

Date: _____

6.5 Notes: Dividing Fractions

There are two methods for dividing fractions:

Method 1: Common Denominator

Write the fractions with a common denominator and divide the numerators.

Eg

$$\frac{7}{8} \div \frac{3}{8} = \frac{7}{3}$$

$$\frac{4}{5} \div \frac{1}{2} = \frac{8}{5}$$

common denominator between 5 and 2 is 10

$$\frac{3}{3} \times \frac{13}{5} \div \frac{4}{3} \times \frac{5}{5} \quad \text{C.D.} = 15$$

$$3\frac{1}{2} \div 1\frac{2}{3} = \quad \text{C.D.} = 6$$

$$\frac{39}{15} \div \frac{20}{15} = \frac{39}{20}$$

$$\frac{7}{2} \div \frac{5}{3}$$

$$\frac{21}{6} \div \frac{10}{6} = \frac{21}{10}$$

Can $\frac{2}{3} \times \frac{5}{7}$ be changed into a division question?

yes but it is based on the second method

consider: $\frac{2}{3} \div 7$ means to split $\frac{2}{3}$ into 7 groups

so each group is $\frac{1}{7}$ of $\frac{2}{3}$

$\frac{2}{3} \div 7$ is the same as $\frac{2}{3} \times \frac{1}{7}$

7 and $\frac{1}{7}$ are reciprocals.

Method 2: Divide Using a Multiplication

To divide a fraction, you can also multiply by its reciprocal

Eg

$$\frac{7}{8} \div \frac{3}{8} = \frac{7}{\cancel{8}} \times \frac{\cancel{8}}{3} = \frac{7}{3}$$

$$\frac{13}{5} \div \frac{4}{3} = \frac{13}{5} \times \frac{3}{4} = \frac{39}{20}$$

$$\frac{4}{5} \div \frac{1}{2} = \frac{4}{5} \times \frac{2}{1} = \frac{8}{5}$$

$$3\frac{1}{2} \div 1\frac{2}{3} = \frac{7}{2} \div \frac{5}{3} = \frac{7}{2} \times \frac{3}{5} = \frac{21}{10}$$

Convert to
Improper fractions
first

Reciprocal
definition: two numbers
that multiply to
make 1.

They appear to be
"flipped"

$$\frac{3}{8} \rightarrow \frac{8}{3} \quad \frac{7}{2} \rightarrow \frac{2}{7}$$

$$\frac{1}{6} \rightarrow \frac{6}{1} \quad 5 \rightarrow \frac{1}{5}$$

mixed numbers must
be converted to improper
fractions.

Eg. Jorge has a very rare Yu-Gi-Oh card worth $\$5\frac{1}{2}$. This is $\frac{3}{4}$ of the original price he paid for it. What price was it when he bought it?

$5\frac{1}{2}$ is $\frac{3}{4}$ of original price.

$$5\frac{1}{2} = \frac{3}{4} \times \square$$

this can be rewritten
as a division.

$$\square = 5\frac{1}{2} \div \frac{3}{4}$$

$$= \frac{11}{2} \div \frac{3}{4}$$

$$= \frac{11}{\cancel{2}} \times \frac{\cancel{4}^2}{3}$$

$$= \frac{22}{3} \text{ or } \$7\frac{1}{3}$$