

### 3.3 Common Factors of a Polynomial

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11:00 AM

monomial: 1 term expression

binomial: 2 term expression

polynomial: 2 or more term expression

factor the polynomial  $\Rightarrow$  write a polynomial as a product (answer when you multiply) of factors.

Ex. 1

$$\begin{array}{cc} 3g & + & 6 \\ \downarrow & & \downarrow \\ \div 3 & & \div 3 \\ 3(1g & + & 2) \end{array}$$

FIND the GCF

$$\begin{array}{c} 3g \\ \swarrow \searrow \\ 1 \cdot \textcircled{3} \end{array}$$

$$\begin{array}{c} 6 \\ \swarrow \searrow \\ 1 \cdot 6 \\ 2 \cdot \textcircled{3} \end{array}$$

\* check your answer \*

$$\begin{array}{c} \textcircled{3} \textcircled{g+2} \\ \swarrow \searrow \\ 3(g+2) \\ = 3g + 6 \quad \checkmark \end{array}$$

Ex. #2

$$8d + 12d^2$$

↓  
÷4

↓  
÷4

$$4(2d + 3d^2) = 4d(2 + 3d)$$

\* check your answer \*

$$4d(2 + 3d) = 8d + 12d^2 \checkmark$$

Ex #3

Factor the trinomial  $18z^2 - 12z + 6$ . Verify that the factors are correct.

$18z^2$	$12z$	$6$
1-18	1-12	1-6
2-9	2-6	3-2
3-6	3-4	

GCF = 6

$$\frac{18z^2}{\downarrow} - \frac{12z}{\downarrow} + \frac{6}{\downarrow}$$

÷6      ÷6      ÷6

$$6(3z^2 - 2z + 1)$$

\* Check your answer \*

$$6(3z^2 - 2z + 1)$$

$$6(3z^2 - 2z + 1) \\ = 18z^2 - 12z + 6 \quad \checkmark$$

Ex #4

Factor  $-20c^4d - 30c^3d^2 - 25cd$

GCF = 5

$$\begin{aligned} & \begin{array}{ccc} \downarrow & \downarrow & \downarrow \\ \div 5 & \div 5 & \div 5 \end{array} \\ & = 5(-4c^4d - 6c^3d^2 - 5cd) \\ & = 5cd(-4c^3 - 6c^2d - 5) \end{aligned}$$

can only factor c d variable