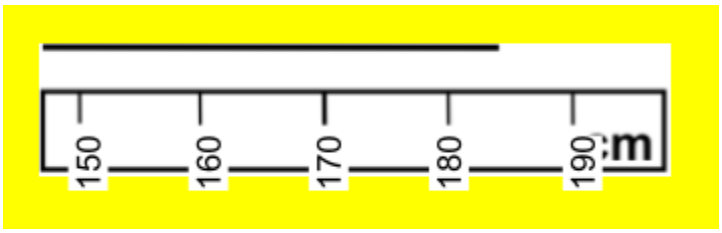
Measurement Practice Name **KEY**

Chemistry Date _____ Hour_____

Directions: Complete the following problems in the spaces provided to you.

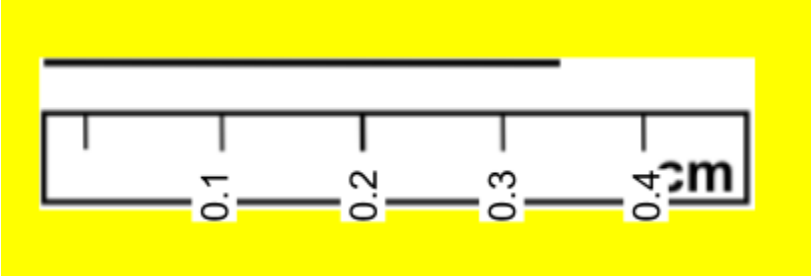
1. A student measures 184 cm on a ruler. Draw in the markings (not to scale) of the ruler that represent that level of precision. VIDEO



   a. Which place value(s) (*i.e.* ones, tens, tenths, etc.) is/are certain or marked in the measurement? Which place value is estimated?
   Certain Digits: Hundreds place and tens place
   Estimated Digit: Ones place

   b. Looking at the markings you made on the ruler above, would 180.5 cm be a reasonable measurement on this ruler for a different object? Explain your answer.
   No -- The estimated digit of the ruler is the ones place. The ruler is not precise enough to round to the tenths place.

2. A student measures 0.35 cm on a ruler. Draw in the markings (not to scale) of the ruler that represent that level of precision. VIDEO

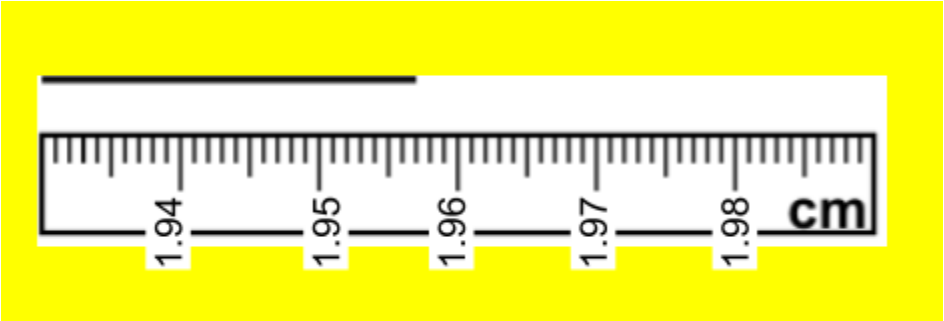


   a. Which place value(s) (*i.e.* ones, tens, tenths, etc.) is/are certain or marked in the measurement? Which position is estimated?
   Certain Digits: Tenths place
   Estimated Digit: Hundredths place

   b. Looking at the markings you made on the ruler above, would 1.78 cm be a reasonable measurement on this ruler for a different object? Explain your answer.
   Yes -- this ruler matches the same precision of the measurement. Any measurement using this ruler would have the estimated digit in the hundredths place.

   c. Looking at the markings you made on the ruler above, would 1.0 cm be a reasonable measurement on this ruler for a different object? Explain your answer.
   No -- The estimated digit of the ruler is the hundredths place. The ruler is too precise to round to the tenths place.

3. A student measures 1.9568 cm on a ruler. Draw in the markings (not to scale) of the ruler that represent that level of precision.

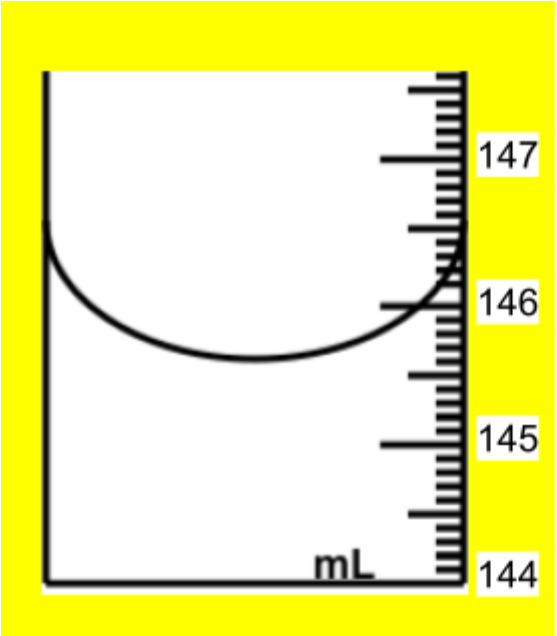


a. Which place value(s) (*i.e.* ones, tens, tenths, etc.) is/are certain or marked in the measurement? Which position is estimated?
Certain Digits: Ones, tenths, hundredths and thousandths place
Estimated Digit: Thousandths place

b. Looking at the markings you made on the ruler above, would 1.0000 cm be a reasonable measurement on this ruler for a different object? Explain your answer.
Yes -- this ruler matches the same precision of the measurement. Any measurement using this ruler would have the estimated digit in the thousandths place.

c. Looking at the markings you made on the ruler above, would 4.035 cm be a reasonable measurement on this ruler for a different object? Explain your answer.
No -- The estimated digit of the ruler is the thousandths place. The ruler is too precise to round to the hundredths place.

4. A student measures 145.60 mL on a graduated cylinder. Draw in the markings (not to scale) of the graduated cylinder that represent that level of precision. Remember that liquids are read from the bottom of the meniscus. VIDEO WALK-THROUGH



a. Which place value(s) (*i.e.* ones, tens, tenths, etc.) is/are certain or marked in the measurement? Which position is estimated?
Certain Digits: Hundreds, tens, ones, tenths
Estimated Digit: Hundredths place

b. Looking at the markings you made, would 1.15 mL be a reasonable measurement on this graduated cylinder? Explain your answer.
Yes -- this graduated cylinder matches the same precision of the measurement. Any measurement using this graduated cylinder would have the estimated digit in the hundredths place.

c. Looking at the markings you made, would 90.00 mL be a reasonable measurement on this graduated cylinder? Explain your answer.
Yes -- this graduated cylinder matches the same precision of the measurement. Any measurement using this graduated cylinder would have the estimated digit in the hundredths place.