

# Brackets + factorising

$$1(a) \quad 2(x+5) \\ = \underline{2x+10}$$

$$(b) \quad a(a+4b) \\ = \underline{a^2+4ab}$$

$$(c) \quad 2x(3x-5y) \\ = \underline{6x^2-10xy}$$

$$2 \quad 4 + 2(2p-3q) \\ = 4 + 2p - 6q \\ = \underline{4+4p-6q}$$

$$(b) \quad 2ab + 4a(3a-2b) \\ = 2ab + 12a^2 - 8ab \\ = \underline{12a^2 - 6ab}$$

$$3(c) \quad (a-3)(a^2+4a-1) \\ = a^3 + 4a^2 - a - 3a^2 - 12a + 3 \\ = \underline{a^3 + a^2 - 12a + 3}$$

$$2(b) \quad 5x - (x+3y) \\ \Rightarrow 5x - 1(x+3y) \\ \Rightarrow 5x - x - 3y \\ = \underline{4x-3y}$$

$$3(a) \quad (x+3)(x+2) \\ = x^2 + 2x + 3x + 6 \\ = \underline{x^2 + 5x + 6}$$

$$(b) \quad (2y-3)(y+4) \\ = 2y^2 + 8y - 3y - 12 \\ = \underline{2y^2 + 5y - 12}$$

$$4. (a) \underline{ba} + \underline{3b}$$

$$\Rightarrow \underline{3(2a+b)}$$

$$(b) 12f + 4g$$

$$\Rightarrow \underline{4(3f+g)}$$

$$(c) 2p - 8p^2$$

$$\Rightarrow \underline{2p(1-4p)}$$

$$(d) c^2 - d^2$$

$$\Rightarrow \underline{(c-d)(c+d)}$$

$$(e) 4x^2 - 25$$

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

$$= \underline{(2x-5)(2x+5)}$$

$$(f) \underline{8k^2} - \underline{18m^2}$$

$$2(4k^2 - 9m^2)$$

$$2((2k)^2 - (3m)^2)$$

$$\Rightarrow 2(\underline{(2k-3m)(2k+3m)})$$

$$(g) \begin{array}{c} \downarrow \\ a^2 + 3a + 2 \\ \downarrow \end{array}$$

$$\begin{array}{cc} \frac{a^2}{a \times a} & \frac{2}{2 \times 1} \end{array}$$

$$\begin{array}{l} t+E. \\ (a-2) + 2a. \\ (a+1) + a. \\ 3a. \end{array}$$

$$\Rightarrow \underline{(a+2)(a+1)}$$

$$(h) \begin{array}{c} \downarrow \\ w^2 + 3w - 10 \\ \downarrow \end{array}$$

$$\underline{(w+5)(w-2)}$$

$$\begin{array}{cc} \frac{w^2}{w \times w} & \frac{10}{1 \times 10} \\ & 5 \times 2 \end{array}$$

$$\begin{array}{l} t+E. \\ (w+5) + 5w \\ (w-2) - 2w \\ 3w \end{array}$$

$$(i) y^2 - 10y + 16.$$

$$\begin{array}{r} y \\ y \times y \end{array}$$

$$\begin{array}{r} 16 \\ 1 \times 16 \\ 2 \times 8 \\ 4 \times 4. \end{array}$$

$$\begin{array}{r} t + e. \\ (y \times 2) - 2y \\ (y - 8) - 8y \\ \hline -10y \end{array}$$

$$\Rightarrow (y - 2)(y - 8)$$

$$(j) 2t^2 + 12t - 32.$$

$$\begin{array}{r} 2t^2 \\ 2t \times t \end{array}$$

$$\begin{array}{r} 32 \\ 1 \times 32 \\ 2 \times 16 \\ 4 \times 8 \end{array}$$

$$\begin{array}{r} t + e. \\ (2t - 4) - 4t \\ (t + 8) + 16t \\ \hline 12t \end{array}$$

$$\Rightarrow (2t - 4)(t + 8)$$

$$(k.) 3p^2 + 8p - 3$$

$$\begin{array}{r} 3p^2 \\ 3p \times p \end{array} \quad \begin{array}{r} 3 \\ 1 \times 3 \end{array}$$

$$\begin{array}{r} t + e. \\ (3p - 1) - p \\ (p \times 3) + 9p \\ \hline +8p \end{array}$$

$$\Rightarrow (3p - 1)(p + 3)$$

Q5

$$\begin{aligned} A_1 &= 2 \times x \\ &= \underline{2x} \end{aligned}$$

$$\begin{aligned} A_2 &= 2(2 + x) \\ &= \underline{4 + 2x} \end{aligned}$$

$$\begin{aligned} \text{Total} &= A_1 + A_2 \\ &= 2x + 4 + 2x \\ &= \underline{4x + 4} \quad \therefore \text{Shown.} \end{aligned}$$