

What is the Greatest Common Factor?

$$856x^2y^3 \quad \text{AND} \quad 1200x^4y^2$$

$$\begin{aligned} 856x^2y^3 &\rightarrow 2 \cdot 2 \cdot 2 \cdot 107 \cdot x \cdot x \cdot y \cdot y \cdot y \\ 1200x^4y^2 &\rightarrow 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 5 \cdot 5 \cdot x \cdot x \cdot x \cdot x \cdot y \cdot y \\ &= 2 \times 2 \times 2 \times x \times x \times y \times y \\ &= 8x^2y^2 \end{aligned}$$

Notice Anything?



Anything Common?

$$3x + 10xy - 7xyz$$

Remember

$$3x + 10xy - 7xyz$$

$$\begin{array}{l} 3x \longrightarrow 3 \cdot x \\ 10xy \longrightarrow 2 \cdot 5 \cdot x \cdot y \\ 7xyz \longrightarrow 7 \cdot x \cdot y \cdot z \end{array}$$



$$3x + 10xy - 7xyz$$

$$x(3 + 10y - 7yz)$$

What do you notice?

$$\mathbf{x^6 + x^5}$$

$$x^6 + x^5$$

$$\begin{aligned} x^6 &= \underbrace{(x \cdot x \cdot x \cdot x \cdot x)}_{\text{common factor}} \cdot x \\ x^5 &= \underbrace{(x \cdot x \cdot x \cdot x \cdot x)}_{\text{common factor}} \\ x \cdot x \cdot x \cdot x \cdot x &= x^5 \end{aligned}$$

Take out the greatest common factor, which will be the smallest of the like powers!!

$$x^5 (x + 1)$$

$$14xy + 28xyz$$

$$\begin{aligned} 14 &= 2 \cdot 7 \cdot x \cdot y \\ 28 &= 2 \cdot 2 \cdot 7 \cdot x \cdot y \cdot z \\ 2 \cdot 7 \cdot x \cdot y &= 14xy \end{aligned}$$

$$\begin{aligned} &7xy(2+4z) \\ &14xy(1+2z) \end{aligned}$$

$$= 14xy(1+2z)$$

1. $a^5 c^6 z^{11} + a^9 c^{10} z^{13}$
 $= a^5 c^6 z^{11} (1 + a^4 c^4 z^2)$

2. $25x^7 - 15x^5$
 $5x^5 (5x^2 - 3)$

Check $25x^7 - 15x^5$

$$\begin{aligned} 3. \quad & 12x^7y^8 - 24x^9y^4 \\ & = 12x^7y^4(y^4 - 2x^2) \end{aligned}$$

$$\begin{aligned} 4. \quad & 13x^2y^5w^3 - 39x^5y^2w + 26x^3y^1 \\ & = 13x^2y^1(y^4w^3 - 3x^3y^1w + 2x^1) \end{aligned}$$

5. $91x - 7y$
 $7(13x - y)$

6. $2x^5y^3 - 8x^2y^2 + 10y'$
 $2y'(x^5y^2 - 4x^2y' + 5)$

