



# 2.8 – Factorisation

Student name: \_\_\_\_\_ Score: \_\_\_\_\_

1. Factorise completely  $3x^2y - 12y^3$ .

$3y(x - 2y)(x + 2y)$  ..... [2]

2. Factorise  $x^2 - 3x - 4$ .

$(x - 4)(x + 1)$  ..... [2]

3. Factorise completely.

(a)  $x^2 + 2x - 48$

$(x + 8)(x - 6)$  ..... [2]

(b)  $xy + 2xz - 3y - 6z$

$(y + 2z)(x - 3)$  ..... [2]

4. Factorise

$6x^2 - x - 2$ .

$(3x - 2)(2x + 1)$  ..... [2]

5. Factorise  $2x^2 + x - 6$ .

$(2x - 3)(x + 2)$  ..... [2]

6. Factorise completely.

(a)  $pq - py + xy - qx$

$(q - y)(p + x)$  ..... [2]

(b)  $32c^2 - 50d^2$

$2(4c - 5d)(4c + 5d)$  ..... [2]

7. (a)  $8ax - by + 2ay - 4bx$

$(4x + y)(2a - b)$  ..... [2]

(b)  $3x^2 - 5x - 12$

$(3x + 4)(x - 3)$  ..... [2]

8. Factorise completely.

$2a - b + 2ax - bx$

$(2a - b)(x + 1)$  ..... [2]



9. (a) Factorise.

$$x^2 - y^2$$

$$\dots\dots\dots (x - y)(x + y) \dots\dots\dots [1]$$

(b) Work out.

$$164^2 - 36^2$$

$$\dots\dots\dots (164 - 36)(164 + 36) \\ = (128)(200) = 25\,600 \dots\dots\dots [1]$$

10. Factorise completely.

(a)  $12x^2 - 27xy$

$$\dots\dots\dots 3x(4x - 9y) \dots\dots\dots [2]$$

(b)  $4a^2 + 8ab - ac - 2bc$

$$\dots\dots\dots (a + 2b)(4a - c) \dots\dots\dots [2]$$

11. Factorise completely.

$$2p - q + 2xp - xq$$

$$\dots\dots\dots (2p - q)(1 + x) \dots\dots\dots [2]$$

12. Factorise completely.

$$2ac - 5bc + 6a - 15b$$

$$\dots\dots\dots (2a - 5b)(c + 3) \dots\dots\dots [2]$$

13. Factorise completely.

(a)  $x^2 - 2x - 24$

$$\dots\dots\dots (x - 6)(x + 4) \dots\dots\dots [2]$$

(b)  $xy^2 - 4xz^2$

$$\dots\dots\dots x(y - 2z)(y + 2z) \dots\dots\dots [2]$$

14. Factorise completely.

$$3xy - 6yz$$

$$\dots\dots\dots 3y(x - 2z) \dots\dots\dots [2]$$

15. Factorise completely.

$$8a^2 - 50b^2$$

$$\dots\dots\dots 2(a - 5b)(a + 5b) \dots\dots\dots [3]$$

16. Factorise.

(a)  $x^2 - 5x - 24$

$$\dots\dots\dots (x - 8)(x + 3) \dots\dots\dots [2]$$

(b)  $pq + p - tq - t$

$$\dots\dots\dots (q + 1)(p - t) \dots\dots\dots [2]$$

17. Factorise completely.

(a)  $3x^2 - 75y^2$

$$\dots\dots\dots 3(x - 5y)(x + 5y) \dots\dots\dots [2]$$

(b)  $15ap + 10bp - 9a - 6b$

$$\dots\dots\dots (5p - 3)(3a + 2b) \dots\dots\dots [2]$$



18. Factorise.

(a)  $p^2 - p - 30$

$(p - 6)(p + 5)$  ..... [2]

(b)  $x(u - v) - y(v - u)$

$(u - v)(x + y)$  ..... [2]

19. Factorise completely.

$6x^2 - 2x$

$2x(3x - 1)$  ..... [2]

20. Factorise  $3y - y^2$ .

$3y(1 - y)$  ..... [1]

21. Factorise.

$2 - t - 2a + at$

$(2 - t)(1 - a)$  ..... [2]

22. Factorise.

$4x^2 - 4xy - 3y^2$

$(2x - 3y)(2x + y)$  ..... [3]

23. Factorise completely.

$2x^2 - 18$

$2(x - 3)(x + 3)$  ..... [2]

24. Factorise completely.

$ab - a - b + 1$

$(b - 1)(a - 1)$  ..... [2]

25. Factorise completely.

$6ac - 9bc - 8ad + 12bd$

$(3c - 4d)(2a - 3b)$  ..... [2]

26. Factorise.

$2x^2 - 3x - 5$

$(2x - 5)(x + 1)$  ..... [2]

27. Factorise completely.

(a)  $4x^2y - 6xy^2$

$2xy(2x - 3y)$  ..... [2]

(b)  $9x^2 - 1$

$(3x - 1)(3x + 1)$  ..... [1]



28. Factorise.

(a)  $12ax - 2by + 3ay - 8bx$

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

[2]

(b)  $5x^2 - 6x - 8$

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

[2]

29. (a) Factorise  $a^2 - b^2$ .

$(a + b)(a - b)$

[1]

(b) Work out  $5.37^2 - 4.63^2$ .

7.4

[2]

30. Factorise.

$1 + a - c - ac$

$(1 + a)(1 - c)$

[2]

31. Factorise  $x^3 - 2x$ .

$x(x^2 - 2)$

[1]

32. Factorise fully.

$6x^2 - 7x - 3$

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

[2]

33. Factorise fully.

$2cx^2 - 2dx - cx + d$

$(cx - d)(2x - 1)$

[2]

34.(a) Factorise  $x^2 - 3x - 10$ .

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

[2]

(b) Using your answer to **part (a)**, solve  $x^2 - 3x - 10 > 0$ .

$x < -2, x > 5$

[2]

35. Factorise completely.

$5x^2 - 125y^2$

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

[3]

36. Factorise.

$4x^2 - 7x - 2$

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

[2]



37. Factorise.

(a)  $64x^2 - 1$

$(8x + 1)(8x - 1)$  ..... [1]

(b)  $2y^2 - y - 6$

$(2y + 3)(y - 2)$  ..... [2]

38. Factorise completely.

$8x^2 - 18$

$2(2x - 3)(2x + 3)$  ..... [2]

39. Factorise.

(a)  $x^2 - 1$

$(x - 1)(x + 1)$  ..... [1]

(b)  $3x^2 - 6ax - axy + 2a^2y$

$(3x - ay)(x - 2a)$  ..... [2]

40. Factorise.

(a)  $8x + 14$

$2(4x + 7)$  ..... [1]

(b)  $8ax^2 - 6bx^3$

$2x^2(4a - 3bx)$  ..... [2]

(c)  $6ax + 9ay - 8bx - 12by$

$(3a - 4b)(2x + 3y)$  ..... [2]

41. Factorise

(a)  $x^2 - x - 6,$

$(x - 3)(x + 2)$  ..... [2]

(b)  $3ax + 2bx - 4by - 6ay.$

$(x - 2y)(3a + 2b)$  ..... [2]

42. Factorise.

$3x + 6 - 2xy - 4y$

$(x + 2)(3 - 2y)$  ..... [2]



43. Factorise.

(a)  $49 - 16u^2$

.....  $(7 + 4u)(7 - 4u)$  ..... [1]

(b)  $1 + 4xy - 2x - 2y$

.....  $(1 - 2y)(1 - 2x)$  ..... [2]