

Answers Sheet

Expanding and Factorising Quadratics

1.

$$(x + 5)(x - 4)$$

$$x^2 - 4x + 5x - 20$$

$$x^2 + x - 20$$

2.

a) $(2a - 4)(a - 2)$

$$2a^2 - 4a - 4a + 8$$

$$2a^2 - 8a + 8$$

$$2(a^2 - 4a + 4)$$

b) $x^2 - 2x - 15$

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

$$x(x - 5) + 3(x - 5)$$

$$(x - 5)(x + 3)$$

3.

a) $(x + 5)(x + 5)$

$$x^2 + 5x + 5x + 25$$

$$x^2 + 10x + 25$$

b) $3x^2 + 25x - 18$

$$3x^2 + 9x - 2x - 18$$

$$3x(x + 9) - 2(x + 9)$$

$$(x + 9)(3x - 2)$$

4.

$$(z + 5)(z - 3)$$

$$z^2 - 3z + 5z - 15$$

$$z^2 + 2z - 15$$

5.

a) $(7b + 3)(3b - 1)$

$$21b^2 - 7b + 9b - 3$$

$$21b^2 + 2b - 3$$

b) $2x^2 + x - 6$

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

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

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

6.

a) $(3y + 2)(4y - 3)$

$$12y^2 - 9y + 8y - 6$$

$$12y^2 - y - 6$$

b) $6x^2 - x - 40$

$$6x^2 + 15x - 16x - 40$$

$$3x(2x + 5) - 8(2x + 5)$$

$$(2x + 5)(3x - 8)$$

7.

$(m - 5)(m - 9)$

$$m^2 - 9m - 5m + 45$$

$$m^2 - 14m + 45$$

8.

a) $(6h + 2)(h + 3)$

$$6h^2 + 18h + 2h + 6$$

$$6h^2 + 20h + 6$$

b) $x^2 - 81$

$$x^2 - 9x + 9x - 81$$

$$x(x - 9) + 3(x - 9)$$

$$(x - 9)(x + 3)$$

9.

a) $(2y - 5)(2y - 4)$

$$4y^2 - 8y - 10y + 20$$

$$4y^2 - 18y + 20$$

b) $2x^2 - 17x + 30$

$$2x^2 - 5x - 12x + 30$$

$$x(2x - 5) - 6(2x - 5)$$

$$(2x - 5)(x - 6)$$

10.

$(x + 8)(4x + 8)$

$$4x^2 + 8x + 32x + 64$$

$$4x^2 + 40x + 64$$

11.

a) $(x - 8)(x - 9)$

$$x^2 - 9x - 8x + 63$$

$$x^2 - 17x + 63$$

b) $x^2 - 25$

$$x^2 - 5x + 5x - 25$$

$$x(x - 5) + 5(x - 5)$$

$$(x - 5)(x + 5)$$

12.

a) $(2x + 1)(7x - 5)$

$$14x^2 - 10x + 7x - 5$$

$$14x^2 - 3x - 5$$

b) $x^2 + 5x - 14$

$$x^2 + 7x - 2x - 14$$

$$x(x + 7) - 2(x + 7)$$

$$(x + 7)(x - 2)$$

13.

$(b - 6)^2$

$$(b - 6)(b + 6)$$

$$b^2 + 6b - 6b - 36$$

$$b^2 - 36$$

14.

a) $(3x - 1)(x + 3)$

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

$$3x^2 + 8x - 3$$

b) $x^2 - 144$

$$x^2 - 12x + 12x - 144$$

$$x(x - 12) + 12(x - 12)$$

$$(x - 12)(x + 12)$$

15.

a) $(4e - 2)(e + 6)$

$$4e^2 + 24e - 2e - 12$$

$$4e^2 + 22e - 12$$

$$2(e^2 + 11e - 6)$$

b) $x^2 + 6x + 8$

$$x^2 + 2x + 4x + 8$$

$$x(x + 2) + 4(x + 2)$$

$$(x + 2)(x + 4)$$

16.

$x^2 - 169$

$$x^2 - 13x + 13x - 169$$

$$x(x - 13) + 13(x - 13)$$

17.

a) $(s - 1)(s + 3)$

$$s^2 + 3s - s - 3$$

$$s^2 + 2s - 3$$

b) $x^2 + 7x + 10$

$$x^2 + 5x + 2x + 10$$

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

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

18.

a) $(2x + 6)(x + 2)$

$$2x^2 + 4x + 6x + 12$$

$$2x^2 + 10x + 12$$

b) $x^2 + 6x + 9$

$$x^2 + 3x + 3x + 9$$

$$x(x + 3) + 3(x + 3)$$

$$(x + 3)(x + 3)$$

19.

$x^2 - 10x + 25$

$$x^2 - 5x - 5x + 25$$

$$x(x - 5) - 5(x - 5)$$

$$(x - 5)(x - 5)$$

20.

a) $(6v - 3)(5v + 3)$

$$6v^2 + 18v - 15v - 9$$

$$6v^2 + 3v - 9$$

b) $6x^2 + 5x - 4$

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

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

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

21.

a) $(9x + 2)(x + 1)$

$$9x^2 + 9x + 2x + 2$$

$$9x^2 + 11x + 2$$

b) $x^2 - 6x - 16$

$$x^2 - 8x + 2x - 16$$

$$x(x - 8) + 2(x - 8)$$

$$(x - 8)(x + 2)$$
