Tonight's Class:
- **Chapter 2 test return - check quickly for any questions you have**
- **Unit 1 Test - closed book, but can use both foldables**
- **Working through the rest of section 3.2**
  - **More factoring**

b) $5 - \sqrt{3x - 8} = -3$

$-5 \qquad\qquad -5$

$\left(-1\sqrt{3x-8}\right)^2 = \left(-8\right)^2$

$3x - 8 = 64$
$+8 \qquad + 8$

$\dfrac{3x}{3} = \dfrac{72}{3}$

$\boxed{x = 24}$

restrictions

radicand ≥ 0

$3x - 8 \geq 0$
$\quad +8 \qquad +8$

$\dfrac{3x}{3} \geq \dfrac{8}{3}$

$\boxed{x \geq \dfrac{8}{3}}$

LS	RS
$5 - \sqrt{3(24) - 8}$	-3 ✓
$5 - \sqrt{72 - 8}$	
$5 - \sqrt{64}$	
$5 - 8$	
-3 ✓	

$p^{86} \qquad 3b) \qquad \sqrt[3]{8000} \;\; =$

```
        8000
       /    \
      8     1000
           /    \
          10    100
```

$$\sqrt[3]{\overline{2 \cdot 2 \cdot 2} \cdot \overline{10 \cdot 10 \cdot 10}}$$
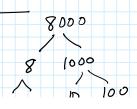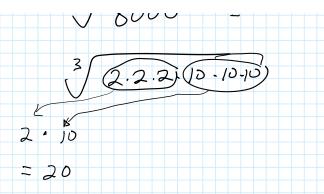
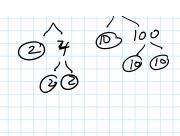$$2 \cdot 10$$

$$= 20$$

Please

- **Put away your phone and all materials except for the "foldables," a calculator, and something to write with.**

- **On your test, write clearly and show all necessary steps - including on multiple-choice questions! When you are finished, please look over your test before handing it in.**

- **While other people are still finishing, respect them by being quiet. You can leave the classroom if you wish, but be back in time for the rest of class.**

3.2 Factoring Polynomial Expressions (continued)
Focus: factor polynomial expressions that contain functions

Recap 8

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Example 4 — Factoring Using the Difference of Squares Pattern

Factor each polynomial expression.

a) $4x^2 - 25y^2$ **b)** $(2x - 1)^2 - (y + 4)^2$

We already did parts (a) and (b)

c) $32(x + 2)^2 - 18(2y - 3)^2$

c) $32(x+2)^2 - 18(2y-3)^2$

$$= 2\left[16(x+2)^2 - 9(2y-3)^2\right]$$

$\underbrace{16(x+2)^2}_{\text{perfect square}} - \underbrace{9(2y-3)^2}_{\text{perfect square}}$

1) always check for GCF

2) look to see what type of factoris is needed.

3) substitute back in.

substitute

$A = x + 2$
$B = 2y - 3$

$$= 2\left[16A^2 - 9B^2\right]$$

$$= 2(4A + 3B)(4A - 3B)$$

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

$$= 2\left[4(x+2) + 3(2y-3)\right]\left[4(x+2) - 3(2y-3)\right]$$

$$= 2\left[4x + 8 + 6y - 9\right]\left[4x + 8 - 6y + 9\right]$$

$$= 2\left[4x + 6y - 1\right]\left[4x - 6y + 17\right]$$

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Factoring Trinomials with Rational Coefficients (decimals/fractions)
Multiplying by "1" will help us out here!

Example 2 — **Factoring Trinomials with Rational Coefficients**

Factor each trinomial.

a) $x^2 + 1.4x - 1.2$ **b)** $3x^2 - \frac{29}{2}x + 14$

a) $\dfrac{10}{10}\left(x^2 + 1.4x - 1.2\right)$

$= \dfrac{1}{10}\left(10x^2 + 14x - 12\right)$

$= \dfrac{1}{10}\left[2\left(5x^2 + 7x - 6\right)\right]$

$= \dfrac{1}{10}\left[\dfrac{2}{1}(x+2)(5x-3)\right]$

$= \dfrac{2}{10}(x+2)(5x-3)$

$= \dfrac{1}{5}(x+2)(5x-3)$

$AC = 5 \cdot -6$
$= -30$

two numbers
$\text{mult} = -30$ 10,   -3

add to $+7$

1, 30
2, 15
3, 10
5, 6

$5x^2 + 10x - 3x - 6$

$= 5x(x+2) - 3(x+2)$

$= (x+2)(5x-3)$

Factoring Using Substitution
When you have equations which are not quadratic but take on a quadratic form
- **use substitution to convert to a quadratic and factor it**
- **substitute back**

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Example 3   Factoring Using a Trinomial Pattern

Factor each polynomial expression.

a) $x^2 - 6x - 16$

b) $(x+3)^2 - 6(x+3) - 16$

→**c)** $6(3x-4)^2 - 21(3x-4) + 15$

$$6\left(3x-4\right)^2 - 21\left(3x-4\right) + 15$$

let
$A = 3x-4$

$$6A^2 - 21A + 15$$

1) GCF

$$= 3(2A^2 - 7A + 5)$$

2) AC
    factoring

product
$AC = 2 \cdot 5$
$= 10$

$-5, -2$

$2A^2 - 5A - 2A + 5$

$= A(2A-5) - 1(2A-5)$

sum
-7

$= (A-1)(2A-5)$

$$= 3(A-1)(2A-5)$$

$$= 3\left(3x-4 -1\right)\left(2(3x-4) - 5\right)$$

$$= 3(3x-5)(6x-8-5)$$

$$= 3(3x-5)(6x-13)$$

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For next class
- Practice trinomial factoring until you feel comfortable with it (some worksheets are posted on the website)
- Finish worktext questions for 3.1 and 3.2
- If you think you want to do a unit test rewrite, prepare for that.