

PreAlgebra
Skill-Builder #D-10
Dividing Decimals by Other Decimals

Recall that when dividing two numbers of the same sign, the quotient will be positive. If the two numbers have different signs, then their quotient will be negative, **regardless of which number has a larger absolute value.**

Note that:

$$\frac{-A}{B} = \frac{A}{-B} = -\frac{A}{B}$$

When dividing two decimals, make sure that the divisor (number that comes after the $\div$ sign) must be a positive whole number. If the divisor is not a whole number, we must move the decimal point to the right by as many places as needed to make the divisor become a whole number, and move the **same number of decimal places** for the dividend, even if the dividend may still be a decimal number. Use zeros to fill in any missing places.

We can also add zeros after the last digit in the decimal part of the dividend if necessary and continue the division process until the remainder becomes zero, or when a pattern is observed in repeating decimals (also known as recurring decimals). When that happens, place a bar over the first repeating pattern in the decimal part. **Note that the decimal point in the quotient is directly above the decimal point in the dividend.**

Example1:

Divide: $0.00238 \div 0.04$

Make the divisor 0.04 become a whole number by moving the decimal point two places to the right. So, we must also move the decimal point of the dividend 0.00238 by two decimal places.

$$= 0.238 \div 4$$

$$\begin{array}{r} 0.0595 \\ 4 \overline{) 0.2380} \\ \underline{-20} \\ 38 \\ \underline{-36} \\ 20 \\ \underline{-20} \\ 0 \end{array}$$

Answer: 0.0595

add zeros after the last digit in the decimal part

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Example 2:

Simplify: $\frac{32.5}{-0.003} \longrightarrow -\frac{32500}{3}$

Make the divisor 0.003 become a whole number by moving the decimal point three places to the right. So, we must also move the decimal point of the dividend 32.5 by three decimal places. Remember to use zeros for any missing places.

$$\begin{array}{r} 10833.\bar{3} \\ 3 \overline{) 32500.0} \\ \underline{-3} \end{array}$$

$$\begin{array}{r} 02 \\ \underline{0} \end{array}$$

$$\begin{array}{r} 25 \\ \underline{-24} \end{array}$$

$$\begin{array}{r} 10 \\ \underline{-9} \end{array}$$

$$\begin{array}{r} 10 \\ \underline{-9} \end{array}$$

$$\begin{array}{r} 10 \\ \underline{-9} \end{array}$$

$$10$$

⋮
↓

place a bar over the first repeating pattern in the decimal part

Division process does not stop since there will always be a remainder. However, a pattern is observed!

This is an example of a repeating or recurring decimal.

$$\frac{32.5}{-0.003} = -\frac{32500}{3} = -10,833.\bar{3} \longleftarrow \text{Answer}$$

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1. Divide: $0.58 \div 0.4$

2. Divide -22.36 by -0.013

3. Simplify: $\frac{0.09}{-2.5}$

4. Divide: $0.07 \div 0.011$

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Answers

1. 1.45
2. 1,720
3. -0.036
4. $6.\overline{36}$

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