Exam Review

Chapter 3
Rational Number

Jan 8-8:08 AM

Write $\frac{4}{5}$ as a decimal.

0.8

Warm Up

What is a rational number?

You must be specific about three things!

State two rational numbers between -5.4 and -5.5

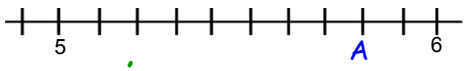
-5.40

-5.41

-5.49

-5.50

Express A as a mixed fraction.



Write two equivalent fractions!

$\frac{-8}{9} = -\frac{8}{9}$

$= \frac{8}{-9}$

Oct 31-3:53 PM

What is a rational number?

2

3.2

$\frac{1}{4}$

0.6666

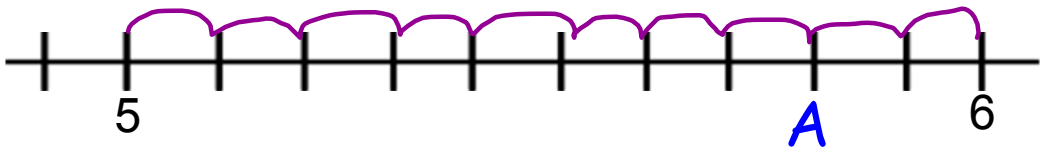
#'s that end

#'s that repeat

or any fraction

Jan 8-8:53 AM

$\frac{1}{10}$



$5\frac{8}{10} = 5.8$

$5\frac{4}{5}$

Jan 8-8:52 AM

Write $\frac{4}{5}$ as a decimal.

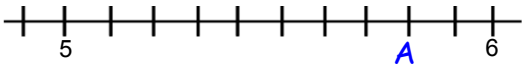
Warm Up

What is a rational number?

You must be specific about three things!

State two rational numbers between -5.4 and -5.5

Express A as a mixed fraction.



Write two equivalent fractions!

$\frac{-8}{9}$

Oct 31-3:53 PM

Rational Numbers

→ any # that can be written as fraction

→ any number including decimal that repeats

$0.1\overline{33}$

→ any # that ends

Sep 10-10:59 AM

$\frac{2}{3}$

$\sqrt{2} = 1.413258\ldots$

π

Jan 15-8:48 AM

Changing fractions to decimals...

Express each fraction as a decimal, then sort as a repeating or terminating decimal.

$\frac{-5}{9}$ $\frac{27}{33}$ $\frac{20}{-10}$ $\frac{6}{27}$ $\frac{-8}{5}$ $\frac{18}{12}$

Repeating

$-0.\overline{5}$

$0.\overline{81}$

Terminating

-1.6

Oct 31-5:25 PM

The numerator is LARGER than the denominator.

Improper vs. Mixed Fractions

$\frac{7}{3}$ This is a Improper Fraction → Mixed Fraction Integer + Fraction

$2\frac{1}{3}$

Oct 31-5:27 PM

$-\frac{5}{4} = -1\frac{1}{4}$

$-3\frac{2}{5} = -\frac{17}{5}$

Jan 17-7:53 AM

Arrange the numbers from least to greatest.

$-\frac{3}{8}, \frac{5}{9}, -\frac{10}{4}, -1\frac{1}{4}, \frac{7}{10}, \frac{8}{3}$

Change the numbers to decimals!

-0.375, 0.555..., -2.5, -1.25, 0.7, 2.666...

Least...

...Greatest

Oct 27-10:29 PM

Which rational number is larger??

(Decimals may be used on this side.)

$\frac{-12}{15}$ $\frac{-13}{16}$

(NO Decimals please!!.)

$\frac{2}{3}$ $\frac{3}{4}$

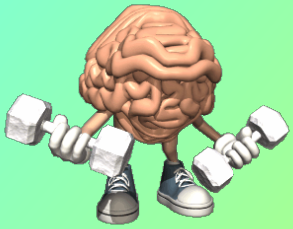
×4 ×3

$\frac{8}{12} < \frac{9}{12}$

$\frac{16}{24}$ $\frac{18}{24}$

show your work!

