**Answers to Practice Quiz #1:**

​1.  Anatomy - Study of Structure
      Physiology - Study of function
​      Cytology - Study of individual cells
      Histology - Study of tissues

2.  atomic - molecular - organelle - cellular - tissue - organ - organ system - organismal

3.  Growth and Development
      Responsiveness
      Reproduction
      Adaptation
​      Organization
      Metabolism
      Regulation

4.  Upright, standing with feet firmly on the ground, parallel and flat on the floor.  The head is level and eyes look forward.  Arms at either side of the body with palms           facing forward and thumbs pointing away from the body.  [Click here for a diagram and more full explanation.](https://medicine107.wordpress.com/category/medicine/page/2/%22%20%5Ct%20%22_blank)

      It is used so that anatomists have a common point of reference for describing and discussing the regions and structures of the body.

5.  Anterior - In front of
      Posterior - In back of
      Superior - Closer to the head/above
      Inferior - Closer to the feet/below
      Dorsal - At the backside
      Ventral - At the bellyside

6.  Emergent properties are behaviors or characteristics that emerge out of the activity of the component parts of a system.  These properties are not inherent in the parts themselves, but are only present as a result of the relationship of the parts.  For instance, a nerve cell, on it's own, does not possess memory or conscious awareness, yet billions of neurons linked together in complex patterns somehow have the ability to produce memory or consciousness.  The activity of the neurons interacting together creates something that is not inherent in any of the individual parts.  [For more on fascinating examples of emergent properties, click here, once the page opens, click on the "Launch Interactive" button for a slideshow of examples.](http://www.pbs.org/wgbh/nova/nature/emergence-examples.html%22%20%5Ct%20%22_blank)

7.  100

8.  1,000,000

9.  1000/1,000,000,000 = 1,000,000

10.  The human blood cell at 8 micrometers

11.  Answers may vary slightly.  To get your answer you should have done something similar to the following sequences for each case:

       Pollen Grain
       Use a ruler to determine the the length of the 20 micrometer line in millimeters.  You should get a value of about 2 mm.  This means that one millimeter is                              representative of 10 micrometers of actual length since 20/2 = 10.   Now measure the length of the pollen grain. Don't worry about being too exact on this part,                you should get somewhere between 5.5 and 6 millimeters.  For the example here, let's say the value is 5.6 mm.  Since our scale indicates that each millimeter is 10          micrometers in actual length, then we simply multiply 5.6 by 10 to get our answer in micrometers.  5.6 x 10 = 56, the pollen grain is approximately 56 micrometers          in diameter.

       Snout Beetle
       First, you'll want to measure the length of the beetle, from rump to head.  This should give you a value of somewhere around, 4 millimeters, excluding the snout.              Don't worry about being too exact with this part, round up or down to keep it simple.  The image on the paper is at 320x magnification, so you'll need to divide the          previous value by 320 to get the actual size of the beetle in millimeters, 4 mm /320 =  0.0125 mm.  Now, all you need to do is convert this value to micrometers.                We know that there are 1,000,000 micrometers in a meter and that there are also 1000 millimeters in a meter.  If we divide the amount of micrometers in a                        meter by the amount of millimeters in a meter, 1,000,000/1,000, we get 1,000.  That means that there are 1,000 micrometers in a millimeter.  To convert our                      answer to micrometers, we simply need to multiply our previously derived value, 0.0125 mm, by 1000.  So, the length of the snout beetle is approximately 12.5                micrometers.

12.  Systole is the contraction phase of the cardiac cycle, meaning it is measurement of the force of the blood (pressure) on arterial and vein walls when the heart is in            contraction.  This state occurs when  the greatest force of pressure is exerted on the cardiovascular system, thus, the value for systole is higher than diastole                      when taking a blood pressure  reading.

         Diastole refers to the resting or relaxation phase of the cardiac cycle, meaning it is the measurement of the force of the blood on arterial and vein walls when the            heart is relaxed and not in contraction.   This state occurs when the least force of pressure is exerted on the CV system and it is the lower value when taking a                    blood pressure reading.