**Gross Anatomy #23 – Thoracic Wall**

1) Which of the following is NOT a function of the thoracic wall?
   a) Respiration
   b) Increase intra-abdominal and intra-thecal pressure
   c) Protection of thoracic and abdominal viscera
   d) Attachment of all abdominal muscles
   e) Speech and assisting in childbirth

2) Which of the following does NOT match up correctly?
   a) T2-T8 have an demi-facet above and a demi-facet below
   b) T9 has a demi-facet above
   c) T10 has one entire facet
   d) T11 has one entire facet and no facet on the transverse process
   e) T12 has a demi-facet below

3) Zygapophyseal joints (synovial) are in the ____ plane and allow ____.
   a) Coronal, Flexion/Extension
   b) Coronal, Rotation
   c) Transverse, Flexion/Extension
   d) Transverse, Rotation
   e) Transverse, Side-Bending

4) Which of the following is NOT correct?
   a) Rib 1 runs beneath the clavicle
   b) True ribs are 1-7
   c) The only floating rib is 12
   d) False ribs are 8-10 or 8-12
   e) Atypical ribs are 1, 2, 10, 11, 12

5) The ____ sternocostal joint is atypical and is a ____ joint.
   a) 1st, cartilaginous
   b) 7th, cartilaginous
   c) 1st, plane synovial
   d) 7th, plane synovial
   e) 3rd, symphysis

6) Which of the following does NOT match up correctly?
   a) Serratus Posterior Superior and Intercostal Nerves
   b) Serratus Posterior Inferior and Intercostal Nerves
   c) Levator Costarum and Dorsal Rami
   d) Intercostal Muscle + Transversus Thoracis and Intercostal Nerves
   e) Diaphragm and Phrenic Nerve levels C4-5-6

7) A patient undergoes a procedure to place a pacemaker lead on the outside wall of the strongest ventricle. Shortly after this procedure, paradoxical motion is seen in the abdomen. Which of the following best describes the clinical problem and the cause of the paradoxical motion?
   a) Right phrenic nerve damage; counter pressure on the abdominal contents
   b) Left phrenic nerve damage; counter pressure on the abdominal contents
   c) Right phrenic nerve damage; counter pressure in the lung
   d) Left phrenic nerve damage; counter pressure in the lung
   e) Bilateral phrenic nerve damage
8) A patient is undergoing a surgical procedure on the underside of their diaphragm. The surgical resident accidentally nicks the structure lying directly inferior and posterior to the lateral arcuate ligament, between the right and left crus. What structure was damaged?
   a) Quadratus lumborum muscle  
   b) Psoas major muscle  
   c) Portal vein of the liver  
   d) Aorta  
   e) Central tendon of the diaphragm
9) Which of the following levels is NOT correct?
   a) T4 dermatome; Male nipple  
   b) T6 dermatome; Xiphoid process  
   c) T8 vertebra at diaphragm; Inferior vena cava  
   d) T9 vertebra at diaphragm; Esophagus  
   e) T10 dermatome; Umbilicus
10) How would you recognize the azygos vein in a cadaver?
   a) Runs on right side of thoracic vertebral column into the superior vena cava  
   b) Runs on left side of thoracic vertebral column into the superior vena cava  
   c) Runs on right side of thoracic vertebral column into the inferior vena cava  
   d) Runs on left side of thoracic vertebral column into the inferior vena cava  
   e) Runs bilaterally between the superior vena cava and inferior vena cava
11) During normal respiration, the diaphragm increases lung volume which ____ pressure in the ____ cavity and decreases lung volume which ____ pressure in the ____ cavity.
   a) Increases; Thoracic; Decreases; Abdominal  
   b) Decreases; Thoracic; Increases; Abdominal  
   c) Increases; Abdominal; Decreases; Thoracic  
   d) Decreases; Abdominal; Increases; Thoracic  
   e) Increases; Thoracic; Decreases; Thoracic

Gross Anatomy #24 – Lungs/Pleura
1) The pleura can be though of as a ____; a ____ layered (mesothelium) tissue.
   a) Sac; single  
   b) Sac; double  
   c) Fist; single  
   d) Fist; double  
   e) Bowl of water; multi
2) While listening to the lungs of a patient, you hear a creaking sound on the chest wall (pleural rub). Chest x-ray shows pleural effusions. This clinical situation can occur because the pleural cavity is a ____ space between the ____ layers.
   a) Real, Costal and Diaphragmatic  
   b) Potential, Costal and Diaphragmatic  
   c) Real, Visceral and Parietal  
   d) Potential, Visceral and Parietal  
   e) Potential, Pulmonary and Aortic
3) A paramedic arrives on-scene to a motor vehicle crash. The driver of the vehicle is having great difficulty breathing, has jugular vein distension, has tracheal deviation to the
right, and decreased breath sounds on the left. The paramedic believes the patient has a tension pneumothorax and pulls out a 14-gauge needle to decompress the pleural space.

Where should the paramedic insert the needle?

a) 1st intercostal space, below the rib, left mid-clavicular  
b) 1st intercostal space, above the rib, right mid-clavicular  
c) 2nd intercostal space, above the rib, left mid-clavicular  
d) 2nd intercostal space, below the rib, right mid-clavicular  
e) Mid-ternal through the sternal foramen

4) A patient needs pus drained from their left lung. The clinician can do this without direct risk to the lung by accessing the costomediastinal recess of the lung. The clinician recalls that when going from anterior to posterior, the three anatomical lines in order are midclavicular, midaxillary, and paravertebral. Which of the following describes the extent of the visceral and parietal pleura, so that the clinician can choose the correct intercostal space?

a) Visceral A to P is 4, 6, 8; Parietal A to P is 8, 10, 12  
b) Visceral A to P is 6, 8, 10; Parietal A to P is 6, 8, 10  
c) Visceral A to P is 8, 10, 12; Parietal A to P is 8, 10, 12  
d) Visceral A to P is 6, 8, 10; Parietal A to P is 10, 12, S2  
e) Visceral A to P is 6, 8, 10; Parietal A to P is 8, 10, 12

5) Referred pain from the lung would come from the ____. Referred pain from the diaphragm would cause sensation on the ____ dermatome.

a) Visceral pleura; Shoulder  
b) Parietal pleura; Shoulder  
c) Visceral pleura; Mid/Lower Thorax  
d) Parietal pleura; Mid/Lower Thorax  
e) Both pleura; Mid/Lower Thorax

6) When viewing the hilum, how can you determine which lung you are looking at?

a) In the left lung, the artery is superior to the bronchus.  
b) In the right lung, the artery is posterior to the bronchus.  
c) In the left lung, the artery is inferior to the bronchus.  
d) In the right lung, the artery is superior to the bronchus.  
e) In the left lung, the artery is anterior to the bronchus.

7) The oblique fissure crosses both lungs anteriorly at the 6th costochondral junction. It also crosses the left lung posteriorly at the ____ and the right lung posteriorly at the ____.

a) 4th costal cartilage; 4th costal cartilage  
b) T4; Opposite spines T3-4  
c) Opposite spines T3-T4; T4  
d) 4th costal cartilage; Opposite spines T3-4  
e) T4; 4th costal cartilage

8) A 3 year old child swallows a marble. The most likely scenario for the marble on the way down the trachea was to hit the ____ and enter directly into the ____ bronchus.

a) Lingula; Right  
b) Lingula; Left  
c) Carina; Right  
d) Carina; Left  
e) Carina; Tertiary
9) A child with non-small cell lung cancer is undergoing wedge resection surgery of a bronchopulmonary segment. These segments are supplied by ____.
   a) The Left Bronchus
   b) The Right Bronchus
   c) Primary bronchi
   d) Secondary bronchi
   e) Tertiary bronchi

10) A 70-year-old chronic smoker comes into the doctor’s office for management of his emphysema. Although this disease is destructive to the alveoli, you too aren’t concerned because the pulmonary vasculature also serves the structures surrounding the alveoli.
   a) True
   b) False

11) An 80-year-old female with osteoporosis breaks her hip after a fall off a step. While in the Emergency Room, she begins to develop difficulty breathing and pain in her chest. A likely cause of this problem is:
   a) Deep Vein Thrombosis (DVT)
   b) Myocardial Infarction (MI)
   c) Pulmonary Embolism (PE)
   d) Pulmonary Edema
   e) Pleural Effusion

**Gross Anatomy #25 – Mediastinum/Pericardium**

1) The anterior mediastinum contains all of the following EXCEPT:
   a) Fat
   b) Lymph nodes
   c) Thymus gland
   d) Mediastinal branches of the internal thoracic artery
   e) Pectinate muscle

2) The middle mediastinum contains all of the following EXCEPT:
   a) Pericardium
   b) Heart
   c) Phrenic nerves
   d) Thoracic duct
   e) Roots of the great vessels

3) The posterior mediastinum contains all of the following EXCEPT:
   a) Esophagus
   b) Thoracic aorta
   c) Azygos vein
   d) Vagus nerve
   e) Superior vena cava

4) All of the following occur at the sternal angle (T4-5) EXCEPT:
   a) Arch of aorta begins and ends
   b) Tracheal bifurcation
   c) Inferior vena cava enters the heart
   d) Superior limit of pericardium
   e) Superior limit of pulmonary trunk
5) Which of the following does NOT occur within the double-walled pericardium?
   a) Myocardial infarction
   b) Cardiac tamponade
   c) Hemopericardium
   d) Pericarditis
   e) Pericardial effusion

