

Multiplying and Dividing by Powers of 10

Home Link 6-1

NAME _____

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Use the ideas below to help you solve Problems 1–9.



- To *multiply* by a power of 10, move the decimal point to the right the number of places indicated by the exponent. For example, to multiply by 10^3 , move the decimal point to the right 3 places. This works because the exponent tells the number of times a start number is multiplied by 10. Each time a number is multiplied by 10, the digits shift 1 place to the left, which moves the decimal point 1 place to the right.

Example: $4.3 \times 10^3 = 4.3 \times 10 \times 10 \times 10 = 4,300$

- To *divide* by a power of 10, move the decimal point to the left the number of places indicated by the exponent. For example, to divide by 10^3 , move the decimal point to the left 3 places. This works because dividing by 10 is the same as multiplying by $\frac{1}{10}$. Each time a number is multiplied by $\frac{1}{10}$, the digits shift 1 place to the right, which moves the decimal point 1 place to the left.

Example: $4.3 \div 10^3 = 4.3 \div (10 \times 10 \times 10) = 4.3 \div 1,000 = 0.0043$

① $6.8 \times 10^2 = \underline{680}$

② $43.9 \div 10^2 = \underline{0.439}$

③ $237.5 \div 10^2 = \underline{2.375}$

④ $5.29 \times 10^4 = \underline{52,900}$

⑤ $13.2 \div 10^3 = \underline{0.0132}$

⑥ $71.8 \times 10^3 = \underline{71,800}$

⑦ $9.4 \times 10^5 = \underline{940,000}$

⑧ $3.6 \div 10^4 = \underline{0.00036}$

- ⑨ Explain how you moved the decimal point in Problem 2 and why. Use clear mathematical language. **Sample answer:** I moved the decimal point two places to the left because 43.9 is divided by 10 two times, which is the same as shifting the digits two places to the right.

Practice

⑩
$$\begin{array}{r} \frac{3}{8} \\ + \frac{1}{3} \\ \hline \frac{17}{24} \end{array}$$

⑪
$$\begin{array}{r} 2\frac{5}{6} \\ + 1\frac{3}{4} \\ \hline 4\frac{7}{12}, \text{ or } 4\frac{14}{24} \end{array}$$