

Counting the Zeros

A **power of 10** is a number that can have 10 as its only factors. For instance, $(10 \times 10) = 100$ and $(10 \times 10 \times 10 \times 10) = 10,000$ are both powers of 10. Multiplying and dividing by powers of 10 is as easy as counting the zeros and moving your decimal point the same number of places.

Part 1: Multiplying by Powers of 10

PROCEDURE: To multiply a number by a power of 10, move the decimal point to the *right* the same number of places as there are zeros in the power of 10. If there are not enough places in your number to do this, you will need to add zeros to the number as place holders.

SAMPLE PROBLEM: Multiply 8.25 by 10, 100, and 1000.

$$\begin{aligned}
 10 \times 8.25 &= 8.25 \rightarrow 82.5 \\
 100 \times 8.25 &= 8.25 \rightarrow 825 \\
 1000 \times 8.25 &= 8.25 \rightarrow 8250
 \end{aligned}$$

It's Your Turn!

1. Write your answers on the lines, and remember to place commas in the appropriate places.

a. $10 \times 6 =$ _____	b. $9.381 \times 100 =$ _____
c. $71 \times 100 =$ _____	d. $1000 \times 41 =$ _____
e. $10 \times 11.9 =$ _____	f. $67 \times 10,000 =$ _____

Part 2: Dividing by Powers of 10

PROCEDURE: To divide a number by a power of 10, move the decimal point to the left as many places as there are zeros in the power of 10.

SAMPLE PROBLEM: Divide 763 by 10, 1000, and 100,000.

$$\begin{aligned}
 763 \div 10 &= 76.3 \rightarrow 76.3 \\
 763 \div 1000 &= 763 \rightarrow 0.763 \\
 763 \div 100,000 &= 763 \rightarrow 0.00763
 \end{aligned}$$

2. Divide by powers of 10.

a. $55 \div 1000 =$ _____	b. $9907 \div 100 =$ _____
c. $620 \div 10 =$ _____	d. $4.01 \div 100 =$ _____
e. $0.04 \div 1000 =$ _____	f. $996 \div 10,000 =$ _____