6) During the implant of a cardiac pacemaker, the physician accidentally pushed the pacing lead through the wall of the right ventricle. Shortly after the patient’s stroke volume drops and the physician diagnoses cardiac tamponade. Under ultrasound, the physician accesses the pericardial space with a needle though the costomediastinal region at the sternal ends of the cartilage of the 5th and 6th ribs on the left side. Which structure is in danger during this procedure?
   a) Left lung
   b) Internal thoracic vessels
   c) Right lung
   d) Azygos vein
   e) Aorta

**Gross Anatomy #26 – Heart**

1) A clinician wants to access the left ventricle with an electrical pacing lead (wire). However, she does not want to enter the left heart as this could create clots leading to a stroke. She determines she can access the left ventricular wall via the coronary venous system. She cannulates the cephalic vein and enters the right ventricle. What is the next structure the clinician will enter with the lead to get to the left ventricular wall?
   a) Right Ventricle
   b) Fossa Ovalis (obliterated foramen ovale)
   c) Coronary Sinus
   d) Ductus Venosus
   e) Coronary Venous

2) After reaching the outside wall of the left ventricle, she turns on the pacing impulses. The patient starts to hiccup at regular intervals. What is the likely cause of this?
   a) Ventricular compression pressing forcefully on the lungs
   b) Electrical capture of the left phrenic nerve
   c) Cardiac tamponade
   d) Myocardial infarction
   e) Vagal nerve reflex

3) The clinician now wants to place a lead into the right ventricle. The lead has tines on the end and she wants to place it so that it remains stuck to the cardiac muscle. This can be done toward the apex of the heart by situating the lead within the fibrous/rough ____.
   a) Chordae tendinae
   b) Cristea terminalis
   c) Sinus venarum
   d) Pulmonary artery
   e) Trabeculae carne
4) Near the apex of the right ventricle, where the clinician is placing the lead, is a structure that has direct connection to the cardiac electrical conduction system. This structure is called the:
   a) Sinoatrial node
   b) Atroventricular node
   c) Bundle of His
   d) Septomarginal trabecula (moderator band)
   e) Bundle branch

5) During cardiac systole, the tricuspid valve is ____, the bicuspid/mitral valve is ____., the pulmonary semilunar valve is ____., and the aortic semilunar valve is ____.
   a) Closed; Closed; Open; Open
   b) Open; Open; Closed; Closed
   c) Closed; Open; Closed; Open
   d) Open; Closed; Open; Closed
   e) Open; Open; Open; Open

6) While listening to a patient’s chest with a stethoscope, you hear a mid-systolic click (murmur). You determine that the mitral valve is everting/prolapsing. At what location could you best hear the mitral valve and what muscle should be preventing the eversion?
   a) 2nd intercostals space left of the sternum; Papillary muscle
   b) 5th intercostals space left of the sternum; Trabeculae carne
   c) 5th intercostals space medial to left midclavicular line; Papillary muscle
   d) 5th intercostals space left of the sternum; Papillary muscle
   e) 5th intercostals space medial to left midclavicular line; Trabeculae carne

7) After the electrical impulse leaves the Bundle of His and splits into the right and left bundle branches, what structure does it impulse activate prior to the purkinje fibers of the ventricles?
   a) Atroventricular node
   b) Sinoatrial node
   c) Papillary muscle
   d) Trabecula muscle
   e) Bachman’s muscle

8) Which of the following is NOT a function of the cardiac skeleton?
   a) Electrical insulation
   b) Provides electrical pathway for cardiac conduction system
   c) Attachment for myocardium
   d) Prevention of bulging as blood is pumped
   e) Attachment of valve leaflets

9) A child comes to the clinic with difficulty breathing and fluid in their lungs. It is found that they have congenital pulmonary trunk stenosis. In which area will the pressure be much higher than normal?
   a) Right Ventricle
   b) Left Ventricle
   c) Right Atrium
   d) Left Atrium
   e) Superior Vena Cava

10) Which of the following arteries are actively filling during cardiac diastole?
11) A patient arrives in the Emergency Department with an occlusion to the right coronary artery and subsequent myocardial infarction. The physician determines that cardiac muscle function may have been saved but orders a temporary pacemaker. Why would this device be needed?
   a) The heart is in shock and will soon stop beating on its own
   b) The occluded artery feeds the sinoatrial node and failure of this node would require only ventricular (AV node) pacing support
   c) The occluded artery feeds the atrioventricular node and failure of this node would require only atrial (SA node) pacing support.
   d) The occluded artery feeds both nodes of the conduction system
   e) The electrical system always fails temporarily after a myocardial infarction

12) Which cardiac artery is the mostly commonly occluded?
   a) Right Anterior Descending (RAD)
   b) Left Anterior Descending (LAD)
   c) Circumflex (Cx)
   d) Left Marginal
   e) Right Coronary

13) A patient arrives in the Emergency Room with chest pain. A nurse takes an electrocardiogram (ECG) and sees the patient has a right bundle branch block (RBBB). What part of the heart is likely damaged?
   a) Right Atrium
   b) Left Atrium
   c) Aorta
   d) Pulmonary Trunk
   e) Ventricular Septum

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**Gross Anatomy #27 – Superior & Posterior Mediastinum**

1) What structure is located mainly in the superior mediastinum and partially in the anterior mediastinum?
   a) Trachea
   b) Aortic Arch
   c) Thymus
   d) Vertebra Column
   e) Thoracic Duct

2) Which of the following arteries is formed by the junction of the common carotid and subclavian arteries?
   a) Right brachiocephalic
   b) Left brachiocephalic
   c) Left coronary artery
   d) Right coronary artery
   e) Thyro-cervical artery
3) The aortic arch has all of the following structures connecting to it EXCEPT:
   a) Ligamentum arteriosum
   b) Brachiocephalic artery
   c) Left common carotid artery
   d) Left subclavian artery
   e) Vein of Marshall

4) What nerve loops under the aortic arch and lateral to the ligamentum arteriosum?
   a) Esophageal
   b) Right vagus
   c) Left cardiac
   d) Left recurrent laryngeal
   e) Right recurrent laryngeal

5) A patient is being seen in a family practice office for continued management of his high blood pressure. The patient’s regular physician is out of the office so another physician sees this patient. The new physician is going through a medical history and something clicks when the patient mentions aches in his legs. The physician checks the blood pressure in the upper arm and finds it to be high, as usual. However, the blood pressure in the lower limb is low. The physician orders a chest x-ray and rib erosion/notching can be seen. What clinical problem is the patient likely having?
   a) Myocardial infarction
   b) Orthostatic blood pressure
   c) Coarctation of the aorta
   d) Patent fossa ovalis
   e) Patent ductus arteriosus

6) A 25 year old patient is being seen for post-ductal narrowing of their aorta. What is the likely path of arterial anastamoses around the narrowing?
   a) Retrograde to internal thoracic to anterior intercostal to posterior intercostal to descending aorta.
   b) Internal thoracic to anterior intercostal to posterior intercostal and retrograde to descending aorta.
   c) Internal thoracic to posterior intercostal to descending aorta.
   d) Anterior intercostal to posterior intercostal to descending aorta.
   e) Retrograde to internal thoracic to anterior intercostal to posterior intercostal and retrograde to descending aorta.

7) Which of the following is NOT contained in the posterior mediastinum?
   a) Aortic arch
   b) Esophagus
   c) Azygos system
   d) Primary bronchi
   e) Thoracic aorta

8) Which of the following is LEAST likely to compress the esophagus?
   a) Aortic arch
   b) Esophageal cancer
   c) Left main bronchus
   d) Right main bronchus
   e) Diaphragm
9) At the point where the vagus nerves enter the diaphragm there is a rotation of the esophagus. This rotation causes the ____ and ____ vagus nerves to become the ____ and ____ vagal trunks, respectively.
   a) Left; Right; Superior; Inferior
   b) Right; Left; Lateral; Medial
   c) Left; Right; Lateral; Medial
   d) Right; Left; Anterior; Posterior
   e) Left; Right; Anterior; Posterior

10) How many intercostals spaces on the left and right does the azygos system drain, respectively?
   a) 11; 8
   b) 8; 11
   c) 10; 9
   d) 9; 10
   e) 12; 12

11) Which of the following levels is NOT correct?
   a) Greater splanchnic nerve from T5 to T9
   b) Lesser splanchnic nerve from T10 to T11
   c) Least splanchnic nerve at T12
   d) Xiphoid process at T4
   e) Cisterna chyli at T12

12) Which of the following lymph nodes is NOT involved in drainage of thoracic structures?
   a) Sacral
   b) Axillary
   c) Anterior and Posterior Mediastinal
   d) Parasternal
   e) Tracheobronchial

13) Enlarged mediastinal lymph nodes can compress on all of the following EXCEPT:
   a) Left recurrent laryngeal nerve
   b) Phrenic nerve
   c) Inferior vena cava
   d) Esophagus
   e) Superior vena cava

14) Comparing the right and left sides of the heart, lymph drainage is ____ with ____.
   a) The same; both draining via brachiocephalic nodes
   b) The same; both draining via tracheobronchial nodes
   c) Different; left draining via brachiocephalic nodes and right draining via tracheobronchial nodes
   d) Different; left draining via tracheobronchial nodes and right draining via brachiocephalic nodes
   e) The same; both draining via brachiocephalic and tracheobronchial nodes

15) Which of the following is NOT the common lymph drainage pattern of the lung?
   a) Right inferior lobe toward the right bronchus
   b) Left inferior lobe toward the left bronchus
   c) Right superior lobe toward the right bronchus
d) Left superior lobe toward the left bronchus
e) Left inferior lobe toward the right bronchus

