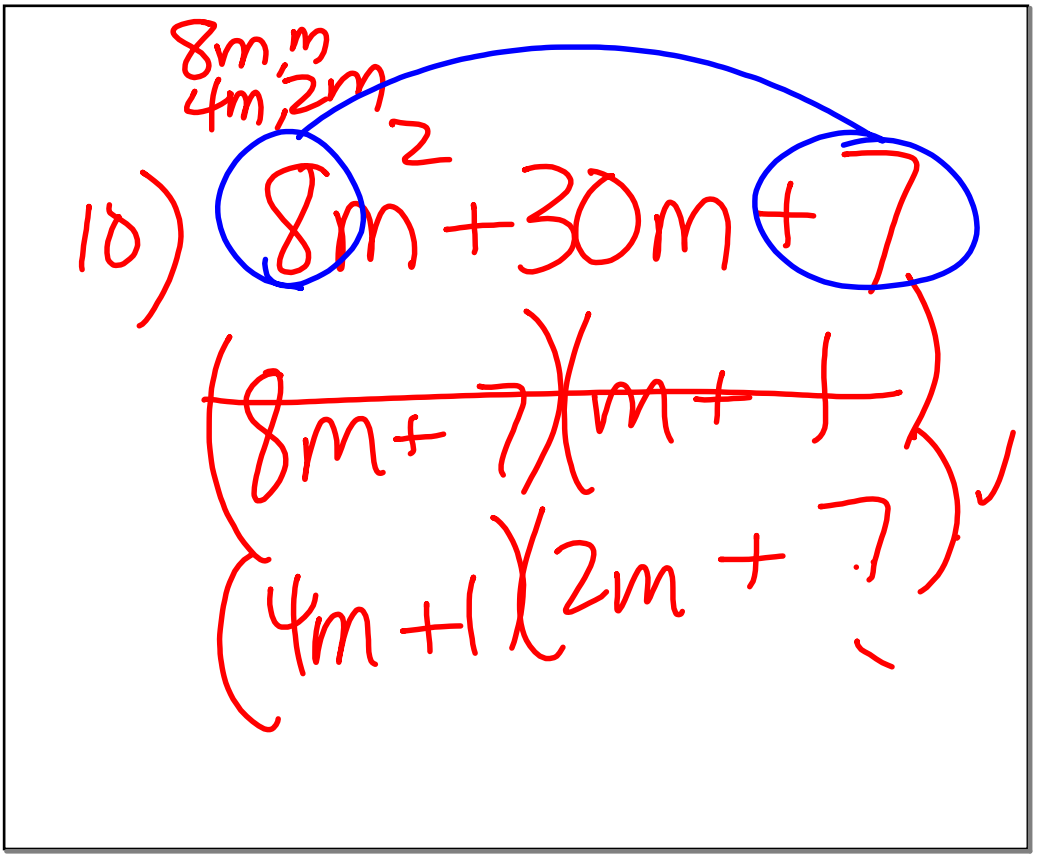
Algebra 1

Our Goal: To learn to factor the difference of two squares

Warm Up: FOIL review

Today's Homework
- 7.7 Exercises, p.401: 4-40 (evens)
- iready is due tomorrow (the snow day did not make this a "short" week)

Previous Homework
7.6 Exercises, p.395: 4-32 (evens)



Simplify.

1. $(y-5)^2$ $y^2-10y+25$

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

3. $(3x-7)^2$ $9x^2-42x+49$

4. $(x-2y)^2$

5. $(4x-9y)^2$

6. $(2x-7)^2$

Core Concept

Difference of Two Squares Pattern

Algebra	Example
$a^2 - b^2 = (a + b)(a - b)$	$x^2 - 9 = x^2 - 3^2 = (x + 3)(x - 3)$

Factor a. $x^2 - 25$ b. $4z^2 - 1$

$(x)^2 - (5)^2$

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

$(2z)^2 - (1)^2$

$(2z+1)(2z-1)$

$x^4 - 16$

$(x^2)^2 - (4)^2$

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

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

a^2+b^2 is S.O.S. prime

x^2+9 is prime

$\neq (x+3)(x+3)$

Use a special product pattern to evaluate the expression $54^2 - 46^2$.

Factor the polynomial.

1. $x^2 - 36$ **2.** $100 - m^2$ **3.** $9n^2 - 16$ **4.** $16h^2 - 49$

$(x+6)(x-6)$ $(3n+4)(3n-4)$

$(10+m)(10-m)$ $(4h+7)(4h-7)$

Use a special product pattern to evaluate the expression.

5. $36^2 - 34^2$ **6.** $47^2 - 44^2$ **7.** $55^2 - 50^2$ **8.** $28^2 - 24^2$

Core Concept

Perfect Square Trinomial Pattern

Algebra	Example
$a^2 + 2ab + b^2 = (a + b)^2$	$x^2 + 6x + 9 = x^2 + 2(x)(3) + 3^2 = (x + 3)^2$
$a^2 - 2ab + b^2 = (a - b)^2$	$x^2 - 6x + 9 = x^2 - 2(x)(3) + 3^2 = (x - 3)^2$

Factor each polynomial.

a. $n^2 + 8n + 16$

$(n)^2 \quad (4)^2$

2

$(n+4)^2$

b. $4x^2 - 12x + 9$

$(2x)^2 \quad (3)^2$

$(2x-3)^2$

Solve $x^2 + \frac{2}{3}x + \frac{1}{9} = 0.$

$(x)^2 \quad \left(\frac{1}{3}\right)^2$

$\left(x + \frac{1}{3}\right)^2 = 0$

$x = -\frac{1}{3}$

Factor the polynomial.

9. $m^2 - 2m + 1$ $(m-1)^2$

10. $d^2 - 10d + 25$ $(d-5)^2$

11. $9z^2 + 36z + 36$ $9(z^2+4z+4)$ $9(z+2)^2$ $9(z+2)^2$

Solve the equation.

12. $a^2 + 6a + 9 = 0$ $(a)^2$ $(3)^2$ $(a+3)^2=0$ $a=-3$

13. $w^2 - \frac{7}{3}w + \frac{49}{36} = 0$ $(w-\frac{7}{6})^2=0$ $\frac{7}{6}$

14. $n^2 - 81 = 0$ $n^2-81=0$ $n=-9, 9$

A bird picks up a golf ball and drops it while flying. The function represents the height y (in feet) of the golf ball t seconds after it is dropped. The ball hits the top of a 32-foot-tall pine tree. After how many seconds does the ball hit the tree?

$81-16t^2=32$

$-32 \quad -32$

$49-16t^2=0$

$(7+4t)(7-4t)=0$

$7-4t=0$

$t=\frac{7}{4}$ 1 3/4 sec

• **Exit Ticket:** Factor each polynomial.

a. $81 - x^2$

b. $x^2 - 24x + 144$