Oct 31-5:43 PM



Warm Up

1) Identify wether the number is rational or non-rational

$\frac{2}{3}$	$1.\overline{66}$	1.234567.....	-2.25

2)Express each fraction as a decimal

a) $\frac{4}{5}$ b) $\frac{9}{6}$ c) $\frac{3}{11}$

3)Express decimal as a fraction mixed fraction

a) **0.1** b) **4.75** c) **-3.222**

Feb 2-7:51 PM

Sept. 14

3.2 Adding Rational Numbers

Write each mixed number as an improper fraction:

1) $3\frac{3}{5}$ 2) $-5\frac{5}{6}$

Copy this DOWN and Hand this IN

3) Put the fractions in order from least to greatest

$$-\frac{1}{2}, -\frac{4}{5}, -\frac{11}{15}, \frac{2}{32}, \frac{1}{20}$$

Oct 29-9:43 AM

Adding Fractions

When adding fractions you need a COMMON DENOMINATOR:

1) $\frac{-5}{8} + \frac{6}{8}$

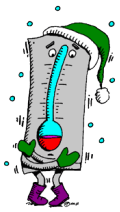
$= \frac{1}{8}$

2) $\frac{-8}{7} + \frac{-4}{7}$

$= \frac{-12}{7}$

$= -1\frac{5}{7}$

Oct 29-10:22 AM



Warm Up

Grade 9

Determine the sum of each of the following

1) $\frac{-3}{7} + \left(\frac{-3}{7}\right) =$ [ ]

2) a) 2.7 + 1.8

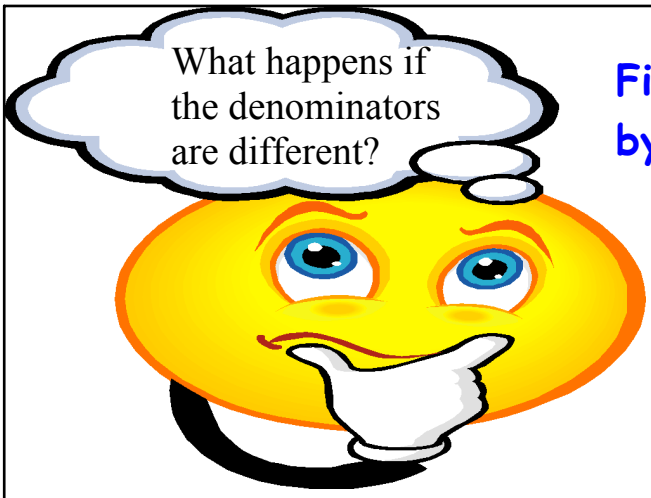
4.5

b) -3.7 + 4.5

0.8

c) 2.7 + (-8.7) [ ]

Nov 1-9:01 PM



Find a

by determining the LCM.

L

C

M

Oct 30-3:39 PM

Find a common denominator:

$$\frac{4}{5} + \frac{8}{3}$$

$\times 3$ $\qquad$ $\times 5$

$$= \frac{12}{15} + \frac{40}{15}$$

$$= \frac{52}{15}$$

Multiples

5

10

15

3

6

9

12

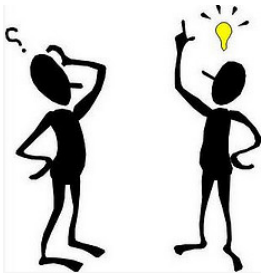
15

LCM

Oct 30-3:43 PM

What about mixed numbers?

$$2\frac{1}{3} + 2\frac{3}{5}$$



Step 1: Write each mixed number as an improper fraction.

$$\frac{7}{3} + \frac{13}{5}$$

x5 x3

Step 2: Find a common denominator, and then add numerators.

$$\frac{35}{15} + \frac{39}{15} = \frac{74}{15}$$

$$= 4\ \frac{14}{15}$$

Oct 30-4:02 PM

$$2\frac{1}{3} + 2\frac{3}{5}$$

$2 + 2 = 4$

$\frac{1}{3} + \frac{3}{5}$ +

x5 $\frac{5}{15} + \frac{9}{15} = \frac{14}{15}$

$4\ \frac{14}{15}$

Jan 15-8:59 AM

Jan 15-8:59 AM

Practice!

