Warm Up 11/28/18

Factor Completely:

1. $18x^3y^2 - 10x^2 + 24y$

$2(9x^3y^2 - 5x^2 + 12y)$

2. $x^3 + 2x^2 - 48x$

$a=1$
$b=2$
$c=-48$
$ac=-48$

-2	24
-3	16
-4	12
-6	**8**

$x(x^2+2x-48)$
$(x^2-6x)(8x-48)$
$x(x-6)\,8(x-6)$
$x(x+8)(x-6)$

3. $5m^2 + 30m - 35$

$ac=-7$

7	-1

$5(m^2+6m-7)$
$(m^2+7m)(-m-7)$
$m(m+7)-1(m+7)$
$5(m-1)(m+7)$

4. $x^2 - 14xy - 51y^2$

$a=1$
$b=-14$
$c=-51$

$(x^2-17xy)(3xy-51y^2)$ $ac=-51$

-17	3

$x(x-17y)\,3y(x-17y)$
$(x+3y)(x-17y)$

Factoring Polynomials

DIFFERENCE OF SQUARES

Review! *Simplify the following:*

- (x + 4)(x – 4) = $x^2 - 4x + 4x - 16 = x^2 - 16$
- (5x + 1)(5x – 1) = $25x^2 - 5x + 5x - 1 = 25x^2 - 1$
- (2a + 3b)(2a – 3b) = $4a^2 - 6ab + 6ab - 9b^2 = 4a^2 - 9b^2$

This resulting product is called a DIFFERENCE OF SQUARES.

To factor a difference of squares, use the following rule:

$a^2 - b^2 =$ $(a-b)(a+b)$

Examples: Factor the following pifference of squares. ***Check your answers by FOIL.***

1. $a^2 - 4$ $(a-2)(a+2)$	**2.** $n^2 - 64$ $(n-8)(n+8)$
3. $81 - x^2$ $(9-x)(9+x)$	**4.** $c^2 - 100$ $(c-10)(c+10)$
5. $k^2 + 25$ PRIME	**6.** $1 - 49y^2$ $(1-7y)(1+7y)$
7. $9b^2 - 100$ $(3b-10)(3b+10)$	**8.** $25x^2 - 49$ $(5x+7)(5x-7)$
9. $16a^2 - 121$ $(4a-11)(4a+11)$	**10.** $x^2 - 81y^2$ $(x-9y)(x+9y)$
11. $4h^2 - 25g^2$ $(2h+5g)(2h-5g)$	**12.** $64u^2 - v^2$ $(8u-v)(8u+v)$

Sometimes you have to take out the GCF first including variables in order to have a Difference of Squares.

Example:

$48a^3 - 12a$ **GCF =** $12a$

$12a(4a^2 - 1)$

$12a(2a-1)(2a+1)$

When you write your final answer the GCF goes outside your two ( )

21. $24a^2 - 54b^2$	**22.** $36x^3 - 9x$
23. $45q^3 - 20q$	**24.** $32s^2 - 18u^2$ $2(16s^2 - 9u^2)$ $2(4s-3u)(4s+3u)$
25. $100b^3 - 36b$	**26.** $3x^4 - 48x^2$ $3x^2(x^2 - 16)$ $3x^2(x-4)(x+4)$
27. $8x^2y - 32y^3$ $8y(x^2 - 4y^2) = 8y(x-2y)(x+2y)$	**28.** $125m^3 - 5m$
29. $3n^2 - 147$	**30.** $18x^2 - 50$