Technology-Integrated Mathematics
Class Notes
Fractions: Division of Fractions (Section 2.3)

Recall, a division like $12 \div 3 = \frac{12}{3} = 4$ tells us that the number 3 fits into 12 exactly 4 times.

We see this also as the multiplication $3 \times 4 = 12$.

Divisor: 3
Dividend: 12
Quotient: 4

What about $5 \div \frac{1}{2}$? What does that mean? We want to know how
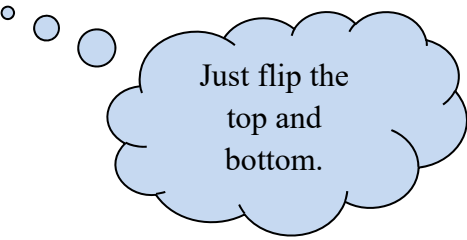
many times $\frac{1}{2}$ fits into 5. Draw it out with five little circles representing the 5. Split each into

pieces worth $\frac{1}{2}$. How many pieces do you get?

We will see a rule for dividing with fractions. But, first, we have a definition.

Definition: Reciprocal: The **reciprocal** of a fraction is the fraction with the numerator (top) and denominator (bottom) switched.

expl 1: Find the reciprocals of these fractions.

Fraction	Reciprocal
$\frac{2}{3}$	
$\frac{7}{10}$	
$\frac{1}{2}$	
3 (or $\frac{3}{1}$)	
$5\frac{2}{3}$ (or $\frac{17}{3}$)	

Just flip the top and bottom.

1

Calculation-wise: Dividing by a fraction:

When you divide a number by a fraction, we "flip and multiply". This means we flip the divisor fraction (find its reciprocal) and multiply it by the other number.

This makes the division problem above $5 \div \frac{1}{2}$ turn into $5 \div \frac{1}{2} = 5 \times \frac{2}{1} = 5 \times 2 = 10$. Try these out!
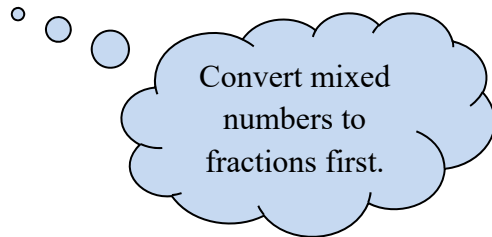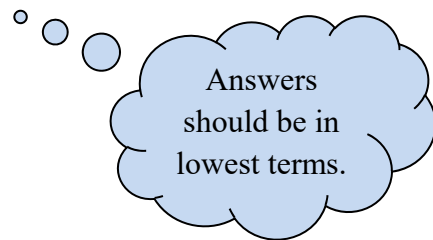
expl 2: Divide.

a.) $\frac{5}{8} \div \frac{1}{2}$

Answers should be in lowest terms.

b.) $\frac{7}{9} \div \frac{2}{3}$

c.) $6 \div 4\frac{1}{2}$

Convert mixed numbers to fractions first.

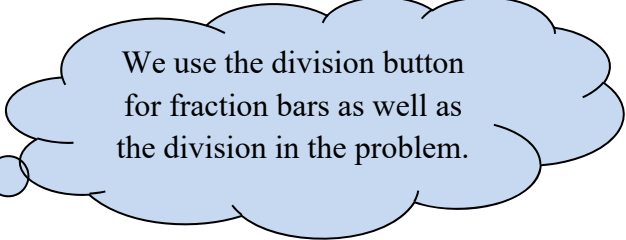d.) $5\frac{1}{3} \div \frac{4}{9}$

We can check our answers by multiplying the quotient (answer) with the divisor and seeing if we get the dividend. Check a couple now.

Calculator Work:

Once again, order of operations will need to be considered when you use the calculator. Let's rethink the following problem.
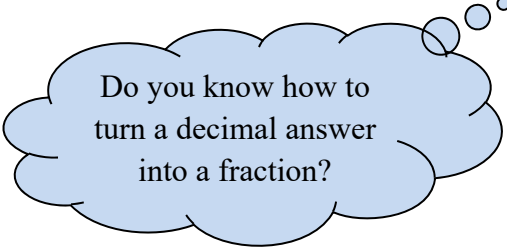
2a.) $\dfrac{5}{8} \div \dfrac{1}{2}$

We use the division button for fraction bars as well as the division in the problem.

If we do it on the calculator, entering 5 / 8 / 1 / 2, it will *not* work. Try it.

On the calculator, we need either the second or both fractions in parentheses. Try it both ways to see that you get the right answer.

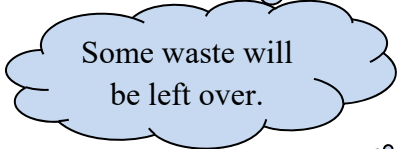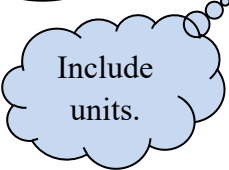Do you know how to turn a decimal answer into a fraction?

expl 3: Divide.

$$5\dfrac{1}{3} \div {}^{4}\!/_{9}$$

expl 4: How many pieces $6\dfrac{1}{4}$ in. long can be cut from 35 metal rods each 40 in. long?
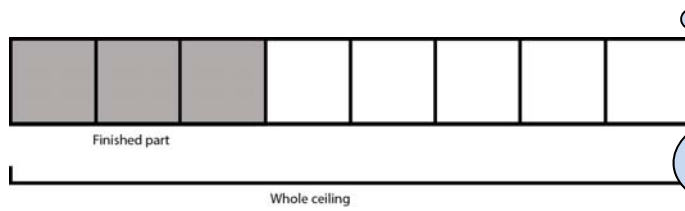
Some waste will be left over.

Include units.

3

expl 5: A family room ceiling is to be taped and mudded. A $106\frac{1}{2}$ sq ft area has already been done, and this represents $\frac{3}{8}$ of the job. How large is the area of the finished ceiling?

Finished part

Whole ceiling

We know $\frac{3}{8}$ *times* the whole area is $106\frac{1}{2}$ sq ft. How do we find the whole area?

Do it by hand and check on the calculator.

expl 6: How many feet are represented by a 5-in. line if it is drawn to a scale of $\frac{1}{2}$ in. = 1 foot?

Worksheet: Reciprocals and Understanding Division of Fractions:
This worksheet will give you practice finding reciprocals and then explore a division problem to see that the calculation method of "flip and multiply" really does get us the right answer. There are three more practice problems.