

GCSE Higher Unit 1-4 Extra Work

1. Expand & Simplify

(a) $(w + 4)(w + 2)$ (b) $(a + 5)(a - 3)$ (c) $(b - 3)(b + 7)$

$$w^2 + 6w + 8$$

$$a^2 + 2a - 15$$

$$b^2 - 4b - 21$$

(d) $(8 + x)(2 + x)$ (e) $(4 - w)(w + 2)$ (f) $(x + 2)(8 - x)$

$$16 + 10x + x^2$$

$$8 + 2w - w^2$$

$$-x^2 + 6x + 16$$

2. Expand & Simplify

a) $(x + 4)(x + 2) + (x + 1)(x + 3)$

$$= x^2 + 6x + 8 + x^2 + 4x + 3$$

$$= 2x^2 + 10x + 11$$

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

$$= 2x^2 - 5x - 12 + x^2 + 3x - 10$$

$$= 3x^2 - 2x - 22$$

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

$$= (2x^2 - 12x + 9) - (x^2 + 6x + 9)$$

$$= x^2 - 18x$$

d) $\frac{(x + 2)(x + 3)(x - 5)}{(x^2 + 5x + 6)(x - 5)}$

$$= x^3 - 19x - 30$$

$$\begin{array}{r|l} & x^2 + 5x + 6 \\ -5 & 2x^3 + 5x^2 + 6x \\ & -5x^2 - 25x - 30 \\ \hline & 6x - 30 \end{array}$$

3. Factorise

a) $x^2 + 10x + 21$
 $(x + 7)(x + 3)$

c) $x^2 - 6x - 27$
 $(x - 9)(x + 3)$

e) $x^2 + x - 42$
 $(x + 7)(x - 6)$

b) $x^2 + 2x - 48$
 $(x + 8)(x - 6)$

d) $x^2 - 9x + 20$
 $(x - 5)(x - 4)$

f) $x^2 - x - 12$
 $(x - 4)(x + 3)$

4. Circle the correct answer in each row

0.3^2	0.9	0.09	0.009
0.2^4	0.0016	0.16	0.016
0.1^5	0.000001	0.00001	0.0001
0.9^2	8.1	0.18	0.81
1.2^2	1.44	0.144	14.4
$(-0.1)^3$	-0.0001	-0.001	0.001