

## Factorising Algebraic Expressions

1)

Factorise **fully**

$$2x^2 - 18.$$

2

$$= 2(x^2 - 9) \quad \checkmark$$

$$= 2(x - 3)(x + 3) \quad \checkmark$$

2)

Factorise

$$x^2 - 5x - 24.$$

2

$$= (x - 8)(x + 3) \quad \checkmark \quad \checkmark \text{ (signs)}$$

$$+3x - 8x = -5x$$

3)

Factorise

$$\underline{x^2 + x - 6.}$$

2

$$= (x + 3)(x - 2) \quad \checkmark \checkmark \text{ (signs)}$$

$$-2x + 3x = x$$

4)

Factorise  $x^2 - 4x - 21$ .

2

$$\underline{x^2 - 4x - 21}$$

$$= (x - 7)(x + 3) \quad \checkmark \checkmark \text{ (signs)}$$

$$+3x - 7x = -4x$$

5)

(a) Factorise

$$x^2 - y^2.$$

1

(b) Hence, or otherwise, find the value of

(Do not use a calculator)

$$9.3^2 - 0.7^2.$$

2

$$\begin{aligned} \text{a)} \quad & x^2 - y^2 \\ & = (x - y)(x + y) \quad \checkmark \end{aligned}$$

$$\begin{aligned} \text{b)} \quad & 9.3^2 - 0.7^2 \\ & = (9.3 - 0.7)(9.3 + 0.7) \quad \checkmark \end{aligned}$$

$$\begin{array}{r} 8 \overline{) 9.3} \\ \underline{-0.7} \\ 8.6 \end{array}$$

$$= 8.6 \times 10$$

$$= 86 \quad \checkmark$$

6)

Factorise

$$6ab - 7bc.$$

1

$$\begin{aligned} & 6ab - 7bc \\ & = b(6a - 7c) \checkmark \end{aligned}$$

7)

Factorise

$$x^2 - 4y^2.$$

1

$$= (x - 2y)(x + 2y) \checkmark$$

8)

Factorise **fully**

$$5x^2 - 45.$$

$$\begin{aligned} & 5x^2 - 45 \\ &= 5(x^2 - 9) \quad \checkmark \\ &= 5(x - 3)(x + 3) \quad \checkmark \end{aligned}$$

2

9)

Factorise **fully**


$$3x^2 + 9x - 12.$$

$$\begin{aligned} & 3x^2 + 9x - 12 \\ &= 3(x^2 + 3x - 4) \quad \checkmark \\ &= 3(x + 4)(x - 1) \quad \checkmark \quad \begin{matrix} \text{(signs)} \\ -x + 4x = 3x \end{matrix} \end{aligned}$$

3

10)

(a) Factorise

  $a^2 + 2ab + b^2.$

1

(b) Hence, or otherwise, find the value of (Do not use a calculator)

~~94^2 + 2 \times 94 \times 6 + 6^2.~~

2

a)  $a^2 + 2ab + b^2$

$= (a + b)(a + b)$

b)  $94^2 + 2 \times 94 \times 6 + 6^2$

$= (94 + 6)(94 + 6)$

$= 100 \times 100$

$= 10000$