

NAME:

DATE:

A2.Q2.BERMELLEEMBO: NEXT LEVEL FACTORING

DAY N1

(GCF AND GROUPING)

NOTES

① Factor: $2x^2 - 5x - 12$

$\downarrow$ Bigger #
 $\downarrow$ Different signs

$2x \cdot x$

$+1 \cdot 12$
 $-12 \cdot 1$
 $+2 \cdot -6$
 $-6 \cdot 2$
 $+3 \cdot -4$
 $-4 \cdot 3$

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

$$\begin{array}{r} (2x+1)(x-12) \\ 1x \\ -24x \\ \hline -23x \text{ NO} \end{array}$$

$$\begin{array}{r} (2x-12)(x+1) \\ -12x \\ +2x \\ \hline -10x \text{ NO} \end{array}$$

$$\begin{array}{r} (2x+2)(x-6) \\ 2x \\ -12x \\ \hline -10x \text{ NO} \end{array}$$

$$\begin{array}{r} (2x-6)(x+2) \\ -6x \\ +4x \\ \hline -2x \text{ NO} \end{array}$$

$$\begin{array}{r} (2x+3)(x-4) \\ 3x \\ -8x \\ \hline -5x \text{ YES} \end{array}$$

$$\begin{array}{r} (2x-4)(x+3) \\ -4x \\ +6x \\ \hline 2x \text{ NO} \end{array}$$

② Factor: $3x^2 - 10x + 8$

$\downarrow$ Bigger #
 $\downarrow$ Same signs

$3x \cdot x$

$-1 \cdot 8$
 $-8 \cdot 1$
 $-2 \cdot 4$
 $-4 \cdot 2$

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

$$\begin{array}{r} (3x-1)(x-8) \\ -1x \\ -24x \\ \hline -25x \text{ NO} \end{array}$$

$$\begin{array}{r} (3x-8)(x-1) \\ -8x \\ -3x \\ \hline -11x \text{ NO} \end{array}$$

$$\begin{array}{r} (3x-2)(x-4) \\ -2x \\ -12x \\ \hline -14x \text{ NO} \end{array}$$

$$\begin{array}{r} (3x-4)(x-2) \\ -4x \\ -6x \\ \hline -10x \text{ YES} \end{array}$$

Take out the GCF
Difference of Squares

③ Factor: $3x^2 - 48$ GCF = 3

$$3(x^2 - 16)$$

$x \cdot x$ $4 \cdot 4$

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

④ Factor: $5x^2 - 125$ GCF = 5

$$5(x^2 - 25)$$

$x \cdot x$ $5 \cdot 5$

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

⑤ Factor: $6x^2 - 600$ GCF = 6

$$6(x^2 - 100)$$

$x \cdot x$ $10 \cdot 10$

$$\boxed{6(x+10)(x-10)}$$

Factor by Grouping

⑥ $(4x^3 - 3x^2y) + (-8xy + 6y^2)$ • Group

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

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

• Take out GCF

• Does it match?

⑦ $(5x^3 - 2x^2y) + (-15xy + 6y^2)$

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

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

⑧ $(6x^3 - x^2y) + (-30xy + 5y^2)$

$$x^2(6x - y) - 5y(6x - y)$$

$$(x^2 - 5y)(6x - y)$$