Gross Anatomy #28 – ANS/Lymph

1) The job of the autonomic nervous system is to monitor and regulate all of the following EXCEPT:
   a) Smooth muscle
   b) Cardiac muscle
   c) Skeletal muscle
d) Glands
   e) Arrector pili

2) Which of the following is NOT true?
   a) Preganglionic sympathetics to the body wall pass through the ventral root, the white ramus, and synapse in the sympathetic chain.
   b) Postganglionic sympathetics to the body wall start in the sympathetic chain, to the gray rami, then to dorsal and ventral rami
c) Cardiac nerves originate from T1-T5, start in the sympathetic chain, and synapse at the thoracic level
d) Cardiac nerves originate from T1-T5, start in the sympathetic chain, ascend the sympathetic chain, and synapse at the neck level
e) Sympathetic visceral branches start in the sympathetic chain, and synapse at the thoracic level

3) Which of the following is NOT true?
   a) Splanchnic nerves distribute to abdominal viscera
   b) There are two splanchnic nerves, T5-T9 and T10-T12
c) Splanchnic nerves do not synapse in the sympathetic chain
d) Splanchnic nerves synapse in a pre-aortic ganglia situated around major blood vessels
e) Splanchnic nerves have preganglionic GVE fibers

4) What nerve provides the thoracic viscera with parasympathetic innervation?
   a) V – Trigeminal Nerve
   b) VI – Abducent Nerve
c) IX – Glossopharyngeal Nerve
d) X – Vagus Nerve
e) XI – Accessory Nerve

5) Which of the following is NOT true regarding the cardiac plexus?
   a) The superficial branch is inferior to the aortic arch and anterior to the pulmonary artery
   b) The deep branch is between the aortic arch and the trachea
c) It contains the left and right vagus nerves
d) It contains the left and right recurrent laryngeal nerves
e) It provides sympathetic innervation only

6) Increasing cardiac sympathetic tone (cardiac plexus) and increasing pulmonary parasympathetic tone (pulmonary plexus) would have the following affect:
   a) Increased cardiac contraction strength; bronchoconstriction
   b) Increase heart rate; bronchodilation
c) Decreased cardiac contraction strength; bronchoconstriction
d) Decreased heart rate; bronchodilation
e) Decreased cardiac contraction strength; bronchial gland inhibition

7) A patient comes into the Emergency Room complaining of substernal pressure. The patient says he has a history of atherosclerosis of the cardiac arteries. The physician determines that the patient is suffering an angina attack. The physician asks if the patient has pain radiating to any parts of the body from the substernal pressure. The patient nods and starts pointing out the areas of pain. The area the patient likely points to are:
   a) Neck and right shoulder
   b) Right chest, right posterior shoulder, and medial aspect of right arm
   c) Left chest, left anterior shoulder, and lateral aspect of left arm
   d) Left chest, left anterior shoulder, and medial aspect of left arm
   e) Left chest, left posterior shoulder, and left scapular region

Gross Anatomy #29 – Radiology
1) An 80-year-old female is being seen in the Emergency Room for difficulty breathing. She has had a recent hip replacement and has great difficulty standing and walking. With her current breathing problem, these tasks are “too much” as the patient says. The physician would like to get a chest x-ray to aid in diagnosis. Which view would be best in this situation?
   a) Left oblique 45 degree
   b) Right oblique 60 degree
   c) AP
   d) PA
   e) Lateral

2) You are looking at a PA chest radiograph at the right cardiophrenic angle. Normally this is indistinguishable from the cardiohepatic angle, but you can see an important structure in this location. What is it?
   a) SVC
   b) IVC
   c) LV
   d) RV
   e) Aorta

3) You are looking at an AP chest radiograph and see a bump coming out to your right near the spine at about the level of T5. What is it?
   a) SVC
   b) IVC
   c) LV
   d) RV
   e) Aorta

4) The cardiothoracic ratio is given by the diameter of the heart (A-B) divided by the diameter of the thorax (C-D). What cardiothoracic ratio would indicate an enlarged heart?
   a) \((A-B) / (C-D) > 1/2\)
   b) \((A-B) / (C-D) < 1/2\)
   c) \((A-B) / (C-D) > 1/3\)
   d) \((A-B) / (C-D) < 1/3\)
e) \( \frac{(A-B)}{(C-D)} > \frac{1}{4} \)

5) You are looking at an AP chest radiograph and are unsure if the labeling is correct. It appears as if the radiograph is mirrored horizontally (backwards) but the “L” is facing the correct way to read and is placed in the upper right corner. Which of the following structures would be most helpful in determining if the patient has dextrocardia or not?

a) Clavicles
b) Ribs
c) IVC & SVC
d) Gastric air bubble
e) Hilums

6) You are looking at an AP chest radiograph and see a large, white unknown structure on your left side, which looks like it arises from the vertebral area around T8. It comes into the pleural area about the width of the large white structure on your right. Which of the following structures is most likely being seen?

a) Right hilum
b) SVC
c) IVC
d) Atelectasis
e) Lung cancer

7) Silhouette Sign is being used to determine if there is any fluid in the lung; seen between the diaphragm, LV, and vertebral column. Which radiographic view would be used for this?

a) Left oblique 45 degree
b) Right oblique 60 degree
c) AP
d) PA
e) Lateral

8) You are looking at a thoracic section from below at the level of T8. From T8, you see the descending aorta to your right and the esophagus forming a triangle with the descending aorta and T8. There is a small circle in between these structures. This structure is likely the:

a) Subclavian artery
b) Brachiocephalic vein
c) Azygous vein
d) Spinal cord
e) Phrenic nerve

9) You are looking at a thoracic section from below at the level of T5. From T5, you see a black circle directly above it. This structure is likely the:

a) Trachea
b) Esophagus
c) SVC
d) Aortic arch
e) Hilum

10) You are looking at a thoracic section at the level of T7. Which of the following large structures is nearest to the sternum?

a) RA
b) LA  
c) LV  
d) RV  
e) Aorta  

11) You are looking at a mammogram and see the outline of the breast. Above the outline, you see several large, white structures. These structures are likely the:
a) Cooper’s ligaments  
b) Glands of Montgomery  
c) Sudorigerous glands  
d) Parasternal lymph nodes  
e) Axillary lymph nodes  

Gross Anatomy #30 – Abdominal Wall I  
1) Which of the following is NOT a plane that divides the superficial abdomen into nine parts?
a) Subcostal  
b) Midclavicular  
c) Umbilical  
d) Transtubercular  
e) Midinguinal  

2) What fascial layer becomes the dartose muscle in the scrotum?
a) Scarpa’s  
b) Camper’s  
c) Lumbar  
d) Latae  
e) Deep  

3) A college student is trying to show off for some girls at a party. After several beers, he challenges his friend to a fence-jumping contest. His friend, having had only a couple beers, barely clears the fence. The original student wasn’t so lucky; landing almost directly onto his lower abdominal area on the top fence post. His bladder bursts and fills the area around his penis, testicles, and above his thigh. What facial layer is keeping the urine from traveling into the lower limb?
a) Scarpa’s  
b) Camper’s  
c) Lumbar  
d) Latae  
e) Deep  

4) The inferior abdominal region is specialized for the inguinal canal, which transmits the ____ in males and the ____ in females.
a) Testicles; Ovaries  
b) Epigastric vessels; Peritoneum  
c) Urachus; Conjoint tendon  
d) Cremaster; Tunica vaginalis  
e) Spermatic cord; Round ligament  

5) In the upper region of the abdomen (above arcuate line), what muscles make up the anterior rectus sheath?
a) External abdominal oblique  
b) External abdominal oblique, internal abdominal oblique  
c) External abdominal oblique, internal abdominal oblique, transverses abdominis  
d) internal abdominal oblique, transverses abdominis  
e) External abdominal oblique, internal abdominal oblique, rectus abdominis  

6) Which of the following is NOT a function of the abdominal muscles?  
   a) Curvature of waist and lumbar region  
   b) Rotation  
   c) Flexion  
   d) Extension  
   e) Compression  

7) Which of the following is NOT associated with the inguinal (Hesselbach’s) triangle?  
   a) Direct inguinal hernia  
   b) Falciform ligament  
   c) Rectus abdominis muscle  
   d) Inguinal ligament  
   e) Inferior epigastric vessels  

8) What fibrous band separates the left and right rectus sheaths?  
   a) Arcuate line  
   b) Transpyloric plane  
   c) Linea semilunaris  
   d) Linea alba  
   e) Tendinous intersections

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**Gross Anatomy #31 – Abdominal Wall II**  

1) What is the name of the artery that becomes the femoral artery after it courses inferior to the inguinal ligament?  
   a) External iliac artery  
   b) Cremaster artery  
   c) Inferior epigastric artery  
   d) Deep circumflex iliac artery  
   e) Superior epigastric artery  

2) At what cord level do the iliohypogastric and ilioinguinal nerves arise?  
   a) T9  
   b) T10  
   c) T11  
   d) T12  
   e) L1  

3) Where do the thoracoabdominal nerves arise?  
   a) T1-T7 ventral rami  
   b) T1-T7 dorsal rami  
   c) T7-T12 ventral rami  
   d) T7-T12 dorsal rami  
   e) T7-T9 ventral rami  

4) Where is the inguinal canal the weakest?  
   a) Posterior wall
b) Anterior wall  
c) Medial wall  
d) Lateral wall  
e) Superior wall

5) The inguinal canal contains the ____ in both males and females.
   a) Pyramidalis muscle  
b) Interior epigastric artery  
c) Deep circumflex iliac artery  
d) Ilioinguinal nerve  
e) Iliohypogastric nerve

