Warm-up

#1. Simplify the expression $(2x+6)(x-1)$

$$2x^2 - 2x + 6x - 6$$

$$2x^2 + 4x - 6$$

#2. Simplify the expression $(3x^2+4)(x-3)$

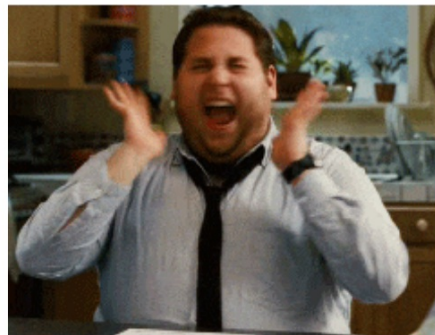$$3x^3 - 9x^2 + 4x - 12$$

Any Questions on the Homework?

Agenda:

1) Notes on factoring!
- GCF
- Factoring when a=1
- Difference of Squares

2) Mastery Challenge.

3) Algebra Connect.

Factoring

GCF, a=1,

Difference of Squares

Quadratic Equations

Standard Form: $ax^2 + bx + c$; where $a = 1$

Shape:

$$a > 0 \qquad\qquad a < 0$$

Factor: means to write quadratic into two binomials multiplied together.

Notes on Factoring

Steps:

- Factor a GCF if there is one
- Check to see if there are two perfect squares that are seperated by subtraction; if so use difference of squares (addition can not be done)
- Check to see if $a=1$; if so use the Diamond Method

Other Things to Remember:

Factor the polynomial into two binomials.

You can check your answer by multiplying the binomials back toegther!

Factors are in the form: $(x-a)(x-b)$

Go through the steps for each problem to ensure the correct factoring method!

GCF: Greatest Common Factor

- ○ Find the greatest common factor among all the monomials, a has to be positive.

- ○ Divide each monomial by the GCF.

EX: $3xy^2 + 9x^2y - 12\ xy$ $3xy$

What do all three monomials have in common? $3xy$

Factor the 3xy out of the trinomial. $3xy(y + 3x - 4)$

Factor each completely. (Remember to pull out the GCF first.)

$-16p^3q^2 + 24p^2q^3 - 32p^4q$

$w \cdot w \cdot w \cdot t \cdot t \quad w \cdot t \cdot t \quad w w t t t$

$8p^2q\left(-2pq + 3q^2 - 4\frac{p^2}{p}\right)$

$12w^3t^2 - 9wt^2 + 15w^2t^3$

$3wt^2(4w^2 - 3 + 5wt)$

$2p^2 + 14p + 24$

$2(p^2 + 7p + 12)$

$\left[8xy(d-12)\right] - \left[9z(12-d)\right]$

$8xy(d-12) - 9z(-1)($

$\left[8xy(d-12)\right] + \left[9z(d-12)\right]$

$(d-12)(8xy + 9z)$

DIAMOND METHOD
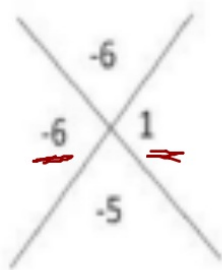
○ The coefficient needs to equal 1.
○ Draw the Diamond. Put x^2 at the top and c at the bottom.
○ Next, search for two factors of c that if multipled together will equal c and add up to get b.
○ Once you find the two factors, then write the factors in two binomials multiplied together.

Ex: $x^2 - 5x - 6$

-6

-5
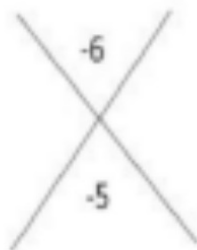
Factors:
1 and -6,
-1 and 6,
2 and -3,
-2 and 3

-6

-6   1

-5

Factors of 6 multiplied to get -5

SOLUTION:

$(x - 6)(x + 1)$

$(x - 6)(x + 1)$

$$a^2 - 5a - 24$$

$$\begin{array}{c} 24 \\ -8 \;\;\diagdown\!\!\!\!\diagup\;\; 3 \\ -5 \end{array}$$

$$(x-8)(x+3)$$

$$x^2 + 4xy - 12y^2$$

$$\begin{array}{c} -12 \\ -2 \;\;\diagdown\!\!\!\!\diagup\;\; 6 \\ 4 \end{array}$$

$$(x-2y)(x+6y)$$

$$p^2 + 14p + 40$$

$$\begin{array}{c} 40 \\ 10 \;\;\diagdown\!\!\!\!\diagup\;\; 4 \\ 14 \end{array}$$

$$(p+10)$$
$$(p+4)$$

FROM NOW ON, WE WILL REFER TO ALL OF OUR PROBLEMS AS OPPORTUNITIES.

ONE OF YOUR IDIOT SPAWN WAS PLAYING WITH THE OVEN AND BURNED DOWN YOUR HOUSE.

CAMPING OPPORTUNITY?

$$\begin{array}{c} -24 \\ 2, -12 \\ 8, 3 \end{array}$$

DIFFERENCE OF SQUARES

$$a^2 - b^2 = (\sqrt{a} - \sqrt{b})(\sqrt{a} + \sqrt{b})$$

EX: $$x^2 - 64$$

Both terms are perfect squares and subtracted.

Take the square root of each a and b and write the monomials as a difference of squares.

SOLUITON: $(x - 8)(x + 8)$

$9k^2 - 1$

$(3k - 1)(3k + 1)$

$36x^2 - 25$

$(6x - 5)(6x + 5)$

$5a^2 - 180$

$5(a^2 - 36)$

$5[(a + 6)(a - 6)]$

Mastery Challenge Question!

Do you think you can solve it?

Simplify: 6a^2-54

Mastery Challenge!

1. If you got the last question correct, you will start from the "Got It" side. If not, you will start from the "Not yet" side.

2. The solution is at the front. Check your solutions before you move onto the next question.

3. You will complete 5 questions total.

4. Show ALL WORK.

Expectations:
- Work individually.
- Work at a minimal volume.
- 25 minutes.

Algebra Connect

Number of Players – 3 per group: 2 players, 1 moderator

Materials needed: Game Board, copy of answers for moderator, two dice, chips of two different colors

Rules:
1. **In order to roll a die, go to your calculator and pressAPP -> ProbSim -> Dice**
2. The first player tosses both dice and locates the corresponding box on the game board. For example, if the player tosses a 3 and a 4, they may go to the 3rd row, 4th column, or the 4th row, 3rd column.
3. The player solves the problem and asks the moderator if he/she is correct. If the solution is correct, the player places his/her marker in that box. If the solution is incorrect, the other player can steal the box by giving the correct solution.
4. If a player tosses the dice and the box indicated is already occupied, the player rolls the dice again.
5. The winner is the player who has four of his/her game markers in a row (row, column, or diagonal).

YOU'RE GOING DOWN
SUCKA!
memegenerator.net

Exit Ticket

#1. $y^2 - 7y + 12$

#2 Factor: $x^2 - 9$

Chalkboard
Eraser