EUREKA MATH™

GRADE 5

Homework Helpers Sampler

This sampler includes Homework Helpers for Grade 5, Lessons 1-3. To order a full-year set of Homework Helpers visit >>> http://eurmath.link/homework-helpers

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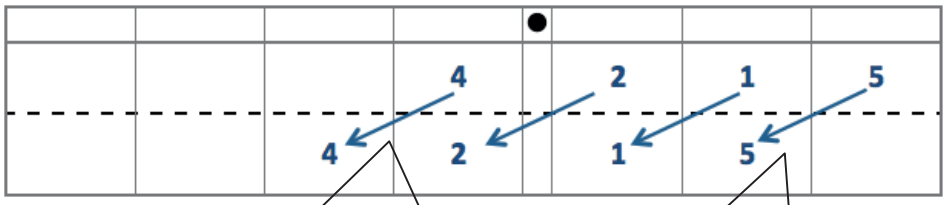
G5-M1-Lesson 1

Note: It is common to encourage students to simply "move the decimal point" a number of places when multiplying or dividing by powers of 10. Instead, encourage students to understand that the decimal point lives between the ones place and the tenths place. The decimal point does not move. Rather, the digits shift along the place value chart when multiplying and dividing by powers of ten.

Use the place value chart and arrows to show how the value of each digit changes.

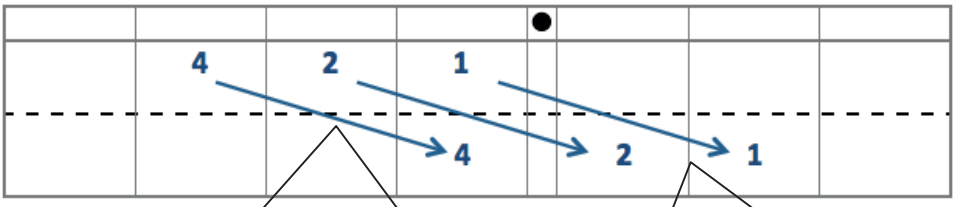
1. $4.215 \times 10 = \mathbf{42.15}$



4 ones times 10 is 4 tens. Since I'm multiplying by 10, the value of each digit becomes 10 times greater.

When multiplying by 10, each digit shifts 1 place to the *left* on the place value chart.

2. $421 \div 100 = \mathbf{4.21}$



4 hundreds divided by 100 is 4 ones. Since I'm dividing by 100, the value of each digit becomes 100 times smaller.

When dividing by 100, each digit shifts 2 places to the *right* on the place value chart.

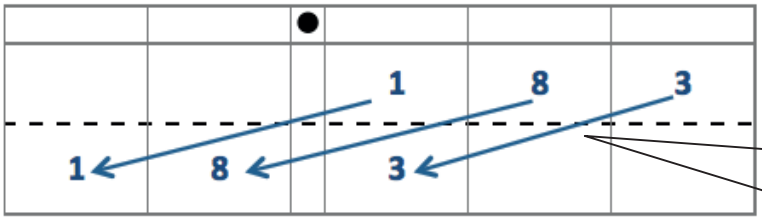
3. A student used his place value chart to show a number. After the teacher instructed him to multiply his number by 10, the chart showed 3,200.4. Draw a picture of what the place value chart looked like at first.

3 hundreds times 10 is 3 thousands. The original number must have had a 3 in the hundreds place.

thousands	hundreds	tens	ones	●	tenths	hundredths	thousandths
	3	2	0	.	0	4	

I used the place value chart to help me visualize what the original number was. When multiplying by 10, each digit must have shifted 1 place to the left, so I shifted each digit 1 place back to the right to show the original number.

4. A microscope has a setting that magnifies an object so that it appears 100 times as large when viewed through the eyepiece. If a small bug is 0.183 cm long, how long will the insect appear in centimeters through the microscope? Explain how you know.



When multiplying by 100, each digit shifts 2 places to the *left* on the place value chart.

The bug will appear to be 18.3 cm long through the microscope.

Since the microscope magnifies objects 100 times, the bug will appear to be 100 times larger. I used a place value chart to show what happens to the value of each digit when it is multiplied by 100. Each digit shifts 2 places to the left.

