

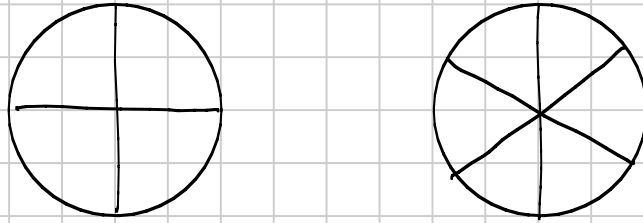
Math 8 Chapter 3.1

Note Title

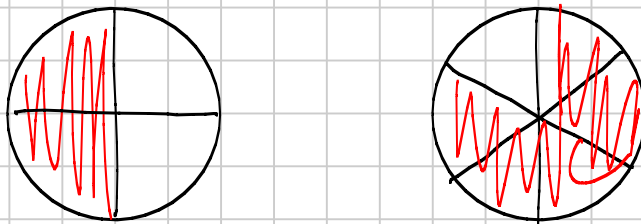
2014-07-17

Using Models to Multiply Fractions and Whole Numbers

Recall that the denominator means how many equal parts make a whole.



The numerator tells us how many parts we have



What's the difference between $5\frac{1}{6}$ and $5(\frac{1}{6})$?

So, what is $5 \times \frac{3}{4}$?

Also

Also

Simplifying:

$$8 \times \frac{3}{12}$$

$$15 \times \frac{4}{5}$$

Another way to phrase questions.

I would like three quarters of that 12 oz. steak.

$$\frac{3}{5} \text{ of } 25 =$$

Recall: Converting Improper Fractions to Mixed Fractions

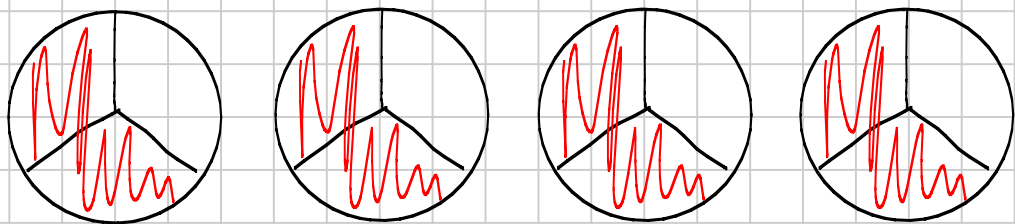
$$\text{eg) } \frac{11}{4} \Rightarrow 4 \overline{)11}$$

$$\text{eg) } \frac{400}{7} \Rightarrow 7 \overline{)400}$$

Models: eg) $\frac{2}{3} \times 4$

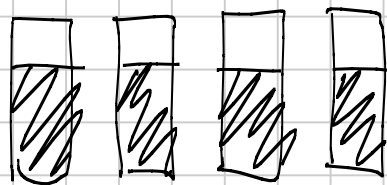
Number Line:

Circles:



$$= \frac{8}{3} = 2\frac{2}{3}$$

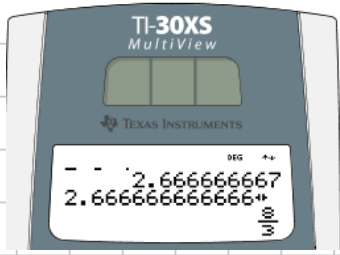
Rectangles:



HW: pp. 107-109: (5-6)(a,b), (8-10)b, (11-16)(b,c), 20

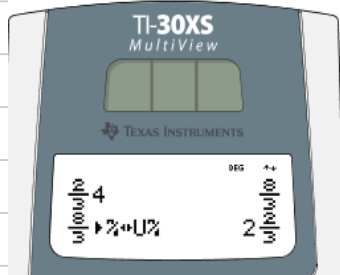
Challenge: 17, 22

Please answer 1 and 2 in person.



