

Name: _____

No work No credit

Date: _____

CW ADDITIONAL PRACTICE: Algebra 1 - Sections 10-5 to 10-7 : Factor Polynomials

Factor each completely:

1. $y^3 + 9y^2$

$y^2(y + 9)$

2. $5x^2y^3 + 15x^3y^2$

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

Common

3. $12t^5 - 20t^4 + 8t^2 - 16$

$4(3t^5 - 5t^4 + 2t^2 - 4)$

Common

4. $p^2 - 36$

$(p + 6)(p - 6)$

$$\begin{array}{r|l} B & -6P \\ +L & 6P \\ \hline M & OP \end{array}$$

Common factor only

5. $25 - x^2$

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

$$\begin{array}{r|l} B & -5x \\ +L & 5x \\ \hline M & \emptyset \end{array}$$

Diff 2 part sq.

Diff of 2 part sq.

6. $4a^3 - 49a$

$a(4a^2 - 49)$

$a(2a + 7)(2a - 7)$

$$\begin{array}{r|l} B & -14a \\ +L & +14a \\ \hline M & \emptyset \end{array}$$

Common
Diff 2 part sq.

CW ADDITIONAL PRACTICE: Algebra 1 - Sections 10-5 to 10-7 : Factor Polynomials

Factor each completely:

7. $x^2 - 10x + 25$

$$\begin{array}{r} 25 \\ -1 \overline{) 25} \\ \underline{-5} \\ 20 \\ \underline{-20} \\ 0 \end{array}$$

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

$$(x-5)^2$$

$$\begin{array}{r} B | -5x \\ +L | -5x \\ \hline m | -10x \end{array}$$

Perfect Square
Trinomial

8. $4a^2 + 16a + 16$

$$\begin{array}{r} 4 \\ 1 \overline{) 4} \\ \underline{1} \\ 3 \\ \underline{-3} \\ 0 \end{array}$$

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

$$4(a+2)(a+2)$$

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

$$\begin{array}{r} B | 2a \\ +L | 2a \\ \hline m | 4a \end{array}$$

Common
Trinomial (Perfect Square tri.)

9. $x^2 + 9x + 20$

$$\begin{array}{r} 20 \\ 1 \overline{) 20} \\ \underline{2} \\ 18 \\ \underline{-18} \\ 0 \end{array}$$

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

$$\begin{array}{r} B | 5x \\ +L | 4x \\ \hline m | 9x \end{array}$$

Trinomial

10. $2y^2 - 16y + 32$

$$\begin{array}{r} 16 \\ -1 \overline{) -16} \\ \underline{-2} \\ -14 \\ \underline{-4} \\ -18 \\ \underline{-18} \\ 0 \end{array}$$

$$2(y^2 - 8y + 16)$$

$$2(y-4)(y-4)$$

$$2(y-4)^2$$

$$\begin{array}{r} B | -4y \\ +L | -4y \\ \hline m | -8y \end{array}$$

Common
Trinomial (Perfect Square)

11. $3x + x^2 - 10$

$$\begin{array}{r} -10 \\ 1 \overline{) -10} \\ \underline{-1} \\ -9 \\ \underline{-2} \\ -11 \\ \underline{-2} \\ -9 \\ \underline{-9} \\ 0 \end{array}$$

$$x^2 + 3x - 10$$

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

$$\begin{array}{r} B | -2x \\ +L | 5x \\ \hline m | 3x \end{array}$$

Trinomial

12. $y^2 + 5y - 84$

$$\begin{array}{r} -84 \\ -1 \overline{) -84} \\ \underline{-2} \\ -82 \\ \underline{-3} \\ -79 \\ \underline{-4} \\ -75 \\ \underline{-6} \\ -69 \\ \underline{-7} \\ -62 \\ \underline{-7} \\ -55 \\ \underline{-7} \\ -48 \\ \underline{-7} \\ -41 \\ \underline{-7} \\ -34 \\ \underline{-7} \\ -27 \\ \underline{-7} \\ -20 \\ \underline{-7} \\ -13 \\ \underline{-7} \\ -6 \\ \underline{-7} \\ 1 \end{array}$$

$$(y-7)(y+12)$$

$$\begin{array}{r} B | 12y \\ +L | -7y \\ \hline m | 5y \end{array}$$

Trinomial

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CW ADDITIONAL PRACTICE: Algebra 1 - Sections 10-5 to 10-7 : Factor Polynomials

