

MATH DOESN'T SUCK



Solution Guide – Chapter 10 All About Decimals

Doing the Math from p. 119

2) $0.8888 \bigcirc 0.891$

Both have a whole number part of “0”, so let’s compare the numbers after the decimal.

First, compare just the first digit: $0.8888 \bigcirc 0.891$, so far it’s a tie. Let’s compare the

second digit: $0.8888 \bigcirc 0.891$. And we have a winner! $8 < 9$

We can ignore the digits after these; since 8 is smaller than 9, we’re done.

Answer: $0.8888 < 0.891$

3. $0.45 \bigcirc 0.1999$

Both have a whole number part of “0”, so let’s compare the numbers after the decimal.

First compare just the first digit: $0.45 \bigcirc 0.1999$. We already have a winner! $4 < 1$, and no matter how many 9’s come after that 1, it still loses to the 4.

Answer: $0.45 > 0.1999$

4. $56.11 \bigcirc 6.889$

Don’t skip to the decimals; notice the whole number parts of these decimal numbers.

Since 56 is bigger than 6, we’re done!

Answer: $56.11 > 6.889$

5. $0.1112 \bigcirc 0.1211$

Both have a whole number part of “0”, so let’s compare the numbers after the decimal.

First we’ll compare the first digit: $0.1112 \bigcirc 0.1211$ and so far we’re a tie, so let’s move

on to the next digit: $0.1112 \bigcirc 0.1211$ and since 1 is smaller than 2, we have our winner!

Answer: $0.1112 < 0.1211$

Doing the Math from p. 121

The most important part of all of the problems in this section is to line up the decimal points, directly on top of each other. Then you can add zeros where you need/want them. Otherwise, it's pretty much like regular addition and subtraction!

2) $3.001 + 21.4 = ?$

$$\begin{array}{r} 3.001 \\ + 21.\downarrow 400 \\ \hline 24.\downarrow 401 \end{array} \leftarrow \text{I added zeros to fill in the blank spots after lining up the decimal points.}$$

Answer: $3.001 + 21.4 = 24.401$

3) $0.59 + 73.001 = ?$

$$\begin{array}{r} 0.590 \\ + 73.001 \\ \hline 73.591 \end{array} \leftarrow \text{I added this zero to fill in the blank spot after lining up the decimal points.}$$

Answer: $0.59 + 73.001 = 73.591$

4) $6.11 - 0.5 = ?$

This one will require some regrouping (aka borrowing)

$$\begin{array}{r} \overset{5}{6}.11 \\ - 0.50 \\ \hline 5.61 \end{array} \leftarrow \text{I added this zero to fill in the blank spot after lining up the decimal points.}$$

Answer: $6.11 - 0.5 = 5.61$

5) $32 - 4.5 = ?$

We'll add a **zero** to the 32, making it "32.0" to help with lining up the decimal points and also to help with the regrouping!

$$\begin{array}{r} 2 \cancel{3} \cancel{2} . 0 \\ - 4 . 5 \\ \hline 27 . 5 \end{array} \quad \leftarrow \text{I added this zero to fill in the blank spot, and also, it helps with regrouping!}$$

Answer: $32 - 4.5 = 27.5$

Doing the Math from p. 125

2) $0.60 \times 0.30 = ?$

Notice that $0.60 = 0.6$ and that $0.30 = 0.3$, so we can drop those zeros right away. So **Count** that there is one number after the decimal place each, to make a total of **two** places. Now drop the decimal points and **multiply** $6 \times 3 = 18$. Now we put the decimal place back in, counting **two** places, to get 0.18.

Answer: $0.60 \times 0.30 = 0.18$

3) $9.1 \times 1.00 = ?$

Notice that $1.00 = 1$, so this problem turns into: 9.1×1 . Well, that's pretty easy, since multiplying by 1 doesn't change the value of the number.

Answer: $9.1 \times 1.00 = 9.1$

4) Let's figure out how much tax would get added. We need to multiply 2.70×0.07 : So first we count the decimal places – that's **four** total. (we also could have dropped that zero, and then we'd count three instead of four)

Next we multiply *without* the decimals: $270 \times 7 = 1890$ Next we move the decimal place **four** places back in, and we get 0.189 So if we add that to the cost of the magazine, we get: $2.70 + 0.189 = 2.889$ In taxes, they always round up, so they'd charge \$2.89.

