You will need your clickers and your notebooks today.

"Dividing Fractions using the Reciprocal"

Learning targets: I will be able to identify divisors. I will be able to find the reciprocals of the divisors. I will be able to rewrite the division problem as a multiplication problem. I will be able to solve the problem in simplest form.

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Let's first begin with the term **reciprocal**, also known as the **multiplicative inverse**.

We remember that any fraction times its reciprocal will equal 1.

For a fraction - flip the numerator and the denominator around. For a whole number, first make it a fraction with a denominator of 1, then flip it for the reciprocal. For a mixed number, first make it improper, then flip it for the reciprocal.

The reciprocal of 3/4 is 4/3.
Check it by multiplying 3/4 x 4/3 and you get 1/1 which equals 1.

The reciprocal of 5 is 1/5.
Check it by multiplying 5/1 times 1/5. Again you will get a product of 1.

The reciprocal of 2 3/5 is 5/13.
First make 2 3/5 into an improper fraction of 13/5, and then flip it to 5/13.
Check it by multiplying 5/13 by 13/5 and you will get a product of 1.

What is the reciprocal of 4/5?

A 5/4

B 1 1/5

C 4/5

D 1

What is the reciprocal of 9?

A 9/1

B 1/9

C 9

D 1

Before we take the next steps in learning how to divide fractions, we need to make sure we know the "players".

$$\text{Divisor}\overline{)\,\text{Dividend}}^{\,\text{Quotient}} \qquad \frac{\text{Dividend}}{\text{Divisor}}$$

Dividend ÷ Divisor = Quotient

It is always the <u>divisor</u> who does the work.

Identify the divisors in these problems

$5\overline{)20}$ (4)

$\frac{12}{4}$

$72 \div 8 = 9$

Remember: it is always the divisor who does the work.

Here are the 4 steps:

1. Find the divisor
2. Rewrite the division problem as a multiplication problem using the same dividend and the reciprocal of the divisor
3. Multiply
4. Simplify

Step 1: *

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

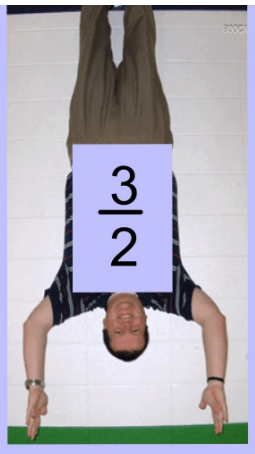
The division question asks how many 2/3rds are in 1/2.

How much of  is in  ?

Step 2: rewrite

1/2 ÷ 2/3 =

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



Step 3: Do the Math

$$\frac{1}{2} \times \frac{3}{2} =$$

Step 4: Look to see if you can simplify

Step 1: find the divisor

Step 2: rewrite using multiplication with the reciprocal of the divisor

Step 3: work the new problem

Step 4: look to see if you can simplify

Start/Stop Voting

What operation do we change division to in step 2?

A +

B X

C –

D ÷

Look at the problem
Find the Divisor
Use its reciprocal
Rewrite as a multiply problem
Do the math
simplify

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

$$\frac{2}{3} \times \frac{2}{1} =$$

Start/Stop Voting

What problem does $\frac{1}{4} \div \frac{3}{4}$ become?

A

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

B

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

C

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

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

$\frac{1}{2} \times \frac{3}{1} =$

Start/Stop Voting

What problem does $\frac{3}{4} \div \frac{2}{7}$ become?

A

$\frac{2}{7} \div \frac{4}{3}$

B

$\frac{3}{4} \times \frac{7}{2}$

C

$\frac{4}{3} \times \frac{2}{7}$

Click the 2
Next click the picture
Then Click the *

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

*

Start/Stop Voting

What problem does $\frac{3}{4} \div 3$ become?

A

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

B

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

C

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

Click in the spot where the quotient will be

Next click the = sign

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

Start/Stop Voting

solve: $\frac{4}{7} \div \frac{2}{3} =$

A $\frac{6}{7}$

B $\frac{7}{9}$

C $1\frac{8}{21}$

You have a worksheet with only 2 problems! The first problem, I want you to tell me step-by-step what to do. The second problem, you can use your knowledge and solve it (always in simplest form.)

Name _____ Class _____ Date _____

Baking A recipe for a loaf of banana bread requires $\frac{2}{3}$ cup of vegetable oil. You have 3 cups of oil. How many loaves of banana bread can you make with the oil?

Understand

1. What are you being asked to do?

2. Explain how to divide fractions.

Plan and Carry Out

3. What number is the divisor?

4. How many cups of oil are available to make the banana bread? _____

5. What number is the dividend?

6. Write a division expression to solve the problem.

7. Re-write the expression using multiplication.

8. Solve your problem in number 7.

Check your work

9. **Multiply** $\frac{2}{3} \times 4\frac{1}{2}$. _____

Solve Another Problem

10. Greg bought 24 bags of mulch for the planters in his front yard. If each planter uses $\frac{3}{4}$ bag, how many planters can he fill with mulch?