6) The ____ plexus around the spermatic cord helps transfer heat away from the testes.
   a) Batson’s  
b) Inguinal  
c) Pampiniform  
d) Cremaster  
e) Ilioinguinal

7) How many tendinous intersections are there for the rectus abdominis muscles?
   a) 1  
b) 2  
c) 3  
d) 4  
e) 5

8) What artery runs inferior to superior under the rectus abdominis at the level of the umbilicus?
   a) Musculophrenic  
b) Subcostal  
c) Superficial circumflex iliac  
d) Inferior epigastric  
e) Superficial epigastric

9) An indirect hernia occurs ____ the inguinal canal and ____ to the inferior epigastric vessels.
   a) Inside; Lateral  
b) Inside; Medial  
c) Inside; Superior  
d) Outside; Lateral  
e) Outside; Medial

**Gross Anatomy #32 – Peritoneum**

1) With the exception of the uterine tubes, the peritoneum is ____ and made of simple ____ epithelium.
   a) Continuous; Columnar  
b) Discontinuous; Squamous  
c) Continuous; Cuboidal  
d) Discontinuous; Cuboidal  
e) Continuous; Squamous
2) You are looking at a radiograph at the level of T12. Which of the following structures could you find the lesser sac (omental bursa) between?
   a) Liver and right kidney
   b) Aorta and IVC
   c) Aorta and stomach
   d) Left kidney and Psoas
   e) Abdominal wall and liver

3) The epiploic foramen is a passageway from the greater to lesser sac and contains/borders all of the following EXCEPT:
   a) Common bile duct
   b) Cystic duct
   c) Hepatic artery
   d) Hepatic portal vein
   e) Inferior vena cava

4) The ligament connecting the lesser curvature of the stomach to the liver is the:
   a) Gastrohepatic
   b) Falciform
   c) Round
   d) Lesser hepatic
   e) Ligamentum venosum

5) The greater omentum is derived from ____ mesentery and the lesser omentum is derived from ____ mesentery.
   a) Ventral; Ventral
   b) Dorsal; Dorsal
   c) Ventral; Dorsal
   d) Dorsal; Ventral
   e) Paraxial; Paraxial

6) All of the following are ligaments of the greater omentum EXCEPT:
   a) Gastrocolic
   b) Splenorenal
   c) Gastroplenic
   d) Gastrophrenic
   e) Splenorectal

7) The ____ (obliterated left umbilical vein) is within the ____ and both come from embryonic ____ mesentery.
   a) Ligamentum venosum; Ligamentum teres; Ventral
   b) Ligamentum teres; Ligamentum venosum; Ventral
   c) Ligamentum venosum; Ligamentum teres; Dorsal
   d) Ligamentum teres; Ligamentum venosum; Dorsal

8) A surgeon is working inferior to the diaphragm and accidentally cuts the phrenicocolic ligament connecting to the left colic flexure. Prior to this iatrogenic trauma, this ligament supported the:
   a) Spleen
   b) Gallbladder
   c) Liver
   d) IVC
9) During an open-abdominal surgical procedure on a patient lying supine, a medical student spills nearly 1L of saline into the abdominal cavity. As the saline hits the pelvic brim, it will be diverted to the ____ and the ____ gutters.
   a) Right infracolic; Left infracolic
   b) Right paracolic; Left paracolic
   c) Posterior subphrenic; Pelvic
   d) Left subphrenic; Right subphrenic
   e) Left pelvic; Right pelvic

10) All of the following are branches of the celiac artery EXCEPT:
   a) Left gastric artery
   b) Splenic
   c) Cystic
   d) Ileal
   e) Left and right hepatic

11) All of the following are branches of the superior mesenteric artery (SMA) EXCEPT:
   a) Middle colic
   b) Anterior cecal artery
   c) Superior rectal artery
   d) Left colic
   e) Gastroduodenal

12) You are on one of your first cases as a surgical resident and are working within the abdominal cavity. You cannot tell if you are looking at the jejunum or the ileum. Which of the following would be the BEST way to determine what you are looking at in this circumstance?
   a) Find the plicae circulares
   b) Find the smooth mucous membrane
   c) Compare tube diameters
   d) Compare wall thickness
   e) Compare arterial arcades

13) The inferior mesenteric artery (IMA) and the superior mesenteric artery (SMA) anastomose at the ____ artery.
   a) Marginal
   b) Superior rectal
   c) Straight
   d) Ileocolic
   e) Sigmoidal

14) All of the following arteries are paired EXCEPT:
   a) Suprarenal
   b) Suprarectal
   c) Renal
   d) Gonadal
   e) Inferior phrenic

15) What terminal arterial branch comes of posteriorly at the bifriction of the aorta?
   a) External iliac
   b) Internal iliac
c) Common iliac
d) Median sacral
e) Middle aortic

16) The portal venous system carries blood from all of the following places to one location EXCEPT:
   a) Spleen
   b) GI tract
   c) Liver
   d) Pancreas
   e) Inferior mesenteric

17) A patient is being seen for intrahepatic portal hypertension. The physician determines that portal venous system is obstructed. All of the following could be taking collateral blood flow EXCEPT:
   a) Gastroesophageal
   b) Anorectal
   c) Paraumbilical
   d) Retroperitoneal
   e) Gastrohepatic

18) The portal venous system has ____ capillary bed(s).
   a) 1
   b) 2
   c) 3
   d) 4
   e) 5

Gross Anatomy #33 – Abdominal Organs I

1) What section of the stomach is situated between the body and pylorus?
   a) Fundus
   b) Greater curvature
   c) Lesser curvature
   d) Antrum
   e) Cardiac orifice

2) Which of the following is NOT a region of the duodenum?
   a) Superior
   b) Inferior
   c) Descending
   d) Horizontal
   e) Ascending

3) The duodenal suspensory ligament (Ligament of Treitz) connects the duodenum to the:
   a) Diaphragm
   b) Liver
   c) Pancreas
   d) Spleen
   e) Kidney

4) Compared with the jejunum, there are ____ plicae circulares in the ileum and the wall is ____ in the ileum.
a) More; Thinner  
b) More; Thicker  
c) Less; Thinner  
d) Less; Thicker  
e) A similar number of; The same as  

5) The taenia coli are in the large intestine and consist of ____ bands of smooth muscle arranged in distinct strips.
   a) 7  
   b) 4  
   c) 5  
   d) 2  
   e) 3  

6) Pouches in the intestinal wall that give the intestine a segmental appearance are called:
   a) Taeniae coli  
   b) Epiploic appendages  
   c) McBurney’s points  
   d) Haustra  
   e) Plicae circulares  

7) At which of the following locations does vascular supply change from superior mesenteric to inferior mesenteric?
   a) Large intestine  
   b) Cecum  
   c) Ascending colon  
   d) Transverse colon  
   e) Descending colon  

8) Which of the following is NOT a distinguishing characteristic of the rectum, with respect to the large intestine?
   a) No sacculations  
   b) No epiploic appendages  
   c) Vasculature includes the inferior mesenteric artery  
   d) Taeniae coli blend together  
   e) Is continuous with the sigmoid colon at the level of S3  

**Gross Anatomy #34 – Abdominal Organs II**

1) The spleen is related to rib(s) ____ at the scapular line and midaxillary line.
   a) 5-7  
   b) 3-5  
   c) 9-11  
   d) 7-9  
   e) 12  

2) The spleen is in contact with all of the following EXCEPT:
   a) Liver  
   b) Diaphragm  
   c) Stomach  
   d) Pancreas  
   e) Left kidney and left colic flexure
3) The ____ of the liver comprises about 5/6s of the organ.
   a) Quadrate
   b) Caudate
   c) Left
   d) Right

4) The portal (functional) organization of the liver mimics the structural organization.
   a) True
   b) False

5) The porta hepatis (transverse fissure of the liver) is on the inferior surface and
   transmits all of the following EXCEPT:
   a) Hepatic duct (bile passage)
   b) Hepatic artery
   c) Portal vein
   d) Hepatic veins

6) What surface of the liver contains the bare area?
   a) Superior
   b) Anterior
   c) Right
   d) Inferior
   e) Posterior

7) The pancreas is a soft, lobulated exocrine/endocrine organ containing all of the
   following parts EXCEPT:
   a) Head
   b) Neck
   c) Back
   d) Body
   e) Tail

8) Posteriorly, each kidney is related to all of the following EXCEPT:
   a) Erector spinea
   b) Psoas major
   c) Quadratus lumborum
   d) Layer of fat
   e) Diaphragm

9) The kidney and suprarenal gland both have all of the following structures EXCEPT:
   a) Capsule
   b) Medulla
   c) Cortex
   d) Pyramids

**Gross Anatomy #35 – Posterior Wall**
1) You are in surgery looking at the posterior wall from the front of the abdomen, after
   most of the colon has been moved away. To the left of the spine at L4 you see a muscle
   mass as a rounded cord coming from somewhere superiorly and coursing somewhere
   inferiorly. It does not appear to start or stop in the region you can see. What muscle is
   this?
   a) Iliacus
2) What cord levels is this muscle innervated by?
   a) T12-L1
   b) L2-L4
   c) L5-S1
   d) S2-S4
   e) C3-C5

3) A patient presents with difficulty passing stool due to reduced parastaltic movement. You determine their vagus nerve is being pinched as it passes through the diaphragm. At what vertebral level does this occur?
   a) T4
   b) T6
   c) T8
   d) T10
   e) T12

