A&P 1
First week of lab
Intro To A&P and Terminology
“Walk-about” guide

Here are some investigative guides for you to try as you look at the stations around the room. **These do not have to be done in any particular order.** In fact, you do not have to get through all of them. These exercises are designed to help you look at the models in lab with a critical eye.

**Before trying to do these steps, you should have read the pertinent sections in the lab and/or lecture book, and watched any online videos your instructor has available.**

Before next week, you should make sure you go through the lab book and fill out the images and questions.

**Before you start, be able to:**

1. Identify the surface Landmarks seen in figure 1.6. However, I have a better handout on my website, under "Lab Materials". Hopefully, you printed this out for lab! If not, you can use the images in your lecture book.

2. Be able to correctly use the Body Orientation & Direction terms. Attached is a practice sheet if you want more practice at home (**APPENDIX 3 at the end of this document!**).

3. Make sure you know the names of the 11 organ systems as shown in Figure 1.2. You'll be using the column “Major Component Organs” for some of these exercises. (**APPENDIX 1 at the end of this document!**).

4. Make sure you can do the questions regarding “Safety in Lab”, “Open Lab”, and “Study Hints” in **Appendix 2 at the end of this document! We will add some to the first lab practical!!**
5. Find the “Cavity Image” in the room. Identify the cavities, PAYING SPECIAL ATTENTION TO THE BOUNDARIES, using the image in your lab book. Mark them on this image:

6. Label the quadrants and regions in the boxes:
7. Study the use of these words in your lab book under the section "Body Orientation":

- ventral
- cranial
- anterior
- inferior
- dorsal
- caudal
- posterior
- medial
- superior
- lateral

Use this image to answer the following questions, using the options given BELOW each statement.

"A" is ______________ to "B"
Choices: Superior, Inferior, Ventral, Dorsal

"B" is ______________ to "A"
Choices: Superior, Inferior, Proximal, Distal

"C" is ______________ to "B"
Choices: Lateral, Medial, Ventral, Dorsal

"D" is ______________ to "C"
Choices: Caudal, Cranial, Ventral, Dorsal

"E" is ______________ and ______________ to "A"
Choices: Ventral, Dorsal, Cranial, Caudal

"F" is ______________ to "G"
Choices: Ventral, Dorsal, Proximal, Distal

"G" is ______________ to "F"
Choices: Medial, Lateral, Proximal, Distal

"H" is ______________ to "I"
Choices: Medial, Lateral, Superficial, Deep

"I" is ______________ to "H"
Choices: Cranial, Caudal, Proximal, Distal

"J" is ______________ to "I"
Choices: Superior, Inferior, Medial, Lateral

"C" is ______________ to "B"
Choices: Lateral, Medial, Ventral, Dorsal

"D" is ______________ to "B"
Choices: Caudal, Cranial, Ventral, Dorsal

"E" is ______________ to "A"
Choices: Ventral, Dorsal, Cranial, Caudal

"F" is ______________ to "G"
Choices: Ventral, Dorsal, Proximal, Distal

"G" is ______________ to "F"
Choices: Medial, Lateral, Proximal, Distal

"H" is ______________ to "I"
Choices: Medial, Lateral, Superficial, Deep

"I" is ______________ to "H"
Choices: Cranial, Caudal, Proximal, Distal

"J" is ______________ to "I"
Choices: Superior, Inferior, Medial, Lateral

"C" is ______________ to "B"
Choices: Superior, Inferior, Ventral, Dorsal

"D" is ______________ to "B"
Choices: Superior, Inferior, Proximal, Distal

"E" is ______________ and ______________ to "A"
Choices: Superior, Inferior, Medial, Lateral

"F" is ______________ to "G"
Choices: Ventral, Dorsal, Proximal, Distal

"G" is ______________ to "F"
Choices: Medial, Lateral, Proximal, Distal

"H" is ______________ to "I"
Choices: Cranial, Caudal, Proximal, Distal

"I" is ______________ to "H"
Choices: Lateral, Medial, Ventral, Dorsal

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Choices: Caudal, Cranial, Ventral, Dorsal

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Choices: Superior, Inferior, Medial, Lateral
Step 1. Do at your desk, with 1 or 2 partners.