Key Press History Large Screen

2	K ÷	3	×	4
enter	←			



Key Press History Large Screen

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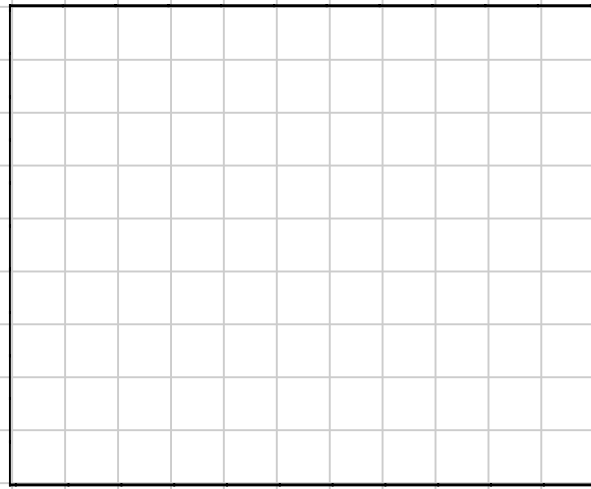
Math 8 Chapter 3.2

Note Title

2014-07-17

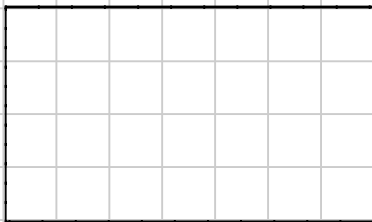
Using Models to Multiply Fractions.

eg) Assume random distribution. 2 out of 9 people regularly floss. 3 out of 11 people own an electric toothbrush. What proportion of people regularly floss and own an electric toothbrush?



Answer:

eg) There is $\frac{3}{4}$ of a jug of milk. We use up $\frac{2}{7}$ of milk to make pancakes. How much milk is left in the jug?



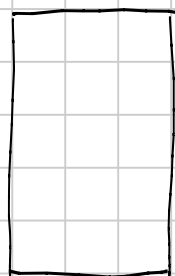
Recall that multiplication is commutative for whole numbers and integers. Do you think it applies for fractions?

$$\frac{3}{7} \times \frac{4}{11} ? \frac{4}{11} \times \frac{3}{7}$$

eg) Model $\frac{2}{3} \times \frac{4}{5}$ and find answer.



or



In math, we want to notice patterns, so how does the area of the answer compare to the 2 areas of the fractions that we are multiplying?

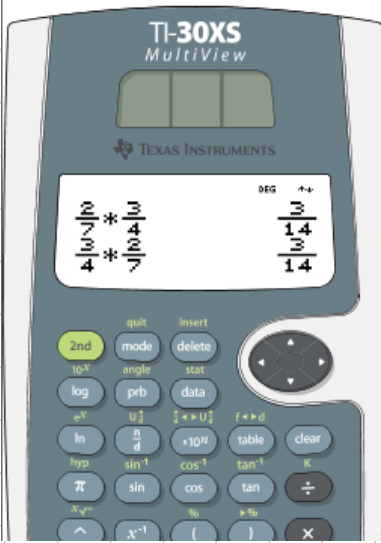
Applications: make sure you correctly determine which area is your answer. Just like the pancake question; you are given the fraction for amount used, but you actually need the fraction for what's left which is not given.

Note: Another way of saying "multiply" with fractions is "of". So, " $\frac{4}{5}$ of $\frac{3}{8}$ " is " $\frac{4}{5} \times \frac{3}{8}$ ".

HW: pp. 112-114: (6-8)(b,d), 10, 11, 13

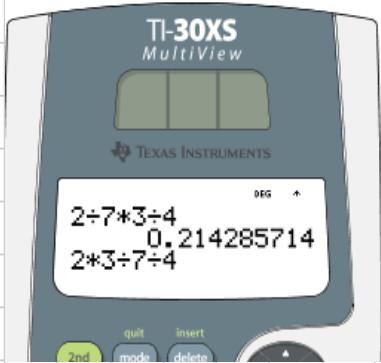
Challenge: 15, 16

Please answer 1 and 2 in person.



Key Press History Large Screen

clear	$\frac{n}{d}$	2	▼	7
▶	×	$\frac{n}{d}$	3	▼
4	enter	$\frac{n}{d}$	3	▼
4	▶	×	$\frac{n}{d}$	2
▼	7	enter		



Key Press History Large Screen

2	$\frac{K}{\div}$	7	×	3
$\frac{K}{\div}$	4	enter	2	×
3	$\frac{K}{\div}$	7	$\frac{K}{\div}$	4

Math 8 Chapter 3.3

Note Title

2014-07-17

Multiply Fractions.

Definition: Reciprocal is swapping the numerator and denominator.

eg) The reciprocal of $\frac{3}{4}$ is $\frac{4}{3}$.