1) $5\frac{7}{8} + (-3\frac{1}{2})$

$\frac{47}{8} - \frac{7}{2}$

$\frac{47}{8} - \frac{28}{8}$

2) $(-1\frac{2}{3}) + (-2\frac{1}{4})$

Oct 30-4:28 PM

Grade 9 Warm Up

1) Identify whether the number is rational or non-rational

i)

$\frac{3}{4}$	-3.286754....	$1.\overline{66}$	-0.33	1.85

2)Express each fraction as a decimal (Show all work)

a) $\frac{1}{5}$ b) $\frac{2}{15}$ c) $\frac{-4}{13}$

3)Express decimal as a mixed fraction in simplest form. (Show all work)

a) **0.4** b) **-3.2** c) **1.125**

4) Determine each sum. (Show all work)

a) $\frac{-6}{5} + \left(\frac{-2}{5}\right)$ b) $\frac{8}{3} + \frac{5}{4}$ c) $-3\frac{2}{7} + 2\frac{1}{4}$

Oct 18-2:06 PM

4) On December 18th, the temperature in Miramichi was -21.6°C. By noon the next day, the temperature increased by 3.7 °C.

a) What was the temperature at noon on December 19 th?

b) On December 17th, the temperature was 2.1°C less than (colder than) that of December 18th. What was the temperature on the 17th?

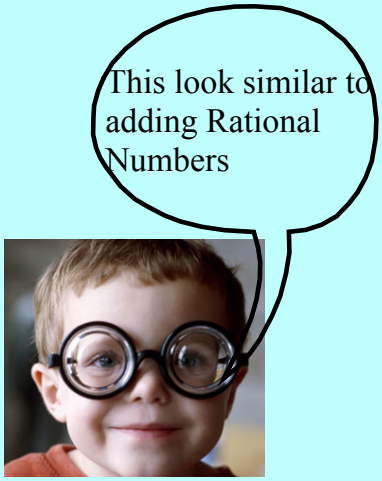
Sep 12-10:18 PM

Section 3.3

Subtracting Rational Numbers

When subtracting Rational Numbers you must have a ...

Common Denominator



Ex) $\frac{13}{7} - \frac{4}{7} =$

Same Denominators

Oct 18-7:52 PM

You try ...

(Remember to write all solution in simplest form)

1) $\frac{21}{2} - \frac{24}{2}$

2) $\frac{-25}{13} - \frac{16}{13}$

3) $\frac{11}{4} - \frac{5}{4}$

Oct 18-8:48 PM

When denominators are different you have to find a **"common denominator"**

By determining the LCM

Lowest Common Multiple

(of the denominators)

Oct 18-8:27 PM

You try...

1) $\frac{17}{12} - \frac{4}{9}$

2) $2\frac{1}{5} - 5 + \frac{2}{3}$

3) $\frac{-2}{7} - \frac{5}{28}$

Oct 18-9:04 PM

Subtracting Rational Numbers in Mixed Number Form

$$3\frac{1}{5} - 2\frac{7}{10}$$

STEP 1) Write each mixed number as an inproper fraction

$\frac{16}{5} - \frac{27}{10}$

STEP 2) Find common denominators and then subtract like before

$\frac{32}{10} - \frac{27}{10}$

$\frac{5}{10} = \frac{1}{2}$

STEP 3) Reduce all fractions

Oct 18-8:56 PM

$$3\frac{1}{5} - 2\frac{7}{10}$$

$3 - 2 = 1$

$\frac{1}{5} - \frac{7}{10}$

$\frac{2}{10} - \frac{7}{10}$

$= \frac{-5}{10}$

$1 - \frac{5}{10} = \frac{10}{10} - \frac{5}{10} = \frac{5}{10} = \frac{1}{2}$

Jan 15-9:07 AM

Your Turn

1) $-2\frac{2}{9} - \left(-3\frac{1}{3}\right)$

2) $6\frac{1}{2} - 3\frac{1}{7}$

Oct 18-9:23 PM

Multiplying Rational Numbers

What rules do we use to multiply integers?

Indicate if the answer will be **negative** or **positive**. How do you know?

(-4) x 3 = (-)

(-3) x (-6) = (+)

2 x 8 = (+)

(+) (-) = (-)

Nov 1-6:01 PM

Copy down

When multiplying integers , we use the following rules:

(a negative #) x (a positive #) = (a negative #)

a negative # x a negative # = a positive #

a positive # x a positive # = a positive #

Copy down

So, when the signs are opposite ,
the product is negative

and

when the signs are the same ,
the product is positive!

Nov 1-8:10 PM

Now, let's take a look at Fractions .

What rules do we use to multiply fractions?

Evaluate the following expression.

How did you get your answer?

$$\frac{6}{5} \times \frac{8}{7} = \frac{6 \times 8}{5 \times 7} = \frac{48}{35}$$

When multiplying fractions, we use this rule:

Multiply the numerator by the numerator
then
Multiply the denominator by the denominator

** Then, of course, REDUCE!! (if possible)

Nov 1-6:01 PM

Try these out!

Use what you know about multiplying integers & fractions to evaluate the following expressions.

