

DIVIDING DECIMALS STUDY GUIDE

The rule in division states that dividing a decimal number cannot be done. As a result, in order to carry out the operation, move as many times as needed TO THE RIGHT of the decimal point, in order to make the divisor (the number being divided by or the number sitting outside of the division sign), a whole number. However, the decimal point of the dividend (the number inside the division sign) also should be moved to the right by the same number of times as the divisor.

Moving decimal points when multiplying and dividing

Example 1 (Dividing a whole number by a decimal)

Divide 2398 by 41.5

You are not dividing by a whole number, so you need to move the decimal point so that you are dividing by a whole number:

2398	=	2398
41.5	→	415
move 1 place		

You are now dividing by a whole number, so you can proceed. Ignore the decimal point and use long division.

5778

415)2398

2075

3230

2905

3250

2905

345

332

After completing your long division work, the next step is to place the decimal point where it belongs. So now your answer should read: $2398 \div 41.5 = 57.78$

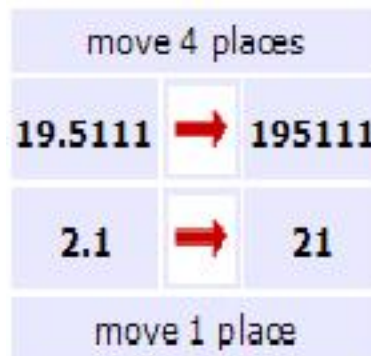
Moving decimal points when dividing

When decimals are divided and multiplied with 10, 100, 1000… the focus is on which way the decimal point will move. When dividing, the decimal point will move to the left, making the number smaller. The number of times the decimal point will move will depend on the number of zeros you are dividing by. However, when decimals are divided with 0.1, 0.01, the decimal point will move the OPPOSITE of what was previously mentioned. However, this time, the number of zeros does not matter but rather, the number of places after the decimal is considered. See examples.

Example 2 (Dividing a decimal by a decimal)

$$19.5111 \div 2.1 = 9.291$$

You are not dividing by a whole number, so you need to move the decimal point so that you are dividing by a whole number.



You are now dividing by a whole number, so you can proceed. Ignore the decimal point and use long division.

9291

21) 195111

189

6111

4200

1911

1890

Again, just as in example 1 above, once you complete your long division, place the decimal points in their proper places in the answer. $19.5111 \div 2.1 = 9.291$

When decimals are divided and multiplied with 10, 100, 1000… the focus is on which way the decimal point will move. When dividing, the decimal point will move to the left, making the number smaller, and when multiplying, the decimal point will move to the right making the number larger. The number of times the decimal point will move will depend on the number of zeros you are dividing or multiplying by. However, when decimals are divided and multiplied with 0.1, 0.01, the decimal point will move the OPPOSITE of what was previously mentioned. However, this time, the number of zeros does not matter but rather, the number of places after the decimal is considered. See the examples below.