Lab Exercise 1

Measurements
Body Organization
Body Systems

Textbook Reference: See Chapter 1

What you need to be able to do on the exam after completing this lab exercise:

- Be able to convert from one metric unit to another.
- Be able to explain what each metric base unit measures.
- Be able to identify directional terms on the muscle man model and the skin model.
- Be able to identify each body plane on a diagram and organ.
- Be able to identify all specified regions on the baby doll.
- Be able to identify the major body organs on a torso model.
- Be able to identify each body cavity on the torso model and know which major organs are housed within each cavity.
- Be able to identify the abdominopelvic regions and quadrants on a torso model.
- Be able to identify the correct body systems and organs on the models or diagrams.
Measurements

Metric Measurement

In the BIO 137 lab, the metric system of measurement is used, so it is important to be able to convert from one metric unit to another.

We will be using 3 base units: gram (to measure mass)  
meter (to measure distance)  
liter (to measure volume)

Below is a table that gives you the base units in the center, larger units to the left of center, and smaller units to the right of center.

To convert from a smaller unit to a larger unit, you simply need to move your decimal point to the left the required number of places.

To convert from a larger unit to a smaller unit, you move your decimal point to the right the required number of places.

\[
\begin{array}{cccccccccccccc}
\text{ mega-} & \text{kilo-} & \text{deca-} & \text{base unit} & \text{dec-} & \text{centi-} & \text{milli-} & \text{micro-} & \text{nano-} \\
\text{(M)} & \text{(k)} & \text{(h)} & \text{(da)} & \text{gram (g)} & \text{(d)} & \text{©} & \text{(m)} & \text{(µ)} & \text{(n)} \\
1,000,000 & 1000 & 100 & 10 & \text{liter (L)} & 0.1 & 0.01 & 0.001 & 0.000001 & 0.000000001 \\
10^6 & 10^3 & 10^2 & 10^1 & \text{meter (m)} & 10^{-1} & 10^{-2} & 10^{-3} & 10^{-6} & 10^{-9} \\
\end{array}
\]

46 mm = ____ m

To convert from mm to m, move your decimal point 3 places to the left (since the base unit is three places to the left of milli- on the chart).

46 mm = .046 m

400 cg = ____ mg

To convert from cg to mg, move your decimal point 1 place to the right (since milli- is 1 place to the right of centi- on the chart).

400 cg = 4,000 mg
Practice. Convert the following:

1. 25 mL = __________ dL
2. 15 g = __________ mg
3. 750 g = __________ kg
4. 275 mm = __________ cm
5. 3,500 mm = __________ m
6. 0.005 km = __________ m
7. 250 cL = __________ mL
8. 6,750 cg = __________ kg
Body Organization

Anatomical Position

In Human Anatomy & Physiology, we refer to the body parts as if a person was standing in the anatomical position.

Criteria: (Fill in the blanks)

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
Directional Terminology

When comparing the location of one body part to another, we use directional terms.

Know the following directional terms on Muscle Man:

A is ____________________ to B
B is ____________________ to A
B is ____________________ to D (on back)
D is ____________________ to C
E is ____________________ to F (on side)
F is ____________________ to E

F & G are ____________________ (on the same side)
J & A are ____________________ (on opposite sides)
G is ____________________ to H
H is ____________________ to G
G is ____________________ to H & K
Planes of Reference

Know the following planes of reference on a diagram or organ:

A **Frontal** plane divides the body/organ into Anterior/Posterior halves.

A **Median (Midsagittal)** plane divides the body/organ into equal Left/Right halves.

A **Transverse** plane divides the body/organ into Superior/Inferior halves.
Frontal (Coronal) Section of Sheep Brain

Transverse Section of Sheep Brain
Regional Terminology

In Human Anatomy & Physiology, we use scientific terms for various regions of the body.

Know the following regional terms on the baby doll:
Major Body Organs

Know the following organs on the torso model:

A. ____________________  E. ____________________
B. ____________________  G. ____________________
D. ____________________  H. ____________________
Body Cavities

Body cavities are areas in the body that usually house an organ, bone, or other body part.

Know the following body cavities.
In addition to the information above:

The **Pleural** cavities house the _________________.

The **Pericardial** cavity houses the _________________.

Abdominopelvic Quadrants

In Human Anatomy & Physiology, we sometimes divide the abdominopelvic cavity into quadrants to make studying the cavity easier.

Know the following body quadrants:
Abdominopelvic Regions

In Human Anatomy & Physiology, we sometimes divide the abdominopelvic cavity into nine regions to make studying the cavity easier.

Know the following abdominopelvic regions:
Body Systems

For each of the following body systems, know the organs that are listed and to which body system the organs belong:

Integumentary System

Know the parts of the Integumentary System (listed below) on the skin model in the lab.

A. ______________________________
B. ______________________________
C. ______________________________
D. ______________________________
E. ______________________________
F. ______________________________

More Directional Terms on Skin Model:

A is __________________________ to B
B is __________________________ to A
Skeletal System

Know the parts of the skeletal system (listed below the picture) on the knee joint model in lab.

A. _________________________ (femur, tibia, fibula on diagram)

B. _________________________ (1, 2, 3, 4, 5 on diagram)

C. _________________________ (6 & 7 on diagram)
Muscular System

Know the parts of the Muscular System (listed below the picture) on the Muscle Man model in the lab.

A. _________________________ (red on diagram)

B. _________________________ (grayish white on diagram)
Nervous System

Know the parts of the Nervous System (listed below the picture) on the Nerve Man model in the lab.

A. ______________________ (in skull)
B. ______________________ (extends from brain)
C. ______________________ (yellow on diagram; extend from brain/spinal cord)
Endocrine System

Know the glands of the Endocrine System on the model board in the lab.

1. ______________________________  13. ______________________________
5. ______________________________  16. ______________________________
8. ______________________________  20. ______________________________
9. ______________________________

You will not need to know the Pineal Gland for the first lab exam. It will be covered when we study the brain.
Cardiovascular System

Know the organs of the Cardiovascular System (listed below the picture) on the Heart model in the lab.

A. Heart

B. Aorta (large red vessel extending from top of heart)

C. Arteries

D. Veins
Lymphatic System

Know the following parts of the lymphatic system on the diagram displayed in the lab. Note: The diagram in the lab looks different from this one, but has the same organs.

A. Lymph Nodes
B. Lymph Vessels
C. Spleen
D. Thymus

You do not need to know “Tonsil”
Respiratory System

Know the parts of the Respiratory System (listed below the picture) on the Respiratory system model in the lab.

A. ___________________________________________________________________

B. ___________________________________________________________________

C. & D. ___________________________________________________________________

Bronchi (not shown in picture)
Digestive System

Know the parts of the Digestive System (listed below the picture) on the Digestive system model in the lab.

1. ______________________________ 12. ______________________________
6. ______________________________ 13. ______________________________
7. ______________________________ 15a. ______________________________
9. ______________________________ 15b. ______________________________
11. ______________________________ 15c. ______________________________
Urinary System

Know the parts of the Urinary System (listed below the picture) on the Urinary system model in the lab.

12. ______________________________

24. ______________________________

37. ______________________________

Urethra
Male Reproductive System

Know the parts of the Male Reproductive System (listed below the picture) on the Male Reproductive system model in the lab.

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Female Reproductive System

Know the parts of the Female Reproductive System (listed below the model) on the Female Reproductive system model in the lab.

20. _______________________________

21. _______________________________

22. _______________________________

29. _______________________________