

Distribute

$$3(x-4) = 3x - 12 = \frac{3}{\text{GCF}} \left(\frac{x}{\frac{3x}{3}} - \frac{4}{\frac{-12}{3}} \right)$$

$$4x(x+2) = 4x^2 + 8x = 4x \left(\frac{1x}{\frac{4x^2}{4x}} + \frac{2}{\frac{8x}{4x}} \right)$$

$$5x(3x-10) = \frac{15x^2}{5x} - \frac{50x}{5x} = 5x(3x-10)$$

Find the biggest # that is a factor of both #'s.

12 and 8

$$\begin{array}{r} 12 \\ 3 \overline{) 12} \\ \underline{3} \\ 9 \\ \underline{9} \\ 0 \end{array} \quad \text{and} \quad \begin{array}{r} 8 \\ 2 \overline{) 8} \\ \underline{4} \\ 4 \\ \underline{4} \\ 0 \end{array}$$

4

30 and 6

$$\begin{array}{r} 30 \\ 5 \overline{) 30} \\ \underline{15} \\ 15 \\ \underline{15} \\ 0 \end{array} \quad \text{and} \quad \begin{array}{r} 6 \\ 2 \overline{) 6} \\ \underline{2} \\ 4 \\ \underline{4} \\ 0 \end{array}$$

6

x^3 and x^2

$x \cdot x \cdot x$ and $x \cdot x$

x and x^2

20 and 15

$$\begin{array}{r} 20 \\ 4 \overline{) 20} \\ \underline{10} \\ 10 \\ \underline{10} \\ 0 \end{array} \quad \text{and} \quad \begin{array}{r} 15 \\ 3 \overline{) 15} \\ \underline{5} \\ 10 \\ \underline{10} \\ 0 \end{array}$$

5

x and x^4

x and $x \cdot x \cdot x \cdot x$

1 and x^3

x

$$4(2x+3) \xrightarrow{\text{DISTRIBUTE}} 8x+12 \xrightarrow{\text{multiply}} \text{division}$$

GREATEST COMMON FACTOR (GCF)

- you should try this method to start ALL factoring
- identify the largest # that goes into each term and the # of variables that each term has (GCF)
- divide each term by the GCF

$$\boxed{3x^2} + \boxed{6x} \xrightarrow{\text{GCF}} 3x \left(\frac{x}{\frac{3x^2}{3x}} + \frac{2}{\frac{6x}{3x}} \right)$$

FACTOR COMPLETELY:

$$\frac{8x}{\text{GCF}} + \frac{12}{\text{GCF}} \xrightarrow{\text{GCF}} \frac{4}{\text{GCF}} \left(\frac{2x}{\frac{8x}{4}} + \frac{3}{\frac{12}{4}} \right)$$