Decimals – hidden fractions!

A decimal is a way to representant a fraction of a power of 10. Above you had some decimals 0.1 and 0.5 along with 1.1 and 2.5.

The number of places to the right of the decimal point is the power of 10 in the denominator. For example 0.001 is 1 out of   pieces.

  

Sometimes you can simplify the fraction; sometimes not.

You can add and subtract decimals by lining up the decimal points and then borrowing and carrying just like they were natural numbers.

1.2 + 1.9 = 3.1 1.2 – 1.9 = – 0.7

Write it out with borrowing and carrying here:

Should it happen the one of the summands or the minuend have fewer decimal places that another summand or the subtrahend, just fill in with place holder zeros.

Multiplication and Division require some additional work.

With multiplying, multiply as if there were no decimals and then count the numbers to the right of each decimal. Sum the count and count from the right that many places and the plunk down a decimal point. This is one of two or three ways to multiply. We’ll discuss the second way too and get to the third way in the next section on exponents.

Example:

1.23 times .05. Multiply 123 and 5. You get 615. Now there are 4 places to the right of the two decimals. And only 3 digits in 615. So count over 4 places from the 5….and put in a placeholder zero for the 4th digit…then plunk down a decimal point: .0615

You try:

.25 (16)

The product of .15 and 1.2

Now for dividing, again you’ll be taking a short cut by manipulating the decimal point. Let’s get some more vocabulary. When you are given a problem to work, and you are going to divide the old fashioned way, the denominator is called the divisor and the numerator is called the dividend and the answer is called the quotient. If the numbers do not divide evenly then you have a remainder. There is a symbol that most elementary teachers call the “goes into box” to facilitate the process, which is called division or long division.

What is the quotient of 12 and 6?  with no remainder.  is another way to represent the answer to this question.

With decimals the process is just a little bit more complicated. What is the quotient of 1.27 and 6?



You try and divide 6 into 1, which doesn’t go. But 6 does go into 12. Move the decimal up. Subtract 12 from 12. Bring down the 7, 6 goes 1 time with a remainder of 1.

If you have a divisor with a decimal, imagine multiplying both the divisor and the dividend by factors of 10 until the divisor is clear of the decimal. This will move the decimal point to the right in BOTH numbers. Then proceed as usual.

Here are some practice problems:

The quotient of 1.25 and .05

0.8 2.5

1.2 (.6)

1.25 (.05)

Now let’s look at some of these decimals as fractions and do arithmetic operations on them:

0.02 + 0.181 = 

Now do it the decimal add way – do you see the similarities?

Let’s try one quotient.

0.5 divided by 0.25





Two for you to try: 