$\left(\frac{7}{-4}\right) \times \frac{9}{2}$ $\quad 9 \times (-3)$ $\quad \frac{9}{2} \times \left(\frac{-3}{10}\right)$

☆ Don't forget to ALWAYS reduce if possible!

(-1.5) x (-1.8) $\quad \left(-\frac{8}{3}\right) \times \left(-\frac{6}{5}\right)$

Nov 1-6:12 PM

$2 \times \frac{1}{2}$

Jan 9-11:09 AM

Multiplying Rational Numbers in Fraction Form

Determine the product:

$$\left(\frac{-1}{\cancel{11}}\right)\left(\frac{-\cancel{3}}{\cancel{4}}\frac{\cancel{21}}{\cancel{44}}\right) = \left(\frac{-1}{1}\right)\left(\frac{-3}{4}\right)$$

Look for common factors in the numerators and denominators.

The signs are the same, so the product is positive!

First, we simplify:

$= \frac{3}{4}$

$= (\quad)(\quad)$

Our rule for multiplying fractions is:
numerator by numerator
denominator by denominator

So, our new expression, looks like this:

$$\frac{1 \times 3}{1 \times 4} =$$

$$\frac{3}{4} =$$

Nov 1-6:27 PM

Multiplying Rational Numbers in mixed number Form

Determine the product.

$$\left(2\frac{2}{3}\right)\left(-1\frac{3}{4}\right)$$

The signs are different, so the product is negative!
Write the mixed numbers as improper fractions:

$$= \left(\frac{8}{3}\right)\left(-\frac{7}{4}\right)$$

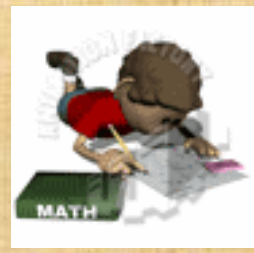
$$= \left(\frac{\overset{2}{\cancel{8}}}{3}\right)\left(-\frac{7}{\cancel{4}_{1}}\right)$$

