## NEED

## TEXTBOOK TODAY!!!

## Warmup $8 /\left(4^{2} \cdot 4\right) \div 4+4$

## ***START A NEW "WEEK 3 WARMUPS" PAGE!***

I. Suppose you were stacking these large 20 oz. styrofoam cups to equal Mr. Lischwe's brother Nate's height. How many cups would it take? (Like on Friday, we are stacking them inside each other) You may NOT use a calculator.


## WHAT DID WE LEARN???

- Drawing a picture is VERY helpful!
- This helps you realize that the top of the cup only counts once. The rest of the stack is make up of the rims.
- Precision counts!!!

- If you measured the rim as 1 cm , you got 152 cups.
- If you measured the rim as 1.2 cm, you got 127 cups.



## Lischwe Age Problem

- I will collect them today...we will go over it tomorrow!!!
- Tomorrow is the last day I will accept this assignment...once you know the answer, this assignment is pointless.


## $2^{\text {nd }} \& 3^{\text {rd }}$ Periods...

- Group work Evaluation


## Today:

- We are starting Unit I: Rational Numbers
- Converting Fractions and Decimals
- Square Roots
- Difference between Rational \& Irrational Numbers
- Our first quiz will be Friday!!!


## Our binder

- The FIRST page of the binder will be your "table of contents"
- This will help you easily find notes \& other pages to review
- There may be a couple binder checks this year, so please keep your binder up to date!
- Whenever we take notes, the red is what you are required to write. Everything else is up to you.


## Table of Contents

p. I

Converting Fractions and Decimals (I.I)

## Converting Fractions and Decimals

Objectives:
-Convert fractions to decimals
-Convert regular decimals to fractions -Convert repeating decimals to fractions

## Example: Long Division

$$
\begin{aligned}
& 4 \longdiv { 1 4 3 } \\
& 35 \frac{3}{4} \text { or } 35.75
\end{aligned}
$$

Which of these are equivalent to $15 \div 12$ ?

$$
\mathbf { 1 5 } \div \mathbf { 1 2 } = \frac { 1 5 } { 1 2 } = 1 2 \longdiv { 1 5 }
$$

- The numerator goes under the long division sign!!!


## BEST ADVICE I CAN GIVEYOU FOR THIS LESSON

- Think about what a reasonable answer would be!!!
- $\frac{4}{11}=$ ?
- If you put the numbers in the wrong places, like so... 4) 11
- ...you will get 2.75. You should KNOW that $\frac{4}{11}$ cannot be $2.75!!!$


## Fraction $\rightarrow$ Decimal

## My Estimate

1. $\frac{1}{9}$
2. $\frac{11}{8}$
3. $4 \frac{1}{6}$
4. Early finisher (challenge): $\frac{16}{7}$

## Fraction $\rightarrow$ Decimal

$$
\begin{array}{lc}
\text { ।. } \frac{1}{9} & =.111111 \ldots \text { or } . \overline{1} \\
\text { 2. } \frac{11}{8} & =1.375 \\
\text { 3. } 4 \frac{1}{6} & =4.16666 \ldots \text { or } 4.1 \overline{6}
\end{array}
$$

4. Early finisher: $\frac{16}{7}=2 . \overline{285714}$

## NEW OBJECTIVE

- Converting from decimals to fractions
- (This one is VERY VERY easy if you know what you're doing!)


## Do we remember place value?

### 98765.4321



## Decimal $\rightarrow$ Fraction

Strategy: Just use the place value of the decimal!

Convert from decimals to fractions. Simplify if possible.

$$
\text { a) } 0.45=\frac{45}{100} \rightarrow \frac{9}{20}
$$

b) -2.7 $=-2 \frac{7}{10}$ (could convert to $-\frac{27}{10}$ but don't have to)
c) $4.370 \mathrm{I}=4 \frac{3701}{10000}$

## What about repeating decimals?

- Convert $\mathbf{0} . \overline{\mathbf{2}}$ into a fraction.

$$
\begin{aligned}
& \text { Let } x=0.22222 \ldots \ldots \\
& 10 x=2.22222 \ldots \ldots \quad \text { Multiply both sides by } 10 \text {. } \\
& -x \quad-\mathbf{0 . 2 2 2 2 2} \ldots \text {.....Take avay } \mid \times \text { from both sides. } \\
& \frac{9 x}{9}=\frac{2}{9} \\
& x=\frac{2}{9} \\
& \text { SO: } 0 . \overline{2}=\frac{2}{9} \\
& \text { Divide both sides by } 9 \text {. }
\end{aligned}
$$

## What about repeating decimals?

- Convert $\mathbf{0 . 7}$ into a fraction.

$$
\begin{aligned}
& \text { Let } x=0.77777 \ldots \ldots \\
& 10 x=7.77777 \ldots \ldots \quad \text { Multipy both sides by } 10 \text {. } \\
& -x \quad-\mathbf{0 . 7 7 7 7 7} \ldots . . . . . \text { Take away Ix from both sides. } \\
& \frac{9 x}{9}=\frac{7}{9} \\
& x=\frac{7}{9} \\
& \text { SO: } 0 . \overline{7}=\frac{7}{9} \\
& \text { Divide both sides by } 9 \text {. }
\end{aligned}
$$

## What about repeating decimals?

- Convert $\mathbf{0 . \overline { 3 4 }}$ into a fraction.

$$
\begin{aligned}
& \text { Let } x=0.343434 \ldots \ldots \\
& 10 x=3.434343 \\
& 100 x=\mathbf{3 4 . 3 4 3 4 3 4 \ldots \ldots} \text { Multiply both sides by } 100 \text {. } \\
& -x-0.343434 \ldots \text {... Take away Ix from both sides. } \\
& \frac{99 x}{99}=\frac{34}{99} \\
& x=\frac{34}{99} \\
& \text { SO: } \mathbf{0 .} \overline{\mathbf{3 4}}=\frac{34}{99}
\end{aligned}
$$

## Repeating Decimals: Pattern

$0 . \overline{1}=\frac{1}{9}$
$0 . \overline{2}=\frac{2}{9}$
$0 . \overline{12}=\frac{12}{99}$
$0 . \overline{76}=\frac{76}{99}$
$0 . \overline{706}=\frac{706}{999}$
etc.
$4 . \overline{8}=4 \frac{8}{9}$
etc.
etc.

## TWO WAYS TO UNDERSTAND THE PATTERN

I. The repeating digits are the numerator. However many digits there are, that's how many " 9 ' s " are in the denominator.
2. Think of what the fraction would be if the digits weren't repeating, then subtract the denominator by $I$.

## Last thing...

- How many inches is this caterpillar??? (BE PRECISE!)



## HOMEWORK

- Textbook p. II (I - 15 all)

