Warm Up:

Expand and Simplify.

$$y = 3(x-1)^{2} + 2$$

$$= 3(x-1)(x-1) + 2$$

$$= -2(x+2)(5x+2) - 5$$

$$= 3(x^{2}-x-x+1) + 2$$

$$= -2(x^{2}+2x+2x+4) - 5$$

$$= 3(x^{2}-2x+1) + 2$$

$$= -2(x^{2}+4x+4) - 5$$

$$= 3(x^{2}-2x+1) + 2$$

$$= -2(x^{2}+4x+4) - 5$$

$$= -2x^{2}-8x-8-5$$

$$= 3x^{2}-6x+3+2$$

$$= -2x^{2}-8x-13$$

$$= 3x^{2}-6x+5$$

$$= -2x^{2}-8x-13$$

Review of Factoring

Lesson objectives

- I know how to factor a simple trinomial
- I know how to factor a complex trinomial
- I know how to factor a difference of squares binomial

Lesson objectives

Teachers' notes

esson notes

Nelson Page 556 #s 1-3, Page 102 #s 1b, 3b 4b & 6cd

Common Factoring: We look for a factor common to each term and divide it out to write the expression as a product.

$$3x^2 + 9$$

$$2x^{2} + x$$

$$3x^2 + 9$$
 $2x^2 + x$ $8x^3 - 6x^2 + 4x$

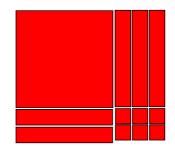
TIP: Use the largest number that divides into all the terms exactly and, if there is a variable(s), use the lowest exponent of that variable(s).

 $3(x^2+3)$ $\chi(2x+1)$ $2\chi(4x^2-3x+2)$

Factoring Quadratics



- Since factoring is the opposite of multiplication we are essentially looking for what two "pieces" we multiplied together to get the given expression
- If we think back to the visual model, we have the area and we are looking for the side lengths



Decomposition

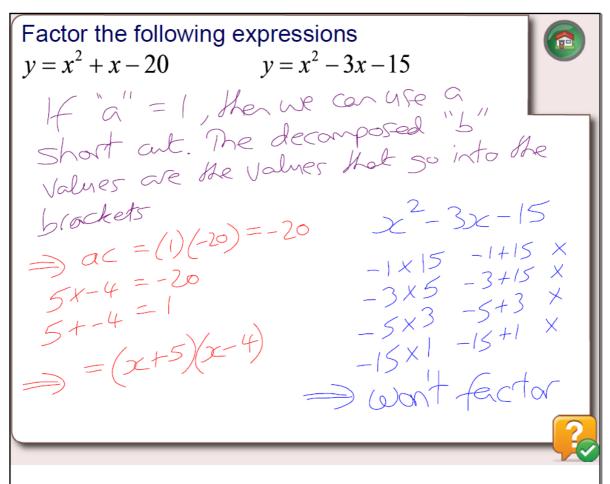


- When we are factoring a trinomial we are doing decomposition (though there are different methods of decomposition)
- Regardless of the method you choose, the first two steps are always the same:
 - 1. Common Factor (if possible)
 - 2. Find two numbers that:
 - add to b
 - and multiply to ac

where,
$$y = ax^2 + bx + c$$



Factor the following expressions $y = 6x^{2} + 11x + 4$ $y = 2x^{2} + x - 6$ x = (6)(4) = 24 x = (2)(-6) = -12 x = (12)(-2) = -24 x = (2)(-6) = -12 x = (12)(-2) = -24 x = (2)(-6) = -12 x = (12)(-2) = -24 x = (2)(-6) = -12 x = (12)(-2) = -24 x = (2)(-6) = -12 x = (



Factoring Difference of Squares Binomials

A difference of squares binomial should be just as quick to factor as a simple trinomial.

These look like they have a "0x" term in the middle.

We take the square root of each term and these values become the values at the beginning and end of each bracket. Then one bracket has a "+" and one has a "-".

Factor the following expressions

$$y = 4x^{2} - 9$$

$$y = 121 - x^{4}$$

$$y = 3$$

$$(2x + 3)(2x - 3) = (1 + x^{2})(1 - x^{2})$$
https://www.mangahigh.com/en-gb/games/wrecksfactor