Demonstrate the Correct Anatomical Position and Surface Landmarks.

1. Oral exercise. Describe out loud the Correct Anatomical Position (CAP) to your partners. What is the position of the head? The hands? The feet?

2. Oral exercise. This assumes that there are 2 people, but it can be done with more. Take turns standing in CAP. Have Partner #1 indicate the first on his/her list, then have Partner 2, find the first on his/her list, then go down the list in order, going between the 2 partners.

<table>
<thead>
<tr>
<th>Partner #1</th>
<th>Partner #2</th>
</tr>
</thead>
<tbody>
<tr>
<td>cephalic</td>
<td>cranial &amp; facial</td>
</tr>
<tr>
<td>frontal &amp; orbital</td>
<td>mental &amp; buccal</td>
</tr>
<tr>
<td>nasal</td>
<td>oral</td>
</tr>
<tr>
<td>cervical</td>
<td>clavicular</td>
</tr>
<tr>
<td>thoracic</td>
<td>vertebral</td>
</tr>
<tr>
<td>sternal &amp; pectoral</td>
<td>scapular</td>
</tr>
<tr>
<td>acromial</td>
<td>axillary</td>
</tr>
<tr>
<td>brachial</td>
<td>antebrachial</td>
</tr>
<tr>
<td>carpal &amp; palmar</td>
<td>digital (ID all 20!)</td>
</tr>
<tr>
<td>coxal &amp; pelvic</td>
<td>cubital</td>
</tr>
<tr>
<td>abdominal</td>
<td>lumbar</td>
</tr>
<tr>
<td>inguinal</td>
<td>pubic</td>
</tr>
<tr>
<td>gluteal</td>
<td>umbilical</td>
</tr>
<tr>
<td>sacral</td>
<td>femoral</td>
</tr>
<tr>
<td>patellar</td>
<td>popliteal &amp; sural</td>
</tr>
<tr>
<td>crural &amp; fibular</td>
<td>tarsal</td>
</tr>
<tr>
<td>pedal</td>
<td>calcaneal</td>
</tr>
</tbody>
</table>

3. Comparison exercise. Next to each term on the table above, place an "A" if it is only seen on the front of the body, a "P" if it is only seen on the back of the body, or a "B" if it can be seen on both sides.
Step 2. Torso Model (this works with the “3B Scientific Model" only!) and Transverse Section Abdominal Region in Resin

Locate the torso model. If the model is not “put together", do so before starting. Do the following:

1. Take off the “front plate" of the model, so you can see the internal organs.

Locate on the torso model all of the gross organs listed here. Use images in your lecture book if you need to: Brain, Spinal Cord

Heart, Lungs, Bronchi, Trachea, Larynx Thyroid Gland,

Diaphragm

Liver, Gall Bladder, Stomach, Pancreas, Spleen, Small Intestines, Large Intestines, Rectum

After removing the digestive organs from the model: Kidneys, Ureters, Bladder, Adrenal Gland, Descending Aorta, Inferior Vena Cava

2. WRITE IN FOLLOWING SPACE. When you took off the “front plate", what kind of section did you make?

3. WRITE IN FOLLOWING SPACE. Look at the head & neck region. What kind of section is this?

4. WRITE IN FOLLOWING SPACE. Look at the arms and legs. What kind of section is this?

5. Pull out the lungs. WRITE IN FOLLOWING SPACE. What kind of section is this?

6. Pull out the heart. WRITE IN FOLLOWING SPACE. Look at the heart model. What kind of section did you just do on the large blood vessels?

PLEASE MAKE SURE YOU PUT THE MODEL BACK TOGETHER FOR THE NEXT GROUP!
Now go get the **transverse section of the abdominal cavity in resin.** This is a real human dissection that has been encased in the resin to preserve it.