4) You are seeing an 80 y/o female patient with a history of vascular disease. During a routine physical, you find a pulsating mass in the abdomen in the most common location for this disorder. You begin to explain how serious this situation is and options for intervention. What vertebral level did you palpate the aortic aneurysm at?
   a) T12-L2
   b) L3-L5
   c) S1-S3
   d) T9-T11
   e) S4-S5

5) Which of the following are the correct vertebral levels for the celiac trunk, superior mesenteric, and inferior mesenteric arteries, respectively?
   a) T8, T9, T11
   b) T9, T10, T12
   c) T10, T11, L1
   d) T11, T12, L2
   e) T12, L1, L3

6) What muscle runs posterior to the lateral arcuate ligament of the diaphragm?
   a) Iliacus
   b) Transversus abdominis
   c) Psoas
   d) Quadratus lumborum
   e) Diaphragm

7) What large vein begins forming on the right side at the level of the right and left renal veins?
   a) Hepatic
   b) Azygous
   c) Inferior phrenic
   d) Median sacral
8) The left gonadal vein branches from the ____ and the right gonadal vein branches form the ____.
   a) IVC; IVC  
   b) Left renal vein; Right renal vein  
   c) Left renal vein; IVC  
   d) IVC; right renal vein

**Gross Anatomy #36 – Lymph/ANS**

1) All of the following are considered abdominal nerve plexuses (interconnected) EXCEPT:
   a) Aortic  
   b) Celiac  
   c) Superior mesenteric  
   d) Intermesenteric  
   e) Inferior mesenteric

2) A patient is undergoing surgery to repair an abdominal aortic aneurysm (AAA) that occurs at the aortic bifurcation. The surgeon notices the AAA was putting significant pressure on the plexus that lies inferior to the aortic bifurcation, pulling on the nerve below. The nerve running from this plexus (superior plexus) inferiorly to the next plexus (inferior plexus) is called the ____ nerve, named after these two plexuses.
   a) Greater splanchnic  
   b) Superior mesenteric  
   c) Inferior mesenteric  
   d) Hypogastric  
   e) Renal

3) What cord levels of thoracic splanchnic nerves synapse in both the aorticorenal and renal plexuses (ganglion)?
   a) T12  
   b) T10-T12  
   c) T10-T11  
   d) T5-T11  
   e) T5-9

4) The lumbar splanchnics (L1-L2) synapse in the ____ ganglion.
   a) Celiac  
   b) Aortic  
   c) Superior mesenteric  
   d) Inferior hypogastric  
   e) Intermesenteric

5) Where in the gastrointestinal tract does parasympathetic innervation change from anterior/posterior vagal (CNX) trunks to pelvic splanchnics (S2-S4)?
   a) Right colic flexure  
   b) Transverse colon  
   c) Left colic flexure  
   d) Descending colon  
   e) Sigmoid colon
6) Autonomic innervation of the midgut region occurs at cord levels:
   a) T6-T7
   b) T6-T9
   c) T8-T12
   d) T8-S4
   e) T12-S4

7) Stimulation of the cutaneous nerve on the _____ thigh concurrently stimulates the cremaster muscle to ascend the testis. This occurs at cord levels _____.
   a) Medial; L1-L2
   b) Lateral; L1-L2
   c) Medial; L2-L3
   d) Lateral; L2-L3
   e) Medial; L2-L4

8) The femoral nerve and obturator nerve leave the lumbar plexus at what cord level(s)?
   a) L1
   b) L1-L2
   c) L2-L3
   d) L2-L4
   e) L4-L5

9) From lateral to medial, which of the following is the correct order of nerves seen on the posterior wall?
   a) Lateral cutaneous nerve of thigh, ilioinguinal nerve, genitofemoral nerve
   b) Ilioinguinal nerve, lateral cutaneous nerve of thigh, genitofemoral nerve
   c) Lateral cutaneous nerve of thigh, genitofemoral nerve, ilioinguinal nerve
   d) Ilioinguinal nerve, genitofemoral nerve, lateral cutaneous nerve of thigh
   e) Genitofemoral nerve, ilioinguinal nerve, lateral cutaneous nerve of thigh

10) A patient presents with pain on the right side of their neck, radiating posteriorly onto the right scapular region. During a brief history, the patient admits to excessive alcohol consumption. You believe the referred pain is coming from the liver. Which structure is being inflamed and leading to referred pain along its cord levels (the neck, shoulder, and upper back)?
   a) Liver
   b) Gallbladder
   c) Duodenum
   d) Stomach
   e) Diaphragm

11) A patient presents two weeks post-liposuction complaining of discharge from her abdominal incision and soreness in her armpits. In what region of the abdomen did the surgeon make her incision?
   a) Left of umbilicus
   b) Right of umbilicus
   c) Superior to umbilicus
   d) Inferior to umbilicus

12) A patient presents with an acute kidney infection. What lymph node do you expect to be enlarged?
   a) Inferior phrenic
b) Celiac
  c) Superior mesenteric
  d) Lumbar
  e) Inferior mesenteric
13) A duodenal (peptic) ulcer causing inflammation would lead to enlargement of what lymph node(s)?
   a) Celiac
   b) Celiac and superior mesenteric
   c) Superior mesenteric
   d) Superior mesenteric and inferior mesenteric
   e) Inferior mesenteric
14) A patient presents with pain in the lower thorax and upper abdomen (T5-T9). Pain is intensified after eating spicy and greasy food. What region would this pain be referred from?
   a) Thoracic
   b) Foregut
   c) Midgut
   d) Hindut
   e) Lower rectum
15) During a soccer game, the goalie is accidentally kicked between the legs during a passing attempt by the opposing team. Aside from immediate pain, the goalie feels like he is sick and going to vomit. This is caused by ____ and is due to the ____ nerve.
   a) Sympathetics; Genitofemoral
   b) Sympathetics; Ilioinguinal
   c) Sympathetics; Lateral femoral cutaneous
   d) Sympathetics; Iliohypogastric
   e) Parasympathetics; Vagus

Gross Anatomy #37 – Radiology & Clinical Correlations
1) You are looking at a high-power magnification radiograph of the stomach. Near the end of the antrum, you see the walls of the stomach curve sharply inward toward each other. What are you seeing?
   a) Rugae
   b) Pylorus
   c) Fundus
   d) Parastaltic movement
   e) Release of gastrin into lumen
2) You are looking at an AP radiograph of a patient who has ingested barium. On your right, you see a twisted mass of tubes. One part of the tube appears to have a black and white banding pattern while the other appears mostly white. What likely is the banded structure you see?
   a) Stomach
   b) Duodenum
   c) Jejunum
   d) Ileum
   e) Appendix
3) You are looking at an AP radiograph of a patient’s transverse colon. The colon appears to be made up of squared balls/blocks that look similar to vertebral bodies. What are these structure called?
   a) Teniae coli
   b) Haustra
   c) Hepatic flexures
   d) Colic flexures
   e) Calyces
4) You are looking at an endoscopic contrast study of the common hepatic duct. From the anterior view, you see a branch arising from the bile duct and looping around toward a target organ. What branch is this?
   a) Right hepatic duct
   b) Left hepatic duct
   c) Common hepatic duct
   d) Cystic duct
   e) Bile duct
5) You are looking at a cross-sectional radiograph at the T11 level. What organ accounts for most of this slice?
   a) Stomach
   b) Pancreas
   c) Kidneys
   d) Spleen
   e) Liver
6) At what cross-sectional level will you begin (coming inferiorly with cross-sections) bilateral kidneys?
   a) L1
   b) T12
   c) L2
   d) T11
   e) L3
7) You are looking at a cross-sectional radiograph at the T12 level. What organ is seen posterior to the stomach that was not seen at the T11 level?
   a) Liver
   b) Aorta
   c) Azygous vein
   d) Spleen
   e) Gall bladder
8) You are looking at a cross-sectional radiograph at the L2 level. On your right side you see several rings (gray in color, black in the middle). What is this structure?
   a) Stomach
   b) Colon
   c) Ileum
   d) Jejunum
   e) Rectum
9) On the same radiograph (L2 level), you see a solid white circle directly above the aorta. What is this?
10) During an intravenous urogram (IVU), what structure of the kidney is seen mostly prominently on the radiograph?
   a) Cortex
   b) Medulla
   c) Pyramids
   d) Calyces
   e) Capsule

11) A 25-year-old female comes to the clinic with her boyfriend seeking fertility drugs. While taking a patient history, you ask about problems the boyfriend may have. The patient looks shocked but the boyfriend speaks up saying his “scrotum doesn’t look right.” Upon examination of the scrotum, you notice the left side has a great deal of dimpling. What likely problem does this male patient have?
   a) Testicular cancer
   b) Hydrocele
   c) Varicocele
   d) Testicular torsion
   e) Indirect hernia

12) A patient presents two weeks post gynecological surgery with abdominal pain, a full belly, and shortness of breath. During abdominal palpation, the patient has a great deal of rebound tenderness. After a radiograph is taken, you diagnose the patient with peritonitis with secondary peritoneal adhesions and ascites. At this point, you would like to drain the excess peritoneal fluid via paracentesis. During needle insertion into the parietal peritoneum, which structure lies between the transverses abdominis muscle and the extraperitoneal connective (fatty) tissue?
   a) Superficial fascia
   b) Fascia transversalis
   c) External oblique muscle
   d) Internal oblique muscle
   e) Skin

13) A duodenal (peptic) ulcer of the ____ wall (most common) may penetrate the wall and erode the relatively large ____ artery, causing severe hemorrhage.
   a) Posterior; Phrenic
   b) Anterior; Splenic
   c) Posterior; Splenic
   d) Anterior; Gastroduodenal
   e) Posterior; Gastroduodenal