Reciprocal Property: when multiplying a fraction by its reciprocal always results in 1 unless the fraction is 0.

eg) $\frac{3}{4} \times \frac{4}{3}$
 $\frac{100}{14} \times \frac{14}{100}$

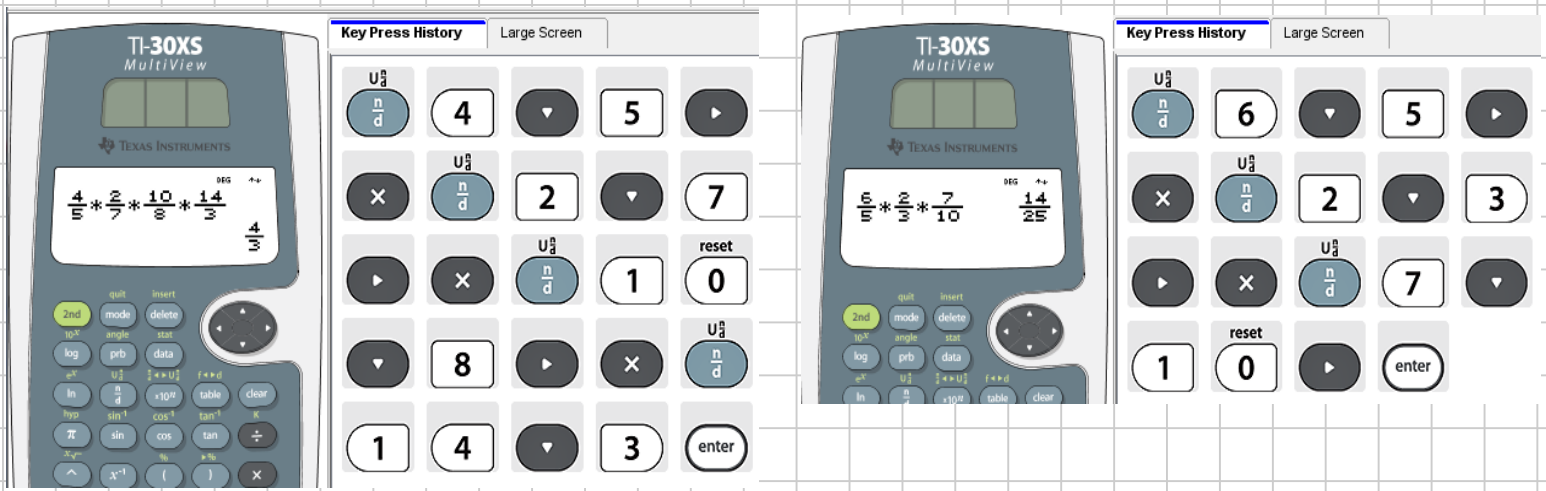
Simplifying - when multiplying a number of fractions, especially without a calculator, you need to find common factors between the **numerator** and **denominator**. Then divide the numerator and denominator by the common factor; this makes both smaller so there is less multiplying!

eg) $\frac{4}{5} \times \frac{2}{7} \times \frac{10}{8} \times \frac{14}{3} =$

eg) $\frac{6}{5} \times \frac{2}{3} \times \frac{7}{10} =$

You must give a reduced fraction as your answer and it is easier to simplify when the numbers are smaller.

Using one of the recommended calculators will make checking your work easier. **Please do not rely on your calculator because you need to learn this for algebra!**



Working Backwards Questions - use multiply by 1 trick

eg) Find 2 fractions when multiplied make 11.

11

eg) Find 2 fractions when multiplied make $\frac{5}{3}$.

$\frac{5}{3}$

Simple divisibility rules:

Even numbers are divisible by .

Numbers ending in 0 or 5 are divisible by

If the sum of the digits is divisible by 3, then the number is divisible by .

eg) 78, 112, 9376 are divisible by .

eg) 60, 85, 135, 9570 are divisible by .

eg) 1245 is $1+2+4+5=12$ and 12 is divisible by .

so 1245 is divisible by .

7830 is $7+8+3+0=18$ and 18 is divisible by .

so 7830 is divisible by .

Estimating - is used to check if our answer is in the correct range. The product of 2 proper fractions will be smaller than the smaller fraction.

$$\text{eg) } \frac{2}{3} \times \frac{1}{8} =$$

$$\text{eg) } \frac{2}{7} \times \frac{3}{4} =$$

The product of a proper and improper fraction is between the 2 fractions.

$$\text{eg) } \frac{1}{3} \times \frac{9}{2} =$$

$$\text{eg) } \frac{2}{7} \times \frac{11}{6} =$$

The product of 2 improper fractions is larger than the largest fraction.

$$\text{eg) } \frac{4}{3} \times \frac{6}{5} =$$

$$\text{eg) } \frac{8}{3} \times \frac{20}{7} =$$

HW: pp. 118 - 120: (7-8) (a-c), 9, 11, 12, 17, 18

Challenge: 14, 19, 20, 21

Please answer 2 and 3 in person.

