1. Use the place value chart and arrows to show how the value of the each digit changes. The first one has been done for you.
   a. $3.452 \times 10 = \underline{34.52}$

   
   
   
   
   
   
   
   

   b. $3.452 \times 100 = \underline{345.2}$

   
   
   
   
   
   
   
   

   c. $3.452 \times 1,000 = \underline{3,452}$

   
   
   
   
   
   
   
   

   d. Explain how and why the value of the 5 changed in (a), (b), and (c).

   The value of the 5 changed each time: because I increased by multiples of 10 each time.

   \[
   \begin{align*}
   a & : 5 \text{ hundredths} \times 10 = 5 \text{ tenths} \\
   b & : 5 \text{ hundredths} \times 100 = 5 \text{ ones} \\
   c & : 5 \text{ hundredths} \times 1,000 = 5 \text{ tens}
   \end{align*}
   \]
2. Use the place value chart and arrows to show how the value of each digit changes. The first one has been done for you.

a. \(345 \div 10 = 34.5\)

b. \(345 \div 100 = 3.45\)

c. \(345 \div 1,000 = 0.345\)

d. Explain how and why the value of the 4 changed in the quotients in (a), (b), and (c).

The value of the 4 changed each time because I decreased by multiples of 10 (\(\div 10\)) each time.

\[\begin{align*}
\text{a - 4 tens } & \div 10 = 4 \text{ ones} \\
\text{b - 4 tens } & \div 100 = 4 \text{ tenths} \\
\text{c - 4 tens } & \div 1000 = 4 \text{ hundredths}
\end{align*}\]
3. A manufacturer made 7,234 boxes of coffee stirrers. Each box contains 1,000 stirrers. How many stirrers did they make? Explain your thinking, and include a statement of the solution.

\[
7,234 \times 1,000 = 7,234,000
\]

When you multiply by multiples of 10, the value of your number increases. In this case, my number (7,234) moves 3 places to the left to equal 7,234,000 stirrers total.

4. 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 | 2 | 0 | 0 | 4 |

a. Explain how you decided what to draw on your place value chart. Be sure to include your reasoning about how the value of each digit was affected by the multiplication. Use words, pictures, or numbers.

If he multiplied by 10, the original # was moved one place value to the left to equal 3,200.4. I just moved backwards (one place value to the right) to get the original # (320.04), so 320.04 \times 10 = 3,200.4.

5. A microscope has a setting that magnifies an object so that it appears 100 times as large when viewed through the eyepiece. If a tiny insect is 0.095 cm long, how long will the insect appear in centimeters through the microscope? Explain how you know.

The insect will appear to be 9.5 cm long.

9 tenths \times 10 = 90 hundredths
9 tenths \times 10 = 9 ones
5 hundredths \times 10 = 5 thousandths
5 hundredths \times 10 = 5 thousandths