14) With appendicitis, vague referred pain is initially felt in the region of the ____.
   a) Male nipple
   b) Costal notch
   c) Umbilicus
   d) Left flank
15) A young male presents with fever, sore throat, and fatigue. During an abdominal exam, you feel an enlarged liver as you push up into the patient’s right abdomen under the ribs. You order a test for mononucleosis, which comes back positive a day later. What organ are you worried might rupture?
   a) Liver
   b) Kidney
   c) Pancreas
   d) Spleen
   e) Gall bladder

16) A patient presents with a chief complaint of abdominal pain and distension. Upon examination, the abdomen is very distended and caput medusae is visible. The patient admits to having “a few drinks everyday during the week and a few more with the boys on the weekend.” You are confident the patient has portal hypertension. Which of the following veins is anastomosing with the portal venous system and leading to caput medusae?
   a) Paraumbilical
   b) Anorectal
   c) Gastroesophageal
   d) Retroperitoneal
   e) Gastrohepatic

**Gross Anatomy #38 & 39 – General Concepts & Pelvis**

1) What ligament forms borders of both the greater and the lesser sciatic foramen?
   a) Inguinal
   b) Sacrospinous
   c) Sacrotuberous
   d) Pubic
   e) Ischial

2) What is at the smooth, rounded border of the internal surface of the ilium? It is immediately inferior to the iliac fossa and iliacus muscle.
   a) AIIS
   b) PSIS
   c) ASIS
   d) Pectineal line
   e) Arcuate line

3) What makes the posterior border of the pelvic inlet?
   a) Coccyx
   b) S5
   c) Sacral promentory
   d) Sacrospinous ligament
   e) Sacrotuberous ligament

4) What makes the posterior border of the pelvic outlet?
   a) Coccyx
   b) S5
   c) Sacral promentory
d) Sacrospinous ligament
e) Sacrotuberous ligament

5) Which of the following is NOT true regarding a male/female pelvic comparison?
   a) The female pelvic inlet is more gynecoid in shape and the male more android
   b) The female pelvic outlet is larger in diameter than the male outlet
   c) The sacrum is shorter, wider, and flatter in the female than in the male
   d) The false pelvis is deep in the female and shallow in the male
   e) The subpubic angle, or pubic arch, is more rounded and wider in the female than in the male

6) All of the following pass through the greater sciatic foramen EXCEPT:
   a) Piriformis muscle
   b) Pudendal nerve
   c) Obturator internus muscle
   d) Internal pudendal artery
   e) Inferior gluteal artery

7) The pelvic conjugate diameters (diagonal, true/obstetric, anatomical) all measure from the pubic symphysis to the:
   a) S5 (approximately)
   b) Sacral promontory
   c) Sacrospinous ligament
   d) Sacrotuberous ligament
   e) Coccyx

8) The pelvic diameter measured from the sacroiliac joint across to the pelvic tubercle is called the:
   a) Anteroposterior diameter
   b) Transverse diameter
   c) Interspinous distance
   d) Obstetrical conjugate
   e) Oblique diameter

9) In a pelvic fracture of the anterior inferior iliac spine, what muscle is responsible for the pelvic avulsion of this broken bone piece?
   a) Sartorius
   b) Quadriceps
   c) Hamstrings
   d) Obturator
   e) Rectus femoris

10) Which of the following muscles is NOT part of the walls of the lesser pelvis?
    a) Iliacus
    b) Coccygeus
    c) Levator ani
    d) Obturator internus
    e) Piriformis

11) What muscle is directly lateral to the puborectalis muscle?
    a) Pubovaginalis
    b) Iliococcygeus
    c) Pubococcygeus
12) The anal sphincters keep the inferior portion of the anal canal closed. However, if there is a great deal of waste compaction, they cannot keep the canal closed. In this case, what muscle, under somatic control, is pinching the canal closed?
   a) Coccygeus
   b) Illiococcygeus
   c) Pubococcygeus
   d) Puborectalis
   e) Piriformis

13) What muscle supports the genital hiatus (urethra and vaginal passage)?
   a) Puborectalis
   b) Pubococcygeus
   c) Iliococcygeus
   d) Coccygeus
   e) No muscular support

14) The subperitoneal endopelvic fascia is made up of:
   a) Peritoneal fascia and loose areolar fascia
   b) Loose areolar fascia and ligamentous fascia
   c) Visceral fascia and parietal fascia
   d) Ligamentous fascia and visceral fascia
   e) Parietal fascia and peritoneal fascia

15) The prostate receives blood supply from all of the following EXCEPT:
   a) Internal pudendal artery
   b) Inferior vesical artery
   c) Middle rectal artery
   d) Superior vesical artery

16) Below the pectinate line, the anal canal receives blood from which of the following?
   a) Middle vesical artery
   b) Superior rectal artery
   c) Inferior rectal artery
   d) Internal pudendal artery
   e) Artery to ductus deferens

17) The visceral branches from the anterior division of the internal iliac artery include all of the following EXCEPT:
   a) Lateral sacral artery
   b) Umbilical artery
   c) Middle rectal artery
   d) Inferior vesical artery
   e) Uterine artery

18) The ureters receive blood supply from all of the following EXCEPT:
   a) Renal artery
   b) Testicular artery
   c) Superior gluteal artery
   d) Branches of the internal iliac artery
   e) Branches of the vesical arteries
19) What artery supplies the penis?
   a) External pudendal
   b) Internal pudendal
   c) Inferior vesical
   d) Middle rectal
   e) Prostatic

20) During a hysterectomy procedure, the surgeon wants to make sure not to damage the ureter as she removes the uterine artery. Which of the following describes the relation of the ureter to the uterine artery?
   a) Ureter lateral to uterine artery
   b) Ureter medial to uterine artery
   c) Ureter superficial/anterior to uterine artery
   d) Ureter deep/posterior to uterine artery

21) The lumbosacral nerve trunks consists of anterior rami from:
   a) S3-S4
   b) S2-S3
   c) S1-S2
   d) L5-S1
   e) L4-L5

22) A patient is being seen for acute leg pain and numbness. The physician determines the problem is arising from the sacral plexus. What muscle, if in spasm, would affect the sacral plexus?
   a) Obturator internus
   b) Piriformis
   c) Iliacus
   d) Coccygeus
   e) Levator ani

23) From what cord levels does the inferior gluteal nerve arise?
   a) L4-L5
   b) L4-S1
   c) L5-S2
   d) L4, S3
   e) S2-S4

24) The lumbrosacral joint is considered:
   a) Fused
   b) Plane synovial
   c) Primary cartilaginous
   d) Secondary cartilaginous
   e) Fibrous

25) Which of the following is NOT true regarding lumbar and sacral splanchnic nerves?
   a) Enter chain via gray ramus
   b) Preganglionic cell bodies are in IML
   c) Transverse chain without synapse
   d) Are preganglionic to hypogastric plexus
   e) They are accompanied by GVA fibers

26) All pelvic viscera get sympathetic innervation from lower portion of IML at:
27) Pelvic splanchnic nerves synapse in:
   a) Sympathetic chain
   b) Organ
   c) Hypogastric plexus
   d) Organ or hypogastric plexus
   e) Adrenal gland

28) All of the following are sub-plexuses (divisions) of the inferior hypogastric plexus (lateral to pelvic viscera) EXCEPT:
   a) Middle rectal plexus
   b) Pudendal plexus
   c) Vesical plexus
   d) Prostatic plexus
   e) Uterovaginal plexus

29) Cavernous nerves are extensions of the ____ plexus.
   a) Middle rectal
   b) Pudendal
   c) Vesical
   d) Prostatic
   e) Uterovaginal

30) Cord levels ____ (parasympathetic) maintain erection and levels ____ (sympathetic) control emission of semen through ejaculatory ducts.
   a) S2-S4; L1-L2
   b) S1-S3; L1-L2
   c) S2-S4; L2-L3
   d) S1-S3; L2-L3
   e) S1-S5; L1-L5

31) All of the following are branches of the pudendal nerve EXCEPT:
   a) Dorsal nerve of penis
   b) Posterior scrotal nerves
   c) Dorsal labial nerves
   d) Perineal nerves
   e) Inferior anal/rectal nerve

32) With the pelvis in normal orientation, what two structures are in-line vertically?
   a) Anterior superior iliac spine and sacral promontory
   b) Sacral promontory and coccyx
   c) Pubic tubercle and coccyx
   d) Pectineal line and sacral promontory
   e) Anterior superior iliac spine and pubic tubercle

33) A patient comes into the primary care clinic with lower back pain. They complain about the pain getting much worse when they shovel snow. What ligament is likely strained?
Gross Anatomy – Part 2

34) Which of the following arteries does NOT have an associated vein?
   a) Internal pudendal
   b) Middle rectal
   c) Superior gluteal
   d) Umbilical
   e) Obturator

Gross Anatomy #40 & 41 – Pelvic Organs I & II

1) Where on the bladder do the ureters enter?
   a) Superior
   b) Inferolateral
   c) Lateral
   d) Apex
   e) Infraposterior

2) What ligament attaches to the apex of the bladder?
   a) Median umbilical
   b) Medial umbilical
   c) Lateral umbilical
   d) Pubovesicalis
   e) Rectovesicalis

3) The prostate sits ____ to the bladder and the uterus sits ____ to the bladder.
   a) Inferior; Inferior
   b) Posterior; Inferior
   c) Inferior; Superior
   d) Posterior; Superior
   e) Superior; Superior

4) After prostate surgery, a urinary line must be placed so the patient can void. However, since the prostatic urethra needs to heal, urethral catheterization with a Foley is not an option. What other route is likely the best option?
   a) Infrapubic
   b) Suprapubic
   c) Lateral from iliac crest
   d) Inferior through perineal body
   e) Via spongy urethra

