

Divide Decimals by Decimals 1

<p>You have learned...</p> <p>...how to divide decimals <i>by whole numbers</i>, using either mental math or long division:</p>	$2.04 \div 2 = \underline{\hspace{2cm}}$ $0.24 \div 6 = \underline{\hspace{2cm}}$ $5.2 \div 10 = \underline{\hspace{2cm}}$	$ \begin{array}{r} 0.246 \\ 7 \overline{) 17.22} \\ \underline{-14} \\ 32 \\ \underline{-28} \\ 42 \\ \underline{-42} \\ 0 \end{array} $
<p>...and how to divide decimals <i>by decimals</i> mentally, thinking of how many times it fits:</p>	$2.5 \div 0.5 = \underline{\hspace{2cm}}$ $0.021 \div 0.003 = \underline{\hspace{2cm}}$	

But how can we divide if the divisor is a decimal, yet the division won't be even?

Examples of that type of divisions are $4.6 \div 0.029$ and $0.23 \div 0.07$. Such decimal divisions are based on the following principle:

We **change the decimal division into a new division** problem that has the *same answer*, yet it has a *whole-number* divisor. This new problem can be solved with regular long division.

Let's now explore how to do that change.

1. Solve, thinking how many times the divisor "fits into" the dividend. **Notice something special!**

a. $60 \div 20 = \underline{\hspace{2cm}}$	e. $350 \div 50 = \underline{\hspace{2cm}}$	i. $2,000 \div 10 = \underline{\hspace{2cm}}$
b. $6 \div 2 = \underline{\hspace{2cm}}$	f. $35 \div 5 = \underline{\hspace{2cm}}$	j. $200 \div 1 = \underline{\hspace{2cm}}$
c. $0.6 \div 0.2 = \underline{\hspace{2cm}}$	g. $3.5 \div 0.5 = \underline{\hspace{2cm}}$	k. $20 \div 0.1 = \underline{\hspace{2cm}}$
d. $0.06 \div 0.02 = \underline{\hspace{2cm}}$	h. $0.35 \div 0.05 = \underline{\hspace{2cm}}$	l. $2 \div 0.01 = \underline{\hspace{2cm}}$

What did you notice?

The answers are the same, because 0.02 fits into 0.06 as many times as 0.2 fits into 0.6, as many times as 2 fits into 6, and as many times as 20 fits into 60.

2. Solve first the easier of the two problems in each box. The answers to both are the same.

<p>a. $5 \div 0.2 = \underline{\hspace{2cm}}$</p> <p>$50 \div 2 = \underline{\hspace{2cm}}$</p>	<p>b. $7 \div 0.35 = \underline{\hspace{2cm}}$</p> <p>$700 \div 35 = \underline{\hspace{2cm}}$</p>	<p>c. $36.9 \div 3 = \underline{\hspace{2cm}}$</p> <p>$0.369 \div 0.03 = \underline{\hspace{2cm}}$</p>
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