Answer: Yep, \$3 is plenty of money, because it'll cost **\$2.89!**

Doing the Math from p. 127

2) $3 \overline{)63}$ ²¹

Answer: Divisor = 3, Dividend = 63, Quotient = 21

3) $32 \div 4 = 8$

Rewrite it in "house" form: $4 \overline{)32}$ ⁸

Answer: Divisor = 4, Dividend = 32, Quotient = 8

4) $\frac{80}{5} = 16$

Rewrite it in "house" form: $5 \overline{)80}$ ¹⁶

Answer: Divisor = 5, Dividend = 80, Quotient = 16

5) $72 \div 8 = 9$

Rewrite it in "house" form: $8 \overline{)72}$ ⁹

Answer: Divisor = 8, Dividend = 72, Quotient = 9

$$6) \frac{10}{2} = 5$$

Rewrite it in "house" form: $2 \overline{)10}^5$

Answer: Divisor = 2, Dividend = 10, Quotient = 5

Doing the Math from p. 130

If you need a review of long division, you can find one on www.mathdoesntsuck.com!

The main thing with the problems below, is to pay close attention to zeros and be sure to put the decimal point *directly* above on the roof before you start dividing.

$$2) 4 \overline{)0.52}$$

$$\begin{array}{r} 0.13 \\ 4 \overline{)0.52} \\ \underline{-4} \downarrow \\ 12 \\ \underline{-12} \\ 0 \rightarrow \text{DONE!} \end{array}$$

Answer: $4 \overline{)0.52} = 0.13$

$$3) 4 \overline{)0.052}$$

$$\begin{array}{r} 0.013 \\ 4 \overline{)0.052} \\ \underline{-4} \downarrow \\ 12 \\ \underline{-12} \\ 0 \rightarrow \text{DONE!} \end{array}$$

Answer: $4 \overline{)0.052} = 0.013$

4) $5\overline{)67}$

$$\begin{array}{r}
 13.4 \\
 5\overline{)67.0} \\
 \underline{-5} \downarrow \\
 17 \downarrow \\
 \underline{-15} \downarrow \\
 20 \\
 \underline{-20} \\
 0 \rightarrow \text{DONE!}
 \end{array}$$

← I added this zero because I needed it to continue subtracting.

Answer: $5\overline{)67} = 13.4$

Doing the Math from p. 133-4

2) $0.8\overline{)4} = ?$

To get rid of the decimal place in the divisor, we need to move the decimal point **one** place to the right. $0.8 \rightarrow 8$

This means we also need to move the “decimal” one place in the dividend, which in this case means adding a zero. $4 \rightarrow 40$

We’ve just shown that $0.8\overline{)4}$ is the same division problem as: $8\overline{)40}$, and that’s pretty

easy, since it’s straight from our multiplication facts! $8\overline{)40}^5$

Answer: $0.8\overline{)4} = 5$

3) $4.2 \div 0.6 = ?$

This is the same as $0.6 \overline{)4.2}$, so we'll need to move the decimals **one** place to the right, in order to get rid of the decimal in the divisor: $0.6 \rightarrow 6$ and $4.2 \rightarrow 42$

Notice that we've just shown that $0.6 \overline{)4.2}$ is the *same division problem* as $6 \overline{)42}$.

Since $6 \overline{)42} = 7$, we know that:

Answer: $4.2 \div 0.6 = 7$

4) $0.8 \overline{)0.4} = ?$

To get rid of the decimal place in the divisor, we'll need to move the decimal point one place to the right. $0.8 \rightarrow 8$ and $0.4 \rightarrow 4$. Now we have the problem: $8 \overline{)4}$. Hm, how do we do this? Well, remember that we can always add a decimal and zeros to the dividend.

$8 \overline{)4}$ is the same as $8 \overline{)4.0}$. Now this we can solve, since 8 does divide into 40:

$$\begin{array}{r} 0.5 \\ 8 \overline{)4.0} \\ - 40 \\ \hline 0 \rightarrow \text{DONE!} \end{array}$$

Answer: $0.8 \overline{)0.4} = 0.5$

You may notice that this makes total sense, since $\frac{4}{8} = 8 \overline{)4}$, and we know that

$\frac{4}{8}$ reduces to $\frac{1}{2}$, which equals 0.5, so this answer makes total sense.

...read that last sentence again, slowly. You'll see it!