5) What structure in the bladder is bounded superiorly by the interureteric crest?
   a) Apex
   b) Left ureter
   c) Right ureter
   d) Trigone
   e) Uvula vesicae
6) After the micturation reflex is initiated efferent parasympathetic impulses leave S2-S4 via preganglionic fibers. These fibers synapse at the ____. The detrusor muscle is made to contract and the sphincter vesicae is made to relax.
   a) Bladder wall
   b) Detrusor muscle
   c) Trigone
   d) Inferior hypogastric plexus
   e) Superior hypogastric plexus

7) A patient presents with spinal cord damage to the sacral segments due to traumatic force to the upper part of the lumbar region of the vertebral column. What best describes how this patient urinates?
   a) The patient can sense distention and control urination
   b) The patient can sense distention but not control urination
   c) The patient can sense distention but is not able to urinate at all
   d) The patient cannot sense distention but can control urination
   e) The patient cannot sense distention and is not able to urinate at all

8) What structure lies on the urethra at the mid-prostate level?
   a) Bulbourethral glands
   b) Ejaculatory duct opening
   c) Bulbourethral duct opening
   d) Bulbospongiosus
   e) Corpus cavernosum

9) What is the widest part of the male urethra?
   a) External urethral orifice
   b) Spongy urethra in bulb of penis
   c) Bulb of urethra
   d) Intermediate (membranous) part of urethra
   e) Prostatic urethra

10) Lymph drainage from the testicles goes to what nodes?
    a) Lumbar
    b) Inferior mesenteric
    c) Common iliac
    d) Superficial inguinal
    e) Deep inguinal

11) What part of the prostate is related to the levator ani?
    a) Base
    b) Apex
    c) Posterior
    d) Anterior
    e) Inferolateral

12) What prostatic lobe is superior to the urogenital diaphragm and inferior to the ejaculatory duct?
    a) Anterior
    b) Median
    c) Posterior
    d) Left anteriolateral
13) What artery supplies the seminal vesicles as well as the prostate?
   a) Umbilical artery
   b) Prostatic artery
   c) Superior vesicle artery
   d) Inferior vesicle artery

14) With the bladder empty, the uterus is normally situated with:
   a) Anteversion and anteflexion
   b) Anteversion and retroflexion
   c) Retroversion and anteflexion
   d) Retroversion and retroflexion

15) What artery forms an anastamoses superior to the uterine artery?
   a) Median sacral artery
   b) Superior rectal artery
   c) Ovarian artery
   d) Vaginal artery
   e) Pudendal artery

16) What is the name of the second part of the uterine tube, which is the intermediate dilated portion and curves over the ovary?
   a) Infundibulum
   b) Ampulla
   c) Isthmus
   d) Intramural part
   e) Fundus

17) What is the name of the part of the broad ligament that spans from the uterine tube to the ovary?
   a) Myometrium
   b) Endometrium
   c) Mesometrium
   d) Mesovarium
   e) Mesosalpinx

18) Innervation of the prostate and penis come from ____ of the inferior hypogastric plexus.
   a) Somatics
   b) Sympathetics
   c) Parasympathetics
   d) Mixed autonomies

19) In the female, all intraperitoneal visceral internal organs are innervated by:
   a) Superior hypogastric plexus
   b) Inferior hypogastric plexus
   c) Pelvic plexus
   d) Pudendal nerve
   e) Ovarian plexus

20) Which of the following muscles is involved in compressing/closing the vagina?
   a) Bulbospongiosus
   b) Compressor urethrae
c) External urethral sphincter
d) Puborectalis
e) Pubococcygeus

21) What artery anastomoses with the vaginal artery to supply the vagina?
   a) Ovarian artery
   b) Uterine artery
   c) Pudendal artery
   d) Superior rectal artery
   e) Inferior rectal artery

22) The bottom half of the vagina is innervated by the:
   a) Superior hypogastric plexus
   b) Inferior hypogastric plexus
   c) Perineal nerve
   d) Pudendal nerve
   e) Uterine nerve

23) Lymph drainage from the bladder goes to the ____ nodes.
   a) External iliac
   b) Internal iliac
   c) Inferior vesicle
   d) Superior vesicle
   e) Obturator

24) Lymph from the distal end of the spongy urethra (as well as the distal female urethra) drains to the ____ nodes.
   a) Lumbar
   b) Common iliac
   c) Internal iliac
   d) External iliac
   e) Deep inguinal

25) All of the following contribute to semen content EXCEPT:
   a) Ejaculatory duct
   b) Bulbourethral gland
   c) Prostate
   d) Seminal vesicles
   e) Vas deferens

26) How many permanent transverse folds does the rectum have?
   a) 1
   b) 2
   c) 3
   d) 4
   e) 5

27) The superior rectal artery is a branch off of the:
   a) External iliac artery
   b) Internal iliac artery
   c) Obturator artery
   d) Pudendal artery
   e) Inferior mesenteric artery
28) The middle rectal artery is a branch off of the:
   a) External iliac artery
   b) Internal iliac artery
   c) Obturator artery
   d) Pudendal artery
   e) Inferior mesenteric artery
29) The inferior rectal artery is a branch off of the:
   a) External iliac artery
   b) Internal iliac artery
   c) Obturator artery
   d) Pudendal artery
   e) Inferior mesenteric artery
30) Lymph from the lower portion of the vagina drains to the ____ nodes.
   a) Inferior mesenteric
   b) Internal iliac
   c) Superficial inguinal
   d) Deep inguinal
   e) Lumbar
31) A male patient presents with a deep abdominal/perineal infection. Pus has settled in
    the lowest extent of the peritoneum, the rectovesical pouch. Which of the following
    structures is least likely to be at risk for erosion?
    a) Prostate
    b) Peritoneum
    c) Rectum
    d) Bladder
    e) Seminal vesicles
32) A female patient presents with deep perineal pain. Radiographic study shows an
    accumulation of cancer cells in the lowest extend of the peritoneum. Where are the
    cancer cells located?
    a) Uterovesical pouch
    b) Rectovesical pouch
    c) Rectouterine pouch
    d) Pararectal fossae
    e) Urogenital fossae
33) A female patient is undergoing culdocenesis. The needle will be inserted into the
    rectouterine pouch (of Douglas) via the vagina, near the midline between the uterosacral
    ligaments. What structure does the needle pierce?
    a) Cervical canal
    b) Rectum
    c) External os
    d) Fornix
    e) Labia minora
34) At what bladder capacity is pain felt and micturition involuntary?
    a) 100cc
    b) 200cc
    c) 300cc
d) 400cc
e) 500cc

**Gross Anatomy #42 & 43 – Perineum I & II**

1) In the ischioanal fossa, what muscle covers the pudendal canal with fascia?
   a) Levator ani
   b) Obturator internus
   c) Coccygeus
   d) Iliococcygeus
   e) Pubococcygeus

2) What pelvic landmark does the pudendal nerve (S2-S4) run near prior to entering the pudendal canal?
   a) Greater sciatic notch
   b) Iliac crest
   c) Pectineal line
   d) Ischial spine
   e) Pubic symphysis

3) The anal canal is located ____ to the urogenital diaphragm.
   a) Posterior
   b) Anterior
   c) Lateral
   d) Medial

4) Which rectal vein drains into the portal vein/system?
   a) Superior rectal vein
   b) Middle rectal vein
   c) Inferior rectal vein
   d) Pudendal vein
   e) Perineal vein

5) The lower half of the anal canal (below pectinate line) is sensitive to all of the following EXCEPT:
   a) Pain
   b) Touch
   c) Stretch
   d) Temperature

6) Movement of feces from the sigmoid colon to the rectum involves ____ innervation, relaxation of the internal anal sphincter involves ____ innervation, and relaxation of the external anal sphincter involves ____ innervation.
   a) Somatic; Somatic; Somatic
   b) Somatic; Parasympathetic; Somatic
   c) Parasympathetic; Somatic; Parasympathetic
   d) Parasympathetic; Somatic; Somatic
   e) Parasympathetic; Parasympathetic; Somatic

7) What structure contracts both prior to/during and after defecation (same structure but two different functions)?
   a) Puborectalis
   b) Longitudinal muscle
c) Ischiorectal fossa
d) Internal anal sphincter
e) External anal sphincter

8) After a severe spinal cord injury, the effect on defecation is likely:
   a) Excessive defecation due to somatic loss
   b) Excessive defecation due to parasympathetic loss
   c) Constipation due to somatic loss
   d) Constipation due to parasympathetic loss

9) What lies between the superior fascial layer of the urogenital diaphragm and the inferior fascial layer of the urogenital diaphragm (perineal membrane)?
   a) Deep perineal pouch
   b) Superficial perineal pouch
   c) Colles’ fascia
   d) Scarpa’s fascia
   e) Ischioanal fossa

10) The superficial perineal pouch (male or female) contains all of the following EXCEPT:
    a) Root of the clitoris
    b) Bulbospongiosus muscle
    c) Deep transverse perineal muscle
    d) Ischiocavernosus muscle
    e) Root of the penis

11) A teenager is showing off to some girls on his BMX bike. After going off a jump, he misses the pedals and lands hard on the seat. The teenager goes to the hospital in severe pain and is found to have urine extravasated into the scrotum, penis, and abdomen. Where is the likely location of the injury?
    a) Urethra torn in the pelvic cavity, below the prostate
    b) Urethra torn below the membranous region, outside the pelvis
    c) Urethra torn but Buck’s fascia still intact