$$= \frac{(2)(-7)}{(3)(1)}$$

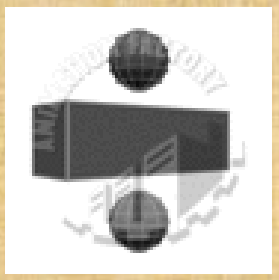
$$= \frac{-14}{3}$$

$$= -4\frac{2}{3}$$

Nov 1-6:31 PM



Dividing Fractions



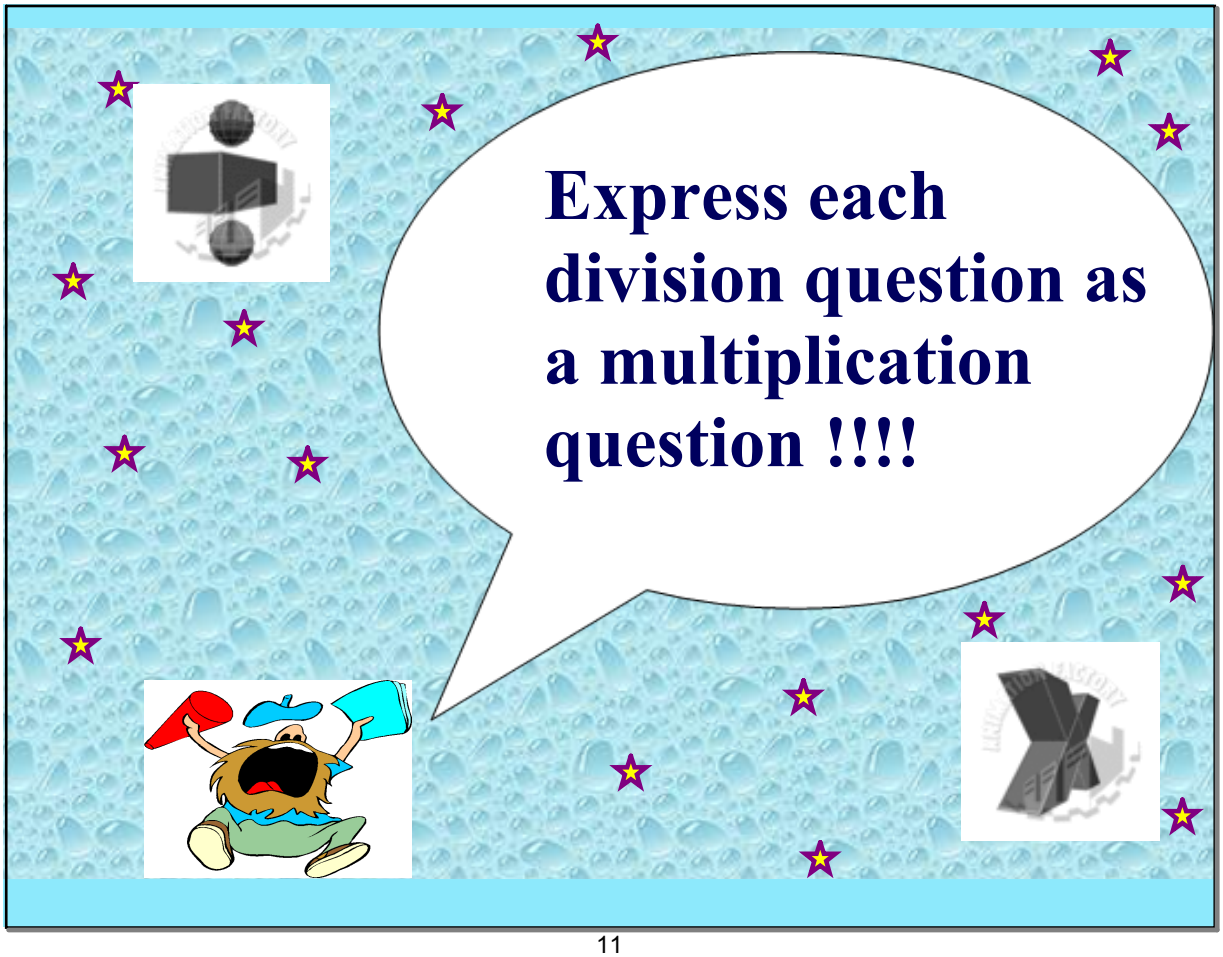
9

Reciprocal

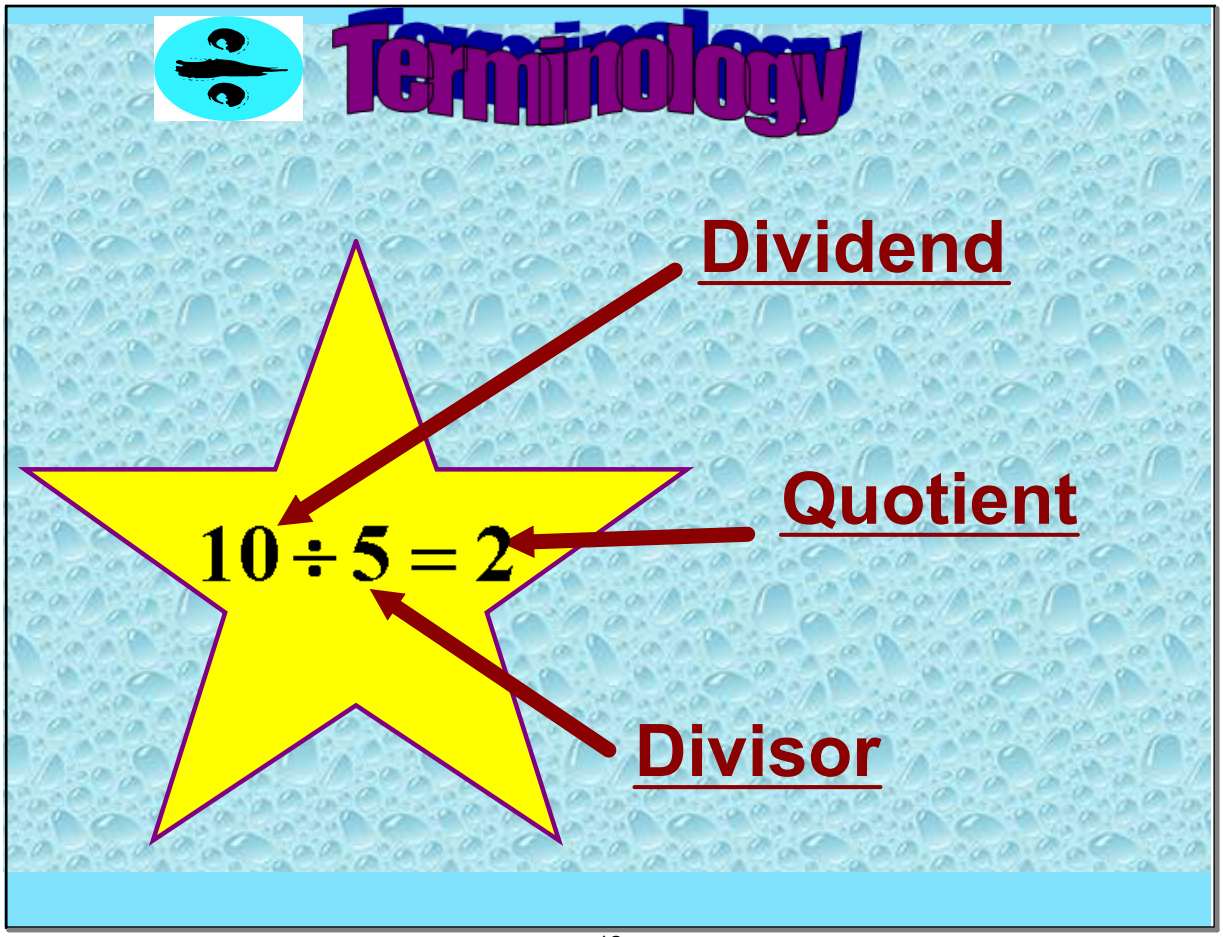
- Every non-zero fraction has a reciprocal.
- Fractions with a denominator of "0" are undefined. $\left(\frac{6}{0}\right)$
- To find the reciprocal of a fraction, you simply flip the fraction !!