Math 8 Chapter 3.4

Note Title

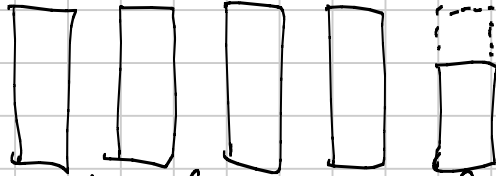
2014-07-17

Multiplying Mixed Numbers

Mixed Numbers need to be converted to improper fractions before multiplying.

Understanding the conversion:

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



How many thirds do we have?

Algebraically, we multiply the whole number by the denominator and add it to the numerator for the new numerator.

eg) $3 \frac{4}{5} =$

eg) $11 \frac{3}{7} =$

Converting back to a mixed number - simply divide and the remainder becomes the numerator and the divisor is the denominator.

eg) $65/7 \Rightarrow 7 \overline{)65}$

eg) $39/5 \Rightarrow 5 \overline{)39}$

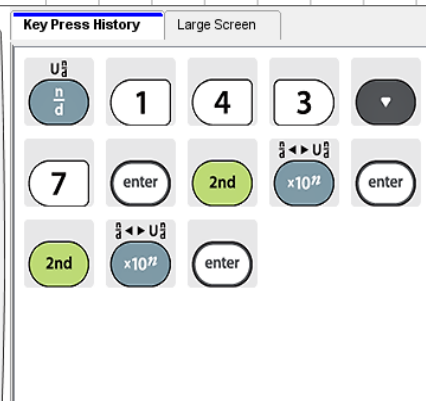
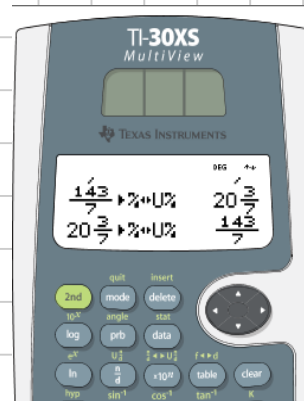
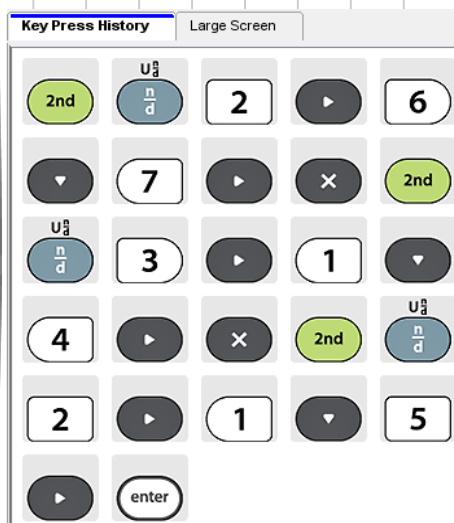
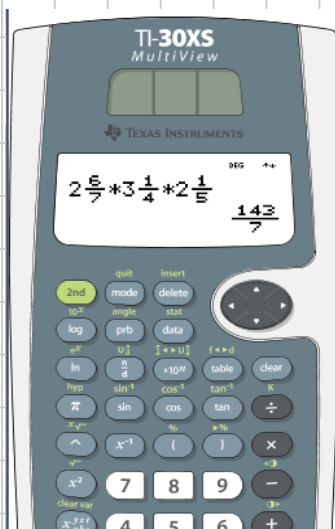
Multiplying 2 Mixed Fractions and Estimating

eg) $6 \frac{3}{8} \times 4 \frac{2}{3} =$

$$\text{eg) } 2\frac{6}{7} \times 3\frac{1}{4} \times 2\frac{1}{5} =$$

Estimating works best if one is rounded up and the other is rounded down. If both are rounded down then the estimate will be lower than the actual value. And if both are rounded up, the estimate will be higher than the actual value.

Recall that 5 can be written as $\frac{5}{1}$ and $7 = \frac{7}{1}$



Hw: pp. 124-126: 4, (5-7)(a-c), 9, 12(d-f), 13, 14
 Challenge: 17, 19
 Please answer 1 and 2 in person.