Monday, August 12!

Homework on Desk!

Happy Monday :)

Do Now:

Correct one problem from your test on your warm up.

Found this when looking for pics for a ppt. 1 twin + 1 twin = 2 twins

140 oz divided by 7 oz per bag = 20 bags of pasta

I need to keep the tests!! No pictures please!

If you miss a test - you need to schedule a make-up with me.

Reassessments will be at the end of the quarter.

Gradesheets will come out tomorrow for you to record your grade.

- ## What are some perfect squares?

4   144   36   225 $\text{Something}^2 = \text{perf} \square$

25   49   256

9   81   64

What does it mean to take the square root of something?

$\sqrt{100} = 10$

$\sqrt{-100} = 10i$

What are some examples of perfect cubes?

$27 = 3^3$ $64 = 4^3$ $216 = 6^3$

$8 = 2^3$ $125 = 5^3$ -125

$(-2)^3 = \boxed{-8}$

What does it mean to take the cube root of something?

$\sqrt[3]{8} = 2$

What is the cube root of the following:

$\sqrt[3]{a^3} = a$ $\sqrt[3]{8x^3} = 2x$

$2x(2x)(2x) = 8x^3$

$\sqrt[3]{27} = 3$ $-8y^3 = -2y$

Factoring

$$12 = 6 \cdot 2$$

$$x^2 + 4x + 3 = (x + 1)(x + 3)$$

Break it down into pieces that can be multiplied together.

Solving

- Find value(s) that make the statement true.
  "equation"

$$x^2 + 4x + 3 = 0$$

$$x = -3$$
$$x = -1$$

$$2x = 16$$
$$\boxed{x = 8}$$

Instructional Focus: IF.3

I can FACTOR cubic equations:

    1) sum and difference of cubics

    2) cubic equations with a GCF to quadratic

Factoring Special Cubes

Sum of Cubes! - 2 terms, perfect cubes

$$a^3 + b^3 = (a+b)(a^2 - ab + b^2)$$

Same

Opposite   A. Positive

S O A P

S ame   O pposite   A lways   P ositive

EX. $x^3 + 8$

$\sqrt[3]{x^3} = \boxed{x}$ a

$\sqrt[3]{8} = \boxed{2}$ b

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

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

$(3m)^2 = 9m^2$

$27m^3 + 125$

$\sqrt[3]{27m^3} = \boxed{3m}$

$\sqrt[3]{125} = \boxed{5}$

$(3m+5)(9m^2 - 3m \cdot 5 + 25)$

$(3m+5)(9m^2 - 15m + 25)$

Difference of Cubes

$$a^3 - b^3 = (a-b)(a^2 + ab + b^2)$$

Same   opp   always pos.

EX. $x^3 - 27$

S O A P

ame pposite lways ositive

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

$8x^3 - 27$

$a = 2x$ $(2x-3)((2x)^2 + 6x + 9)$
$b = 3$ $(2x-3)(4x^2 + 6x + 9)$

$$a^3 - b^3 = (a-b)(a^2 + ab + b^2)$$

$$(4x - 3y)(16x^2 + 12xy + 9y^2)$$

Factor!

Ex 3. $64x^3 - 27y^3$

$a = 4x$
$b = 3y$

$a^2 = 16x^2$
$ab = 12xy$
$b^2 = 9y^2$

S O A P

ame
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Factor!

Ex 4. $24a^4 + 3ax^3$

$$- x^3 - 27$$

$a = -x$

$b = 3$

Factor out the GCF!

Ex 5. $18x^4 - 27x^3 + 45x^2$

$9x^2 (2x^2 - 3x + 5)$

$a \neq 1$

$\overset{\frown}{=}$

$*|0 \mid -3$

$-5,2$

With your partner! Factor each polynomial.

1) $y^3 + 125 = (y + 5)(y^2 - 5y + 25)$

2) $27x^3 - 8 = (3x - 2)(9x^2 + 6x + 4)$

3) $2x^3 + 16 = 2(x^3 + 8) = 2(x + 2)(x^2 - 2x + 4)$

4) $8x^3 + 14x^2 + 6x$

$2x(4x^2 + 7x + 3)$

$\begin{array}{c|c} 12 & 7 \\ \hline 3,4 \Rightarrow \end{array}$

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

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

$x(4x + 3) + 1(4x + 3)$

$\boxed{2x(x + 1)(4x + 3)}$

Knowledge Check

Identify each as a sum or difference of cubes or a cubic with GCF to quadratic! (do not factor - write down what it is)

A. $r^3 - 8b^3$ C. $12x^3 - 10x^2 - 8x$

B. $1000 + 27a^3$ D. $128a^3 - 2b^3$

Rate yourself on your knowledge check sheet as to your understanding of this lesson:

I can FACTOR cubic equations:

1) sum and difference of cubics   got it   kind of   no way

2) cubic equations with a GCF to quadratic