$\frac{4}{5}$ $\frac{5}{4}$

10


Express each division question as a multiplication question !!!!

11


Terminology
Dividend
Quotient
Divisor
10 ÷ 5 = 2

12

Express division as

multipication by multiplying

the dividend by the reciprocal

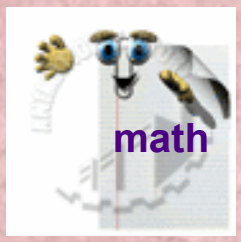
of the divisor !!

$$\frac{4}{5} \div \frac{1}{3} =$$

$$\frac{4}{5} \times \frac{3}{1} = \frac{12}{5}$$

13

Try These !!



#1 $\frac{4}{5} \div \frac{7}{8} =$

$\frac{4}{5} \times \frac{8}{7} = \frac{32}{35}$

14

#2

$$\frac{1}{8} \div \frac{-6}{5}$$

15

#3

$$2\frac{1}{4} \div \frac{5}{1} =$$

$\frac{9}{4} \div \frac{5}{1}$

$\frac{9}{4} \times \frac{1}{5} = \frac{9}{20}$

16

$2 \div \frac{1}{3}$

Jan 9-11:12 AM

Determine the missing number in the division statement.

Dividend Missing

$(\_\_) \div 4 = 3$

What # goes in the blank?

Think:
Division is the inverse of **Multiplication.**

Any division statement can be written as an equivalent multiplication.

OR

$(\_\_) = x$

To Solve for Missing Dividend
take Divisor X Quotient

Now with Rational #s

You Try

A) $(\ \ ) \div \left(\frac{5}{11}\right) = \frac{3}{7}$

B) $\_\_\_\_ \div 12.6 = 4.2$

Nov 14-5:40 PM

Determine the missing number in the division statement.

Divisor Missing Decimals

$15 \div (\_\_) = -5$

Think:
Quotient is negative thus the BLANK mus be what sign? _____

What # goes in the blank?

To solve for missing Divisor
take Dividend ÷ Quotient

OR

$15 = -5 \times (\_\_)$

Erase to see

$15 = -5 \times (\_\_)$

Multiply by the reciprocal

or

reciprocal of -5 is $\frac{1}{-5}$

You Try

1) $-2.5 \div \_\_\_ = 5$

2) $1.16 \div \_\_\_ = 0.2$

What about fractions???

Nov 14-5:40 PM

Determine the missing number in the division statement.

Divisor Missing &Fractions

$\left(\frac{-6}{7}\right) \div (\quad) = \frac{18}{49}$

The Quotient is Positive

Thus the divsor is _____

Divsor = Dividend ÷ Quotient

$(\quad) = \left(\frac{-6}{7}\right) \div \frac{18}{49}$

Use the strategy of multilpying by the reciprocal

$(\quad) = \left(\frac{-6}{7}\right) \times \frac{49}{18}$

Simplify

$(\quad) = \left(\frac{-\cancel{6}^{2}}{\cancel{7}_{1}}\right) \times \frac{\cancel{49}^{7}}{\cancel{18}_{3}}$

