

Factoring Review Key

1. $12xy^2 - 16y^3$

$4y^2(3x - 4y)$
(GCF)

2. $9x^2 - 100$

$(3x + 10)(3x - 10)$
(diff. of squares)

3. $x^2 + 3x - 40$

$\begin{array}{r} -40 \\ 0 \times -5 \\ 3 \end{array}$ $(x+8)(x-5)$
x-games (a=1)

4. $6x^2 - 5x - 4$

$\begin{array}{r} -24 \\ -8 \times 3 \\ -5 \end{array}$ $(x-\frac{8}{6})(x+\frac{3}{6})$
 $(3x-4)(2x+1)$
(a ≠ 1 slip n divide or grouping)

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

$x^2(x-1) \quad 3(x-1)$
 $(x^2+3)(x-1)$
(Grouping)

6. $5x^2 - 15x - 20$

$5(x^2 - 3x - 4)$ $\begin{array}{r} -4 \\ -4 \times 1 \\ -3 \end{array}$
 $5(x-4)(x+1)$
GCF & x-games (a=1)

7. $x^3 + 6x^2 - 25x - 150$

$x^2(x+6) - 25(x+6)$
 $(x^2-25)(x+6)$
 $(x+5)(x-5)(x+6)$
(Grouping & Diff. of Sq.)

8. $4x^3 + 12x^2 - 4x$

$4x(x^2 + 3x - 1)$ $\begin{array}{r} -1 \\ -4 \times 1 \\ 3 \end{array}$
(GCF, x games doesn't work)

9. $16x^4 - 1$
 $(4x^2 + 1)(4x^2 - 1)$

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

(diff. of squares twice)

10. $6x^2 - 20x^3$

$2x^2(3 - 10x)$

(GCF)

11. $5x^3 - 40x^2 - 240x$
 $5x(x^2 - 8x - 48)$

$\begin{array}{r} -48 \\ -12 \times 4 \\ -8 \end{array}$

$5x(x - 12)(x + 4)$

(GCF & x-games)

$a = 1$

12. $x^3 + x^2 - x - 1$

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

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

$(x + 1)(x - 1)(x + 1)$

(Grouping & diff. of sq.)

13. $48x^2 + 88x - 56$

$8(6x^2 + 11x - 7)$

$8(\underbrace{x-3}_6)(\underbrace{x+14}_6)$

$\begin{array}{r} -42 \\ -3 \times 14 \\ 11 \end{array}$

$8(2x - 1)(3x + 7)$

(GCF & slip n divide
or grouping)
 $(a \neq 1)$

14. $3x^3 + 10x^2 - 8x$

$x(3x^2 + 10x - 8)$

$x(\underbrace{x+12}_3)(\underbrace{x-2}_3)$

$\begin{array}{r} -24 \\ 12 \times -2 \\ 10 \end{array}$

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

(GCF & slip n divide
or grouping)
 $(a \neq 1)$

$$15. \quad 8x^3 + 2x^2 - 12x - 3$$

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

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

(grouping)

$$16. \quad 8x^{11} - 8x^7$$

$$8x^7(x^4 - 1)$$

$$8x^7(x^2+1)(x^2-1)$$

$$\boxed{8x^7(x^2+1)(x+1)(x-1)}$$

(GCF & Diff of sq twice)

$$17. \quad x^2 - 49$$

$$\boxed{(x+7)(x-7)}$$

(Diff of sq.)

$$18. \quad 9 - 18x^5$$

$$\boxed{9(1 - 2x^5)}$$

(GCF)

$$19. \quad x^2 + 14x + 48$$

$$\boxed{(x+8)(x+6)}$$

(x-games)
a=1

$$\begin{array}{r} 48 \\ 8 \times 6 \\ \hline 14 \end{array}$$

$$20. \quad 5x^3 + 2x^2 + 30x + 12$$

$$x^2(5x+2) + 6(5x+2)$$

$$\boxed{(x^2 + 6)(5x + 2)}$$

(Grouping)