 2x - 12x^2 - 28x - 8$$

$$3x^3 - 5x^2 - 26x - 8$$

11 Show that  $(2x + 3)(5x + 2)(x - 5) = 10x^3 - 31x^2 - 89x - 30$

for all values of  $x$ .

$$(10x^2 + 4x + 15x + 6)(x - 5)$$

$$= (10x^2 + 19x + 6)(x - 5)$$

$$= 10x^3 + 19x^2 + 6x - 50x^2 - 95x - 30$$

$$= 10x^3 - 31x^2 - 89x - 30$$

(shown)

12 Show that  $(2x - 1)(3x + 2)^2 = 18x^3 + 15x^2 - 4x - 4$

for all values of  $x$ .

$$(9x^2 + 12x + 4)(2x - 1)$$

$$= 18x^3 + 24x^2 + 8x - 9x^2 - 12x - 4$$

$$= 18x^3 + 15x^2 - 4x - 4 \text{ (shown)}$$

13 Show that  $(3x - 1)(4x + 3)(x - 9) = 12x^3 - 103x^2 - 48x + 27$

for all values of  $x$ .

$$\begin{aligned}& (12x^2 + 9x - 4x - 3)(x - 9) \\&= (12x^2 + 5x - 3)(x - 9) \\&= 12x^3 + 5x^2 - 3x - 108x^2 - 45x + 27 \\&= 12x^3 - 103x^2 - 48x + 27 \\&\quad (\text{shown})\end{aligned}$$

14 Show that  $(5x - 4)(3x + 1)(2x - 7) = 30x^3 - 119x^2 + 41x + 28$

for all values of  $x$ .

$$\begin{aligned}& (15x^2 + 5x - 12x - 4)(2x - 7) \\&= (15x^2 - 7x - 4)(2x - 7) \\&= 30x^3 - 14x^2 - 8x - 105x^2 + 49x + 28 \\&= 30x^3 - 119x^2 + 41x + 28 \\&\quad (\text{shown})\end{aligned}$$

(Total for question 14 is 3 marks)