$(\quad) = \left(\frac{-7}{3}\right)$

Nov 14-7:01 PM

Your Turn

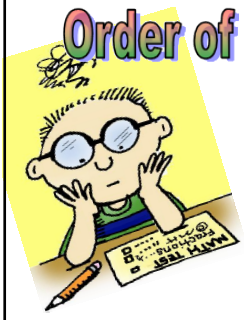
A) $\left(\frac{15}{26}\right) \div (\quad) = \frac{-3}{2}$

b) $\left(\frac{-12}{21}\right) \div (\quad) = \frac{5}{8}$

Nov 14-7:54 PM

Section 3.6

Order of Operations with Rational Numbers



Remember from operations

"BEDMAS".....order of

In the order that they appear

Recall

Evaluate the following

1) $(-5) - 3[18 \div (-3)]^2$

$-5 - 3[-6]^2$

$-5 - 3(36)$

$-5 - 108$

$= -113$

Oct 19-4:10 PM

Using the Order of Operations with Decimals

Evaluate the following:

It is no difference with decimals....follow BEDMAS

With decimals you may need to round your final answers

1) $(-1.3) + 0.8 \div (-0.2) \times 5$

2) $(-3.6) - 1.7 \div [0.6 - (-0.8)]^2$

$= (-3.6) - 1.7 \div [1.4]^2$

$= (-3.6) - 1.7 \div 1.96$

$(-3.6) - 0.867346938$

$= (-3.6) - 0.867346938$

this number does not terminate

$= -4.467346939$

Oct 19-9:36 PM

Do we need more practice?

1) $3 \times - [(-5) + 1^3]$

2) $(-2.7) \times (3.4 - 8.5) - 6.1 \div 7$

Oct 19-9:54 PM

Order of Operations

with

Rational Numbers

$$(-0.8) + 1.2 \div (-0.3) \times 1.5$$

=

=

=

Nov 21-3:47 PM

1) $\left(-\frac{3}{5}\right)\left(\frac{2}{5}\right) - \left(\frac{7}{30}\right) \div \left[\frac{1}{2} + \left(-\frac{1}{6}\right)\right]$

Operations with Fracti

Remember fractions are just numbers

erase to see solutions

1) $\left(-\frac{3}{5}\right)\left(\frac{2}{5}\right) - \left(\frac{7}{30}\right) \div \left[\frac{1}{2} + \left(-\frac{1}{6}\right)\right]$

Step 1) BRACKETS

- find common denominato
then add the #s in brackets
Common Denominator =

Reduce sum if possibl

$\div \left(\Rightarrow \quad -\frac{1}{6}\right)\Big]$

=

Step 2) Multiply next

$\left[1\frac{1}{7}\right]$

Step 3) Divide next

$\frac{3}{1}$

- multiply by the reciproc
the divisor.

$\left(\frac{7}{30}\right) \div \left[\frac{2}{6}\right] = \left(\frac{7}{30}\right) \times \left[\frac{6}{2}\right.$

reduce at this poi
work with smalle
fractions

$\frac{21}{}$

3

$\frac{35}{30}$

Subtract.....find commo
denominator

$= \frac{-47}{30}$

=

Oct 19-10:02 PM

1) $\left(-\frac{3}{5}\right)\left(\frac{2}{5}\right)-\left(\frac{7}{30}\right)\div\left[\frac{1}{2}+\left(-\frac{1}{6}\right)\right]$

$\div\left[\frac{3}{6}+\frac{-1}{6}\right]$

$\frac{2}{6}$

$\left(-\frac{3}{5}\right)\left(\frac{2}{5}\right)-\frac{7}{30}\div\left[\frac{1}{3}\right]$

$\frac{-6}{25}-\frac{7}{30}\div\frac{1}{3}$

$\frac{7}{10}\times\frac{3}{1}$

$\frac{7}{10}\times\frac{1}{1}$

$-\frac{6}{25}-\frac{7}{10}$

$\frac{-12}{50}-\frac{35}{50}$

$-\frac{47}{50}$

Jan 8-9:23 AM

1) Erase to reveal answer

$\left(-1\frac{3}{4}\right)-\left(-3\frac{1}{2}+5\right)\left(-3\frac{1}{2}+5\right)$

Remember to switch mixed to improper fractions

Make common denominators inside brackets

Complete Brackets

Multiply

Divide

=

Oct 19-10:38 PM

4. $\left(-\frac{1}{2}\right)^2 - \left(-\frac{2}{3}\right) \div \left[\frac{1}{3} + \left(-\frac{3}{12}\right)\right]$

