

Name:

Level 2 Further Maths



Factorising Quadratics Corbettmaths

Ensure you have: Pencil or pen

Guidance

1. Read each question carefully before you begin answering it.
2. Check your answers seem right.
3. Always show your workings

Revision for this topic

www.corbettmaths.com/more/further-maths/



1. Factorise $x^2 + 8x - 105$

$$\frac{(x+15)(x-7)}{(2)}$$

2. Factorise $x^2 - 29x + 180$

$$\frac{(x-9)(x-20)}{(2)}$$

3. Factorise $2x^2 - x - 10$

$$\frac{(x+2)(2x-5)}{(2)}$$

4. Factorise $6x^2 + 13x + 6$

$$\frac{(3x+2)(2x+3)}{(2)}$$

5. Factorise $3x^2 - 17x + 10$

$$\frac{(3x-2)(x-5)}{(2)}$$

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

$$\frac{(2x+1)(2x-3)}{(2)}$$

7. Factorise $12x^2 + 5x - 3$

$$\frac{(3x-1)(4x+3)}{(2)}$$

8. Factorise ~~$12x^2 + 5x - 3$~~
 $15x^2 + 32x + 16$

$$\frac{(5x+4)(3x+4)}{(2)}$$

9. Factorise $20x^2 - 23x + 6$

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

.....
(2)

10. Factorise fully $98 - 72x^2$

$$2(49 - 36x^2)$$
$$2(7 - 6x)(7 + 6x)$$

.....
(2)

11. Factorise fully $27y^2 - 75x^2$

$$3(9y^2 - 25x^2)$$
$$3(3y - 5x)(3y + 5x)$$

.....
(2)

12. Factorise fully $x^4 - y^4$

$$(x^2 - y^2)(x^2 + y^2)$$
$$(x + y)(x - y)(x^2 + y^2)$$

.....
(2)

13. Factorise fully $1 - y^4$

$$(1 - y^2)(1 + y^2)$$
$$(1 - y)(1 + y)(1 + y^2)$$

.....
(2)

14. Factorise fully $7x^2 - 28$

$$7(x^2 - 4)$$
$$7(x - 2)(x + 2)$$

.....
(2)

15. Factorise $2x^2 + 11xy + 15y^2$

$$(2x + 5y)(x + 3y)$$

.....
(3)

16. Factorise $7x^2 + 20xy - 3y^2$

$$(7x - y)(x + 3y)$$

.....
(3)

16. Factorise $5x^2 - 13xy - 6y^2$

$$\frac{(5x + 2y)(x - 3y)}{(3)}$$

17. Factorise $7x^2 - 22xy + 16y^2$

$$\frac{(7x - 8y)(x - 2y)}{(3)}$$

18. Factorise $6x^2 - 35xy + 49y^2$

$$\frac{(3x - 7y)(2x - 7y)}{(3)}$$

19. (a) Factorise $2x^2 + 7x - 15$

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

(b) Hence solve $2(y - 3)^2 + 7(y - 3) - 15 = 0$

$$\text{let } y - 3 = x$$

$$2x^2 + 7x - 15 = 0$$

$$(2x - 3)(x + 5) = 0$$

$$x = \frac{3}{2} \quad \text{or} \quad x = -5$$

$$y - 3 = \frac{3}{2} \quad \text{or} \quad y - 3 = -5$$

$$y = \frac{9}{2}$$

$$y = -2$$

$$\frac{y = \frac{9}{2} \quad \text{or} \quad y = -2}{(3)}$$

20. (a) Factorise $3x^2 - 17x + 10$

$$\frac{(3x - 2)(x - 5)}{\dots\dots\dots}$$

(2)

(b) Hence solve $3(y - 1)^2 - 17(y - 1) + 10 = 0$

$$\begin{aligned}x &= y - 1 \\3x^2 - 17x + 10 &= 0 \\x &= \frac{2}{3} \text{ or } x = 5 \\y &= \frac{5}{3} \text{ or } y = 6\end{aligned}$$

$$\frac{y = \frac{5}{3} \text{ or } y = 6}{\dots\dots\dots}$$

(3)

21. (a) Factorise $15x^2 + 32x + 16$

$$(3x + 4)(5x + 4)$$

$$\frac{(3x + 4)(5x + 4)}{\dots\dots\dots}$$

(2)

Let
 $x = y - 7$

(b) Hence factorise $15(y - 7)^2 + 32(y - 7) + 16$

$$15x^2 + 32x + 16$$

$$(3x + 4)(5x + 4)$$

$$(3(y - 7) + 4)(5(y - 7) + 4)$$

$$(3y - 17)(5y - 31)$$

$$\frac{\dots\dots\dots}{\dots\dots\dots}$$

(3)