12) What structure of the female genitalia is continuous with the union of the labia majora (union is superficial to perineal body)?
    a) Labia minora
    b) Prepuce of the clitoris
    c) Frenulum of the clitoris
    d) Vestibule
    e) Mons pubis

13) What structure in the female/male superficial perineal pouch prevents blood flow out of the erectile tissue during sexual excitement?
    a) Corpora cavernosus
    b) Tunica albuginea
    c) Superior transverse perineal
    d) Ischiocavernosus
    e) Bulb of vestibule

14) What muscle is NOT part of the female urogenital diaphragm?
    a) Cocygeus
    b) Compressor urethrae muscle
c) Sphincter urethrae muscle
d) Urethrovaginal sphincter muscle
e) Deep transverse perineal muscle

15) What artery pierces the perineal membrane and ascends between the vaginal crura and pubic symphysis?
   a) Inferior rectal
   b) Deep artery of the clitoris
c) Dorsal artery of the clitoris
d) Transverse perineal
e) Posterior labial

16) What artery pierces the perineal membrane and runs with the corpus cavernosum?
   a) Inferior rectal
   b) Deep artery of the clitoris
c) Dorsal artery of the clitoris
d) Transverse perineal
e) Posterior labial

17) What nerve runs inferior (anatomical position) to the deep transverse perineal muscle and directs toward the female external genitalia?
   a) Pudendal
   b) Inferior rectal
c) Superficial perineal (posterior labial)
d) Deep perineal
e) Dorsal nerve of the clitoris

18) What structure lies in-between the superficial and deep dorsal veins of the penis?
   a) Corpus cavernosum
   b) Dorsal artery of the penis
c) Dorsal nerve of the penis
d) Tunica albuginea
e) Deep (Buck’s) fascia

19) The corpus spongiosum is surrounded by tunica albuginea.
   a) True
   b) False

20) The fundiform ligament is a thickening of the ____ fascia and extends from the linea alba, around the penis (like a sling), and to the septum of the scrotum.
   a) Scarpa’s
   b) Colles’
c) Buck’s
d) Camper’s
e) Douglas’

21) What dermatome level covers the anus for both males and females?
   a) S1
   b) S2
c) S3
d) S4
e) S5
22) What dermatome level covers the external female genitalia and most of the external male genitalia?
   a) S1  
   b) S2  
   c) S3  
   d) S4  
   e) S5

23) What fascia serves to bind down the muscles of the root of the penis and thus runs near the bulb of the penis?
   a) Scarpa’s  
   b) Colles’  
   c) Buck’s  
   d) Camper’s  
   e) Douglas’

Gross Anatomy #44 – Radiology
1) You are viewing a lateral MRI of the male pelvis. What structure do you see between the bladder, rectum, and prostate?
   a) Pubic symphysis  
   b) Corpus cavernosum  
   c) Corpus spongiosum  
   d) Seminal vesicles  
   e) Sacrum

2) You are viewing a cross-section MRI of the male pelvis. Which of the following structure would not show as a dark space?
   a) Pectineus  
   b) Obturator externus  
   c) Obturator internus  
   d) Rectum  
   e) Gluteal fat

3) You are viewing a cross-section MRI of the male pelvis. You see a grey structure lateral to the anus and ischioanal fossa. What is it?
   a) Pectineus  
   b) Adductor muscle mass  
   c) Ishial tuberosity  
   d) Obturator externus  
   e) Crura of the penis

4) You are looking at a coronal MRI of the male pelvis. You see the bladder, prostate, and corpus carvernosum. Another coronal MRI from the same patient is viewed next, but this view is taken a little more posterior. You can no longer see the prostate, but in its place is a bilateral structure with folds. What is it?
   a) Seminal vesicles  
   b) Rectum  
   c) Anal canal  
   d) Levator ani  
   e) Obturator internus
5) You are looking at a lateral MRI of the female pelvis. What structure is directly inferior to the fundus of the uterus?
   a) Myometrium
   b) Rectouterine pouch
   c) Bladder
   d) Endometrium
   e) Vagina

6) You are looking at a cross-section MRI of the female pelvis. You see a white structure on an oblique line between the gluteus maximus and the rectum. What is it?
   a) Vagina
   b) Ishioanal fossa
   c) Rectouterine pouch
   d) Levator ani
   e) Obturator internus

7) You are looking at a contrast study of the uterine system to determine patency of the uterine tubes. What broad ligament covers the structure of interest?
   a) Myometrium
   b) Endometrium
   c) Mesometrium
   d) Mesovarium
   e) Mesosalpinx

**Gross Anatomy #45 – Clinical Correlations**

1) You are performing urethral catheterization on a male patient after minor prostate surgery. Using sterile technique, you lubricate the catheter and pass it to the bladder. Normally, what structure would have the most resistance (be the most narrow)?
   a) External urethral orifice
   b) Spongy urethra in bulb of penis
   c) Navicular fossa
   d) Intermediate (membranous) part of urethra
   e) Prostatic urethra

2) While performing a digital rectal examination (DRE), which of the following structures can NOT be palpated anteriorly?
   a) Prostate
   b) Rectouterine pouch
   c) Seminal vesicles
   d) Ishiorectal fossae
   e) Bladder

3) Varicoceles are mostly seen on the ____ side because that pampiniform plexus joins with the ____.
   a) Left; IVC
   b) Right; IVC
   c) Left; Renal vein
   d) Right; Renal vein

4) During a pap smear, what type of cells are scraped for examination?
   a) Connective
b) Muscle  
c) Epithelial  
d) Nervous

5) A female patient presents post-childbirth with a cystocele of the bladder. What structure is the bladder pressing against?  
   a) Pubic symphysis  
   b) Uterus  
   c) Urethra  
   d) Rectum  
   e) Vagina

6) A woman in labor is given a caudal anesthetic/block using an 18-guage Tuohy needle. This will give a general area of numbness from the spinal segment the needle was inserted into, downward though the perineum. Thus, this relieves the pain of labor. What space does the needle enter?  
   a) Subdural  
   b) Epidural  
   c) Subarachnoid  
   d) Spinal cord  
   e) IML

7) Mediolateral episiotomy incisions are preferred over median (midline) incisions. All of the following structures may be damaged in the median incision. Which of the following structures is most likely to be damaged in the mediolateral incision?  
   a) Bulbospongiosum  
   b) Central tendon  
   c) Perineal body  
   d) Labia majora  
   e) Anal sphincters

8) What is the landmark for administering a pudendal nerve block?  
   a) Ishial spine  
   b) Sacrotuberous ligament  
   c) Anterior superior iliac spine  
   d) Anterior inferior iliac spine  
   e) Pubic symphysis

9) A teenage male presents from an accident where he fell off his skateboard and straddled a handrail. Upon examination, urine extravasation is found contained within Buck’s fascia. Where is the damage along the urinary tract?  
   a) Prostate  
   b) Bladder  
   c) Urethra within penis  
   d) Urethra within superficial space  
   e) Urethra within pelvis

10) Which of the following structures does NOT pass through the pelvic inlet?  
    a) Gonadal vessels  
    b) Obturator nerve  
    c) Hypogastric plexus  
    d) Inferior rectal vessels
e) Ductus deferens

11) Which of the following muscles does NOT attach to the perineal body?
   a) Superficial and deep transverse perineal muscles
   b) Ischiocavernosus muscle
   c) Bulbospongiosus muscle
   d) External anal sphincter
   e) Pubococcygeus muscle

12) Which of the following is NOT true when comparing the female pelvis to the male pelvis?
   a) The false pelvis is shallow
   b) The pelvic inlet is heart-shaped
   c) The pelvic cavity if roomier and the inlet to outlet distance is shorter
   d) The pelvis is less dense
   e) The pelvic outlet is larger

13) What muscle is torn most often during childbirth?
   a) Puborectalis
   b) Pubococcygeus
   c) Iliococcygeus
   d) Ischiocavernosus
   e) Bulbospongiosus
Answer Key

Anat #23

Anat #24

Anat #25

Anat #26

Anat #27

Anat #28

Anat #29

Anat #30

Anat #31

Anat #32

Anat #33

Anat #34

Anat #35

Anat #36

Anat #37
3) B 31) C 5) C
4) D 32) E 6) E
5) E 33) B 7) B
6) A 34) D 8) D
7) D 9) A
8) B

_Anat #40–41_
9) A 1) E 11) B
10) D 2) A 12) E
11) C 3) C 13) D
12) B 4) B 14) A
13) E 5) D 15) C
14) C 6) A 16) B
15) D 7) E 17) C
16) A 8) B 18) E
9) E 19) B

_Anat #38–39_
10) A 20) A
1) B 11) E 21) E
2) E 12) C 22) C
3) C 13) D 23) B
4) A 14) A
5) D 15) C
6) C 16) B 1) D
7) B 17) E 2) E
8) E 18) D 3) C
9) A 19) B 4) A
10) A 20) A 5) C
11) C 21) B 6) B
12) D 22) D 7) E
13) E 23) B
14) B 24) E
15) D 25) A 1) A
16) C 26) C 2) D
17) A 27) E 3) C
18) C 28) B 4) C
19) B 29) D 5) E
20) D 30) C 6) B
21) E 31) A 7) D
22) B 32) C 8) A
23) C 33) D 9) C
24) D 34) E 10) D
25) A
26) E

_Anat #44_
1) D

_Anat #45_
12) B
27) D 1) B
28) B 2) D
29) D 3) A
30) A 4) A
Please let me know if there are any errors and I will fix them.

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There may be mistakes, flaws, and incorrect answers.

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