Please erase to reveal answer

=

=

=

=

=

=

=

=

=

Nov 21-4:06 PM

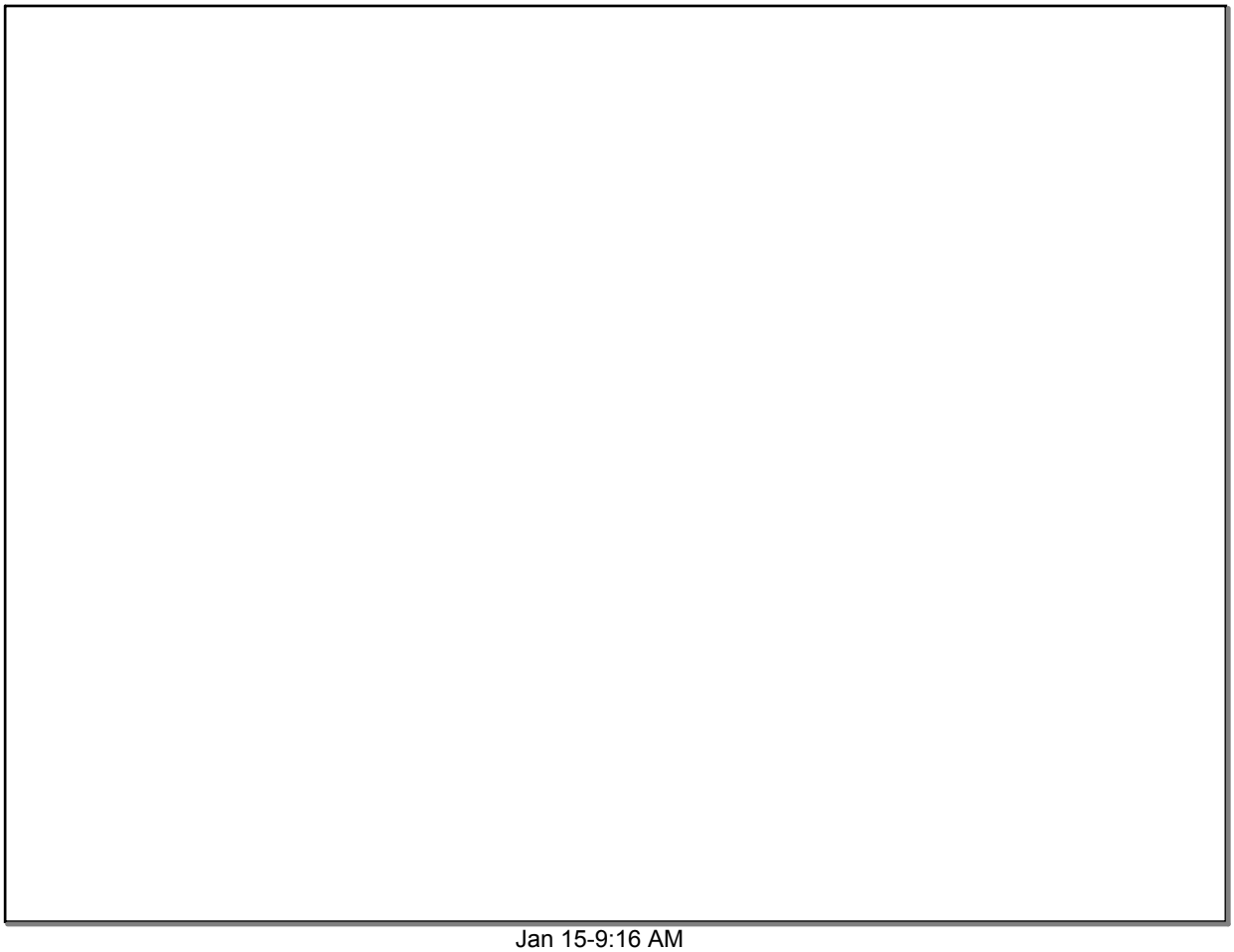
Class / Homework

Page 144 & 145

-If the question deals with fractions you must work with fractions (no calculator)
-As soon as you see a decimal you can use a calculator

#2 *(without calculator)*
3(c,d)
#5 (a,c)
#7(a,b,c) *(without calculator)*
#10(b,c) *(without calculator)*
#14 (b, d)

#18(ac)
#19(b,d)
#21 *(without calculator)*
#23a,c,d,g



Jan 15-9:16 AM