Here is a drawing of it:

![Diagram of the abdominal cavity](image)

Can you locate the following? Make a crude drawing and label what you think are the following:

- lumbar vertebrae
- liver
- stomach
- left & right kidney
- back muscles (erector spinae muscles)

Find the brain model & brain dissection “biomounts” (the brains in the fluid cases).

Correctly I.D. the frontal, sagittal, transverse sections on both the human & sheep brains.

Using the diagram to the right, find these regions on both the brain dissection and the model.

Answer the questions.

1. To which organ system does this belong?

2. Put the brain model back together. Locate the following on the model, and indicate on the above image:
   - anterior surface
   - posterior surface
   - superior surface
   - inferior surface
   - lateral surface

3. There is a “Nervous System Flat Mount” in the room. Take a quick look at how the spinal cord connects to the brain, and how the nerves attach to the spinal cord.

On the diagram to the right, circle where you think you might find the following, USING THE INFORMATION YOU GAINED IN STEP 1:

<table>
<thead>
<tr>
<th>Brachial nerve</th>
<th>Axillary Nerve</th>
<th>Thoracic Nerves</th>
<th>Sacral Nerves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Popliteal Nerve</td>
<td>Femoral Nerve</td>
<td>Lumbar Nerves</td>
<td>Cervical Nerves</td>
</tr>
</tbody>
</table>
**Step 4.** Heart Model, Thoracic Viscera Model, Trachea Model, Transverse Section Thoracic Region in Resin.

Find the heart model in the room. Open it up. WRITE IN FOLLOWING SPACES:

1. When you open it up ... what kind of section is this?

2. What organ system does this belong to?

Now, also locate the respiratory models...there are several of them together.

3. Look at the model with the lungs and heart (the “thoracic viscera” model). Also...look at the model of the trachea. Compare the trachea model to how the trachea looks on the “thoracic viscera model”.

Find on the models, and label on the above images, the following:
   - On both model images: larynx, trachea, bronchi
   - On lung model only: lungs, heart, blood vessels.
4. Now, find in the room the *transverse section of the thoracic cavity in resin*. This is a real human dissection that has been encased in the resin to preserve it. Bring it over to the heart and lung models.

See if you can find the following on the transverse section. Label on the image below:

ventral and dorsal surfaces
lungs
heart
trachea
large blood vessel
spinal cord and vertebrae

(HINT: use the torso model if it helps)
Step 5. Digestive System Flat Mount.

Find the FLAT MOUNT MODEL that clearly shows the stomach, intestines, & liver. WRITE IN FOLLOWING SPACES:

1. Name the organ system this represents.

2. Pull apart the stomach. What kind of section is this?

3. Pull off the piece of the large intestines that easily comes off. What type of section is this?

4. What kind of section is the head?

PLEASE MAKE SURE YOU PUT THE MODEL BACK TOGETHER FOR THE NEXT GROUP!
Step 6. There are 3 “pelvis” models in the room. 2 are Sagittal sections (one male, one female), and one is a frontal section.

Actual models may not look EXACTLY like this!

You can use, as a guide, the drawings in images 2.3 & 2.4 in your lab book. On these models, find representatives of these easy-to-find systems:

- Integumentary system
- Skeletal system
- Muscular system
- Digestive system
- Urinary system
- Nervous system
- Cardiovascular system
- Reproduction system
  (I.D. some male and female parts)

On the “Frontal” section, find the large red blood vessel. This is the Aorta! Notice that the aorta slits into an upside-down “Y”. These are the “Common Iliac Arteries”. There is one on the right side, and one on the left side.

1. Find the aorta on the 2 sagittal models.
2. Find the split on the 2 sagittal models, along with the common iliac arteries. FIND BOTH OF THEM (right & left!!).
3. Describe the differences you are seeing, and why!!
4. Look at the “blue blood vessels”. Do you see a similar difference? How about any other organs? (HINT: find the pubic bone on the “frontal section”).
**Step 7.** Sagittal Head Model and Transverse Section of the Head in Resin

Locate the “Sagittal Head” model. There might be 2 of these...either will work.