G5-M1-Lesson 2

1. Solve.

a. $4{,}258 \times 10 =$ **$42,580$**

I visualized a place value chart. 8 ones times 10 is 8 tens. When multiplying by 10, each digit shifts 1 place to the *left*.

b. $4{,}258 \div 10 =$ **425.8**

When dividing by 10, each digit shifts 1 place to the *right*.

c. $3.9 \times 100 =$ **390**

The factor 100, has 2 zeros, so I can visualize each digit shifting 2 places to the *left*.

d. $3.9 \div 100 =$ **0.039**

The divisor, 100, has 2 zeros, so each digit shifts 2 places to the *right*.

2. Solve.

7×1 hundred $= 7$ hundreds $= 700$

a. $9{,}647 \times 100 =$ **$964,700$**

$7 \div 1$ thousand $= 7$ thousandths $= 0.007$

b. $9{,}647 \div 1{,}000 =$ **9.647**

c. Explain how you decided on the number of zeros in the product for part (a).

I visualized a place value chart. Multiplying by 100 shifts each digit in the factor $9,647$ two places to the left, so there were 2 additional zeros in the product.

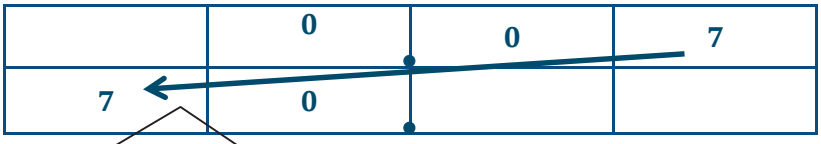
d. Explain how you decided where to place the decimal in the quotient for part (b).

The divisor, $1,000$, has 3 zeros, so each digit in $9,647$ shifts 3 places to the right. When the digit 9 shifts 3 places to the right, it moves to the ones places, so I knew the decimal point needed to go between the ones place and the tenths place. I put the decimal between the 9 and the 6.

3. Jasmine says that 7 hundredths multiplied by 1,000 equals 7 thousands. Is she correct? Use a place value chart to explain your answer.

Jasmine is not correct. 7 ones × 1,000 would be 7 thousands.

But 0.07 × 1,000 = 70. Look at my place value chart.

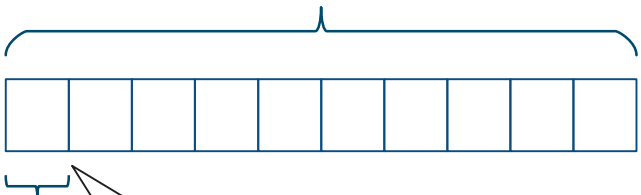


The factor 1,000 has 3 zeros, so the digit 7 shifts 3 places to the left on the place value chart.

4. Nino's class earned $750 selling candy bars for a fundraiser. $\frac{1}{10}$ of all the money collected was from sales made by Nino. How much money did Nino raise?

The whole tape represents all of the money earned by Nino's class.

Nino collected $\frac{1}{10}$ of all the money, so I partition the tape diagram into 10 equal units.



The value of this 1 unit will tell me how much money Nino earned for his class.

10 units = $750

1 unit = $750 ÷ 10

1 unit = $75

Nino raised $75.

G5-M1-Lesson 3

1. Write the following in exponential form.

   a. $10 \times 10 \times 10 =$ **10^3**

   10 is a factor 3 times, so the exponent is 3. I can read this as, "ten to the third power."

   b. $1{,}000 \times 10 =$ **10^4**

   $1{,}000 = 10 \times 10 \times 10$, so this expression uses 10 as a factor 4 times. The exponent is 4.

   c. $100{,}000 =$ **10^5**

   d. $100 =$ **10^2**

   I recognize a pattern. 100 has 2 zeros. Therefore, the exponent is 2. One hundred equals 10 to the 2nd power.

2. Write the following in standard form.

   a. $6 \times 10^3 =$ **6,000**

   10^3 is equal to 1,000. 6 times 1 thousand is 6 thousand.

   b. $60.43 \times 10^4 =$ **604,300**

   The exponent 4 tells me how many places each digit will shift to the left.

   c. $643 \div 10^3 =$ **0.643**

   d. $6.4 \div 10^2 =$ **0.064**

   The exponent 2 tells me how many places each digit will shift to the right.

3. Complete the patterns.

   a. 0.06 0.6 **6** 60 **600** **6,000**

   6 tenths is larger than 6 hundredths. Each number in the pattern is 10 times larger than the previous number.

   b. **92,100** 9,210 **921** 92.1 9.21 **0.921**

   The numbers are getting smaller in this pattern.

   The digits have each shifted 1 place to the right. The pattern in this sequence is "divide by 10^1."