Lesson 15: The Division Algorithm—Converting Decimal Division into Whole Number Division Using Mental Math

Classwork

Opening Exercises

Start by finding the quotient of and .

What would happen if we multiplied the divisor by ?

What would happen if we multiplied the dividend by ?

What would happen if we multiplied both the divisor and dividend by?

What would happen if we multiplied both the divisor and dividend by ?

What would happen if we multiplied both the divisor and the dividend by, or ? What do you predict will happen?

How can we use this to help us divide when there are decimals in the divisor? For example, how can we use this to help us divide and ?

**Example 1**

Using our discoveries from the discussion, let’s divide by .

How can we rewrite this problem using what we learned in Lesson 14?

How could we use the short cut from our discussion to change the original numbers to and ?

**Example 2**

Now let’s divide by .

How can we rewrite this division problem so that the divisor is a whole number, but the quotient remains the same?

Exercises

Students will participate in a game called Pass the Paper. Students will work in groups of no more than four. There will be a different paper for each player. When the game starts, each student solves the first problem on his paper and passes the paper clockwise to the second student, who uses multiplication to check the work that was done by the previous student. Then, the paper is passed clockwise again to the third student, who solves the second problem. The paper is then passed to the fourth student, who checks the second problem. This process continues until all of the questions on every paper are complete or time runs out.

Problem Set