

Factoring Review

Factor and Solve Polynomials Practice

Name: KEY

Factor Completely.

1. $5a^2 - 15$

$$\boxed{5(a^2 - 3)}$$

2. $6xy^2 - 3xy + 8y - 4$

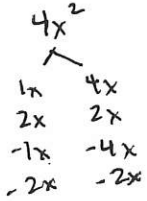
$$3xy(2y - 1) + 4(2y - 1)$$

$$\boxed{(3xy + 4)(2y - 1)}$$

3. $2y^3 - 6xy^2 + 8x^2y$

$$2y(y^2 - 3xy + 4x^2)$$

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



4. $6n^2 - 13n + 6$

a.c = 36

$$\begin{array}{r} 6n^2 - 9n - 4n + 6 \\ \underline{-1 \quad -36} \\ -2 \quad -18 \\ \underline{-3 \quad -12} \\ -4 \quad -9 \end{array}$$

$$3n(2n - 3) - 2(n - 3)$$

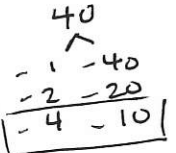
$$\boxed{(3n - 2)(2n - 3)}$$

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



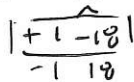
$$\boxed{(x + 2)(x + 1)}$$

6. $x^2 - 14x + 40$



$$\boxed{(x - 4)(x - 10)}$$

7. $6x^2 - 17x - 3$



$$6x^2 + x - 18x - 3$$

$$x(6x + 1) - 3(6x + 1)$$

$$\boxed{(x - 3)(6x + 1)}$$

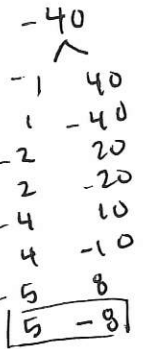
8. $2a^2 + 8ab - 3a - 12b$

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

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

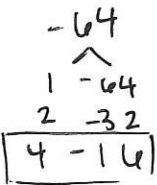
9. $2x^2 - 3x - 20$

$$2x^2 + 5x - 8x - 20$$



$$\boxed{(x - 4)(2x + 5)}$$

10. $x^2 - 12x - 64$



$$\boxed{(x + 4)(x - 16)}$$

11. $6mn - 9m - 4n + 6$

$$-9m + 6mn - 4n + 6$$

$$-3m(3 - 2n) - 2(2n - 3)$$

$$3m(2n - 3) - 2(2n - 3)$$

$$\boxed{(3m - 2)(2n - 3)}$$

12. $75b^2c^3 + 60bc^6$

$$\boxed{15bc^3(5b + 4c^3)}$$

Solve the equation.

13. $3x^2 + 2x - 8 = 0$

$$\begin{array}{r} -24 \\ \wedge \\ -1 \quad 24 \\ -2 \quad 12 \\ -3 \quad 8 \\ \hline -4 \quad 6 \end{array}$$

$X = 4/3, -2$

$3x^2 - 4x + 6x - 8 = 0$
 $X(3x - 4) + 2(3x - 4) = 0$

$(3x - 4)(x + 2) = 0$

$\frac{3x-4=0}{3} \quad \frac{x+2=0}{-2}$
 $\frac{+4}{+4} \quad \frac{-2}{-2}$

16. $x^2 + 20 = -9x$

$x^2 + 20 + 9x = 0$

\wedge
 $x^2 + 9x + 20 = 0$

$x^2 + 5x + 4x + 20 = 0$

$x^2 + 5x + 4x + 20 = 0$
 $X(x+5) + 4(x+5) = 0$

$(x+5)(x+4) = 0$

$X = -5, -4$

19. $15c + 30c^2 = 0$

$15c(1 + 2c) = 0$

$\frac{15c=0}{15} \quad \frac{1+2c=0}{-1}$

$C = 0 \quad \frac{2c = -1}{2} \quad \frac{-1}{2}$
 $C = -\frac{1}{2}$

$C = 0, -\frac{1}{2}$

14. $2x^2 - 3x = 0$

$X(2x - 3) = 0$

$X = 0$

$\frac{2x-3=0}{+3} \quad \frac{2x}{2} = \frac{3}{2}$

$X = \frac{3}{2}$

$X = 0, \frac{3}{2}$

17. $4z^3 - 32z^2 - 5z = -40$

$4z^3 - 32z^2 - 5z + 40 = 0$

$4z^2(z - 8) - 5(z - 8) = 0$

$(z - 8)(4z^2 - 5) = 0$

$z - 8 = 0 \quad \frac{4z^2 - 5 = 0}{+5} \quad \frac{4z^2}{4} = \frac{5}{4}$

$z = 8$

$z = \sqrt{\frac{5}{4}} = \pm 1.2$

$z = 0, 3$

20. $-25k - 75 + k^3 = -3k^2$

$-25k - 75 + k^3 + 3k^2 = 0$

$k^3 + 3k^2 - 25k - 75 = 0$

$k^2(k + 3) - 25(k + 3) = 0$

$(k^2 - 25)(k + 3) = 0$

$\frac{k^2 - 25 = 0}{+25} \quad \frac{k + 3 = 0}{-3}$
 $\sqrt{k^2} = \sqrt{25} \quad k = -3$

$k = \pm 5, -3$

15. $x^3 + 5x^2 - 9x - 45 = 0$

$x^2(x + 5) - 9(x + 5) = 0$

$(x^2 - 9)(x + 5) = 0$

$\frac{x^2 - 9 = 0}{+9} \quad \frac{x + 5 = 0}{-5}$

$\sqrt{x^2} = \sqrt{9}$

$X = \pm 3, -5$

18. $6z^2 = 18z$

$6z^2 - 18z = 0$

$6z(z - 3) = 0$

$\frac{6z = 0}{6} \quad \frac{z - 3 = 0}{+3}$

$z = 0 \quad z = 3$

21. $5x^2 + 22x = 15$

$5x^2 + 22x - 15 = 0$

~~scribble~~

$\begin{array}{r} -75 \\ \wedge \\ -1 \quad 75 \\ \hline -3 \quad 25 \\ -5 \quad 15 \end{array}$

$5x^2 - 3x + 25x - 15 = 0$

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

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

$\frac{x + 5 = 0}{-5} \quad \frac{5x - 3 = 0}{+3}$

$X = -5 \quad \frac{5x = 3}{5}$

$X = \frac{3}{5}$

$X = -5, \frac{3}{5}$