Believe it or not, almost all of the organ systems are represented on this model. Try to find representatives of these easy-to-find systems:
- Integumentary system
- Skeletal system
- Muscular system
- Digestive system
- Respiratory system
- Nervous system
- Cardiovascular system (Easier to find on the “stand-up” model)
There is also a Transverse Section of the Head in Resin. ANSWER IN THE SPACE BELOW: What kind of a section is this?

See if you can find the following. Label on the image below:

Eyes
Nose & Nasal cavity
Cerebellum of brain (HINT: look at "Step 3" on an earlier page!!)
Skull bones, skin and fat surrounding the skull
**Step 8.** Go to the station with endocrine, integument, and immunity/lymphoid models, images and photos.

1. Take note of the organs and structures that are mentioned in the table in your lab book.

2. Can you go back to the torso model, head model and hip models and find some of these structures?
**Step 9.** Go to the station with the leg model, arm model, skeleton, “Muscle Person” model, and the transverse limb sections.

1. Locate the biceps muscle on your arm. Locate it on the “Muscle Person” and the “arm” model. Can you label it on the image below?

2. Locate the front of your shin bone. Find it on the skeleton and leg model. Can you label it on the image below? How about your calf muscle…find it on the leg muscle and on the image below.

3. Where is the transverse section in image “A” from on the body? Locate it on the “muscle person”?

4. Are any of these from the thigh? How do you know? How would a transverse section from the thigh compare to the image in “C”? Give at least 2 different ways in which it would be different.

5. Is the “Muscle Person” in Correct Anatomical Position”? If not, list all the reasons why not!

6. Can you tell if the “muscle person” is a “boy person” or a “girl person”? Why or why not?
Step 10.

The Microscope

*Ask your instructor if you need ot do this!*

Do this at home, on your own time!

Shuster's Online Lab Videos contains a section on the microscope, with 2 videos that last about 25 minutes in total. Watch these 2 videos, and be prepared to be tested on the material on the first lab practical.

The videos are VERY specific about what you need to know.

There is a Wordlist online that covers this lab. There is also a section in your lab book. The exam questions will all cover the terms and concepts found on the wordlist.
APPENDIX 1 – Organs Systems & the Representative Organs You Need To Know!

This replaces the online handout!

<table>
<thead>
<tr>
<th>Organ System</th>
<th>Organs to Identify on Illustrations and Models</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integumentary</td>
<td>Skin, hair, nails</td>
</tr>
<tr>
<td>Skeletal</td>
<td>Skull, vertebral column, rib cage, bones (general), cartilage (general), joint or articulation (general)</td>
</tr>
<tr>
<td>Muscular</td>
<td>Skeletal muscles (general)</td>
</tr>
<tr>
<td>Nervous</td>
<td>Brain, spinal cord, nerves (general)</td>
</tr>
<tr>
<td>Endocrine</td>
<td>Thyroid gland, pancreas, adrenal glands, ovaries, testes</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>Heart, blood vessels (general)</td>
</tr>
<tr>
<td>Lymphatic</td>
<td>Spleen, lymph nodes</td>
</tr>
<tr>
<td>Respiratory</td>
<td>Nasal cavity, larynx, trachea, bronchi, lungs, diaphragm</td>
</tr>
<tr>
<td>Digestive</td>
<td>Oral cavity, esophagus, stomach, sm. intestine, lg. intestine, liver, gall bladder, pancreas, rectum</td>
</tr>
<tr>
<td>Urinary</td>
<td>Kidneys, ureters, bladder, urethra</td>
</tr>
<tr>
<td>Reproductive</td>
<td>Penis, testes, ovary, vagina, uterus</td>
</tr>
</tbody>
</table>
APPENDIX 2 – Questions regarding Lab Safety, Open Lab, and Study Hints

THESE QUESTIONS CAN ONLY BE ANSWERED IF YOU WATCHED SHUSTER’S VIDEO. Please ignore if your instructor did not make you watch them, or discuss them with your instructor.

