Warm-Up **November 26, 2018**

1. **Factor $5x^2y - 65xy^3 + 200xy$**

$5xy(x-13y^2+40)$

2. **Factor: $4x^3y^3 - 2x^2y^3 + 8xy^3$**

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

3. **Which is a binomial factor of $6x^2 + 3x - 14x - 7$**

a. (6x - 1) **b. (2x - 7)** **c. (3x + 1)** **d. (3x - 7)**

4. **Clara collects dimes and nickels. She has a total of 47 coins. She counted the value of nickels and dimes and found out she has $4.05. How many nickels, n, does Clara have?**

$x+y=47$

$.10x+.05y=4.05$

$.10x+.05(-x+47)=4.05$

$.10x-.05x+2.35=4.05$

$.05x+2.35=4.05$

$.05x=1.70$

$x=34$ dimes

$y=13$ nickels

Factoring Trinomials
$ax^2 + bx + c$

FACTORING TRINOMIALS
of the form
$x^2 + bx + c$

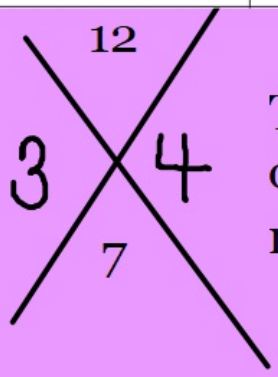
To factor a trinomial of the form $x^2 + bx + c$, you must find two integers that multiply to equal c and add to equal b.

Guided Example: $x^2 + 7x + 12$ $a=1$ $b=7$ $c=12$

What two integers have a product of 12 and a sum of 7? _____

Write two binomials using these integers, then distribute to check.

$(x+3)(x+4)$



Top number is the product of the numbers. Bottom number is the sum.

$ac = 12$

1	12
2	6
3	4

$x^2+7x+12$

$(x^2+3x)(+4x+12)$

$x \quad x \quad 4 \quad 4$

$x(x+3)+4(x+3)$

$(x+4)(x+3)$

Set 1: + and +

Ex. 1) Factor $n^2 + 9n + 20$

$a = 1 \quad b = 9 \quad c = 20$

$ac = 20$

1	20
2	10
4	5

$(n^2 + 4n)(+5n + 20)$

$n \quad n \quad 5 \quad 5$

$n(n+4)+5(n+4)$

$(n+5)(n+4)$

Ex. 2) $w^2 + 9w + 18$

Set 2: + and -

$n^2 + 3n - 18$

$a = 1 \quad b = 3 \quad c = -18$

$ac = -18$

-1	18
-2	9
-3	6

$(n^2 - 3n) + (6n - 18)$

$n(n-3) + 6(n-3)$

$(n+6)(n-3)$

$x^2 + 2x - 8$

What is different about this problem?

How will this impact my answer?

Set 3: - and -

$a^2 - 2a - 3$

$a = 1 \quad b = -2 \quad c = -3$

$ac = -3$

-1	3
1	-3

$(a+1)(a-3)$

$x^2 - 7x - 30$

What is different about this problem?

How will this impact my answer?

Set 4: - and +

$x^2 - 11x + 24$

$x^2 - 14x + 49$

What is different about this problem?

How will this impact my answer?

WATCH THOSE SIGNS!

+/+

$y^2 + 2y + 1$

$(y + 1)(y + 1)$

Signs are the same!
Sign of the middle term.

- / +

$y^2 - 2y + 1$

$(y - 1)(y - 1)$

Signs are the same!
Sign of the middle term.

- / -

$n^2 - n - 90$

$(n - 10)(n + 9)$

Signs are different!

Biggest factor takes the sign of the middle term.

+ / -

$m^2 + 5m - 6$

$(m + 6)(m - 1)$

Signs are different!

Biggest factor takes the sign of the middle term.

What if there is a GCF to factor?

$4k^2+12k+8$

$2x^2- 8x - 24$

Factor each polynomial. Check your answer by distributing.

1.) $2x^2 + 5x + 2$

$a = 2 \quad b = 5 \quad c = 2$

$ac = 4$

1	4
2	2

$(2x^2 + x)(+4x + 2)$

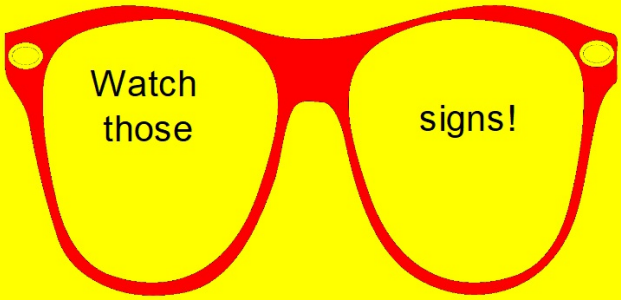
$x(2x+1) + 2(2x+1)$

$(x+2)(2x+1)$

What is different about this problem?

2.) $3n^2 + 5n + 2$

3.) $2y^2 + 9y - 5$



What if there is a GCF?

10. $8x^2 - 2x - 10$

12. $60x^2 + 4x - 8$