Factor each completely:

$$1. (y^3 - y^2) + (2y - 2)$$

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

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

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

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

$$(x+8)(x^2-1) \quad \left. \begin{array}{l} \text{Diff} \\ \text{2 Perf Sq} \end{array} \right\}$$

$$(x+8)(x+1)(x-1)$$

Grouping

$$3. 9x^2 + 15x + 4$$

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

$$\begin{array}{r} 9 \\ \hline 1 \ 9 \\ 3 \ 3 \end{array}$$

$$\begin{array}{r|l} 3 & 12x \\ +L & 3x \\ \hline m & 15x \\ & \checkmark \end{array}$$

Trinomial

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

$$(x+1)(x+2)$$

$$\begin{array}{r|l} 3 & 2x \\ +L & 1x \\ \hline m & 3x \\ & \checkmark \end{array}$$

Trinomial

Grouping

$$4. x^2 - 6x - 16$$

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

$$\begin{array}{r} -16 \\ \hline 1 \ 16 \\ 2 \ 8 \\ \hline 4 \ 4 \end{array}$$

$$\begin{array}{r|l} 3 & 2x \\ +L & -8x \\ \hline m & -6x \\ & \checkmark \end{array}$$

Trinomial

$$6. x^2 - x - 30$$

$$(x-6)(x+5)$$

$$\begin{array}{r} -30 \\ \hline 1 \ -30 \\ 2 \ -15 \\ 3 \ -10 \\ 5 \ -6 \end{array}$$

$$\begin{array}{r|l} 3 & 5x \\ +L & -6x \\ \hline m & -1x \\ & \checkmark \end{array}$$

Trinomial

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CW ADDITIONAL PRACTICE : Algebra 1 - Sections 10-5 to 10-7 : Factor Polynomials

Factor each completely:

7.

$$x^2 + 10x + 16$$

$$\begin{array}{r} 16 \\ \hline 116 \\ \hline 48 \\ \hline 44 \end{array}$$

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

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

Tri → 2 Bi

$$\begin{array}{r|l} B & 8x \\ +L & 2x \\ \hline m & 10x \end{array}$$

8.

$$x^2 + 1x - 72$$

$$\begin{array}{r} -72 \\ \hline 1 \ 72 \\ 2 \ 36 \\ 3 \ 24 \\ 4 \ 18 \\ 6 \ 12 \\ 8 \ 9 \end{array}$$

$$(x+9)(x-8)$$

Tri → 2 Bi

$$\begin{array}{r|l} B & 8x \\ +L & 9x \\ \hline m & 1x \checkmark \end{array}$$

$$x^2 - 8x - 9$$

$$\begin{array}{r} -9 \\ \hline -1 \ -9 \\ 3 \ -3 \end{array}$$

$$(x-9)(x+1)$$

Tri → 2 Bi

$$\begin{array}{r|l} B & 1x \\ +L & -9x \\ \hline m & -8x \checkmark \end{array}$$

10.

$$x^2 + 2x - 48$$

$$\begin{array}{r} 48 \\ \hline -1 \ 48 \\ -2 \ 24 \\ -3 \ 16 \\ -4 \ 12 \\ -6 \ 8 \end{array}$$

$$(x+8)(x-6)$$

Tri → 2 Bi

$$\begin{array}{r|l} B & \\ +L & \\ \hline m & \end{array}$$

$$w^2 - 64$$

$$\begin{array}{r} -64 \\ \hline -1 \ 64 \\ -2 \ 32 \\ -4 \ 16 \\ -8 \ 8 \end{array}$$

$$(w+8)(w-8)$$

Diff 2 Perf sq

$$\begin{array}{r|l} B & 8w \\ +L & -8w \\ \hline m & 0w \checkmark \end{array}$$

12.

$$y^2 - 12y + 36$$

$$\begin{array}{r} 36 \\ \hline -1 \ -36 \\ -2 \ -18 \\ -3 \ -12 \\ -4 \ -9 \\ -6 \ -6 \end{array}$$

$$(y-6)(y-6)$$

Tri → 2 Bi
Perfect Square Tri.

$$\begin{array}{r|l} B & -6y \\ +L & -6y \\ \hline m & -12y \checkmark \end{array}$$