1. The first 3 things you should locate in lab are the:
   ____________________ Kit
   ____________________ Station
   ____________________ Station

2. What kind of gloves do we have?

3. What is the only toxic chemical we will be dealing with in lab?

4. Broken scalpel blades go into the ________________________________.
   What color is it?? ______________________

5. Room number for the “Open Lab” ______________

6. Where is the schedule found?

7. Explain where you enter the Open Lab:

8. Upon entering, there will be a _________________________________ hanging on your left.
   What must you do to it?

9. What “special room” do you have to walk through to get to the Open Lab? What creepy thing is in the room?

10. Name 3 things you’ll find in the Open Lab that will help you get ready for the Lab Practical:
11. We discussed several study tips. Answer these questions regarding the advice you were given:

Where should you always try to study?

Circle all that apply in the list below. **ACCORDING TO THE VIDEOS**, for lab, you should always study:

<table>
<thead>
<tr>
<th>In groups!</th>
<th>By memorizing!</th>
<th>By writing down as much as possible, in case you miss something!</th>
<th>By highlighting important terms in the lab book!</th>
</tr>
</thead>
<tbody>
<tr>
<td>At first, alone. Then get together with someone!</td>
<td>By organizing in an outline</td>
<td>Remembering that you may need this info to get a job!</td>
<td>By printing out flash cards!</td>
</tr>
<tr>
<td>Quietly as possible</td>
<td>Mostly at home</td>
<td>By reading the book over and over!</td>
<td>The day AFTER lab!</td>
</tr>
<tr>
<td>Aloud!</td>
<td>While doing dishes</td>
<td>Often!</td>
<td>Rarely!</td>
</tr>
<tr>
<td>In the same way you will be during the exam.</td>
<td>On weekends, cramming before the exam</td>
<td>By memorizing where the arrows point in the images!</td>
<td>In a coffee shop.</td>
</tr>
<tr>
<td>By testing each other!</td>
<td>Using the internet.</td>
<td>Late in the evenings</td>
<td>The same way you always do!</td>
</tr>
</tbody>
</table>

**How many did you circle? It should be 7! (of course, some of the others are good, too! Ask your instructor!)**
APPENDIX 3  EXTRA PRACTICE – getting ready for the exam

Matching

A. Use These Words:

<table>
<thead>
<tr>
<th>ventral</th>
<th>anterior</th>
<th>dorsal</th>
<th>posterior</th>
<th>superior</th>
</tr>
</thead>
<tbody>
<tr>
<td>cranial</td>
<td>inferior</td>
<td>caudal</td>
<td>medial</td>
<td>lateral</td>
</tr>
<tr>
<td>proximal</td>
<td>distal</td>
<td>superficial</td>
<td>deep</td>
<td></td>
</tr>
</tbody>
</table>

Which of the terms of position and direction shown above best describes the relative positions of the following structures on your body?

1. __________  The position of your lungs relative to your heart.
2. __________  The position of your wrist relative to your elbow.
3. __________  The position of your abdominal cavity relative to your thoracic cavity.
4. __________  The position of your skeletal muscles relative to your skin.
5. __________  The position of your vertebral column relative to your thoracic cavity.
6. __________  The position of your nose relative to your chin.
7. __________  The position of your eye relative to your ear.
8. __________  The position of your tailbone relative to the rest of your vertebral column.
9. __________  The position of your mouth relative to your stomach.
10. __________ The position of your sternum (breastbone) relative to your heart.
11. __________ The position of your hip relative to your knee.
12. __________ The position of your brain relative to your spinal cord.

B. Use These Words:

Sagittal plane       Transverse plane       Frontal plane

Which type of body plane shown above best applies to the following situations?

1. __________  separating the two halves of the brain
2. __________  separating the abdominal cavity from the thoracic cavity
3. __________  separating the ventral body cavity from the dorsal body cavity
4. __________  cutting off the top of the skull to visualize the brain
5. __________  viewing the heart and both lungs in the thoracic cavity
6. __________  viewing the internal structure of the knee joint from the side
7. __________  separating the anterior body surface from the posterior body surface
8. __________  Separating superior structures from inferior structures
9. __________  Separating medial structures from more lateral structures