ANATOMICAL TERMS

1. Use the word bank to fill in the missing words.
   All anatomical terms have an **reference** point which is called the **anatomical** position. This is a(n) **forward** facing position where you **stand** up, with your **arms** by your **side**, with the **palms** of your hands facing forward.

2. Complete these sentences using the terms superior or inferior. Assume the individual is in anatomical position.
   a. The hands are **superior** to the feet.
   b. The knees are **inferior** to the waist.
   c. The elbow is **superior** to the wrist.
   d. The calf muscle is **superior** to the ankle.

3. Complete these sentences using the terms anterior or posterior. Assume the individual is in anatomical position.
   a. The heel is **posterior** to the toes.
   b. The biceps are **anterior** to the triceps.
   c. The hamstrings are **posterior** to the quadriceps.

4. Complete these sentences using the terms lateral or medial. Assume the individual is in anatomical position.
   a. The arms are **lateral** to the midline.
   b. The neck is **medial** to the arms.
   c. The shoulders are **lateral** to the midline.

5. Complete these sentences using the terms superficial or deep. Assume the individual is in anatomical position.
   a. The skin is **superficial** to the muscles.
   b. The heart is **deep** to the ribs.

6. Choose the correct answer. Assume the individual is in anatomical position.
   a. The big toe is on the lateral/medial side of the foot.
   b. The shoulder blade is on the anterior/posterior side of the body.
   c. The hand is distal/proximal to the elbow.
   d. The hips are superior/inferior to the shoulders.
   e. The shoulders are medial/lateral to the spine.
   f. The knee is distal/proximal to the ankle.
   g. The knee is superior/inferior to the ankle.

7. What is the importance of having the anatomical position?
   **The anatomical position gives a common starting point of reference for descriptions of any body region or part.** (Because some terms like “anterior and posterior” as well as “superior and inferior” can vary based upon location and position of the body, anatomical position is used as a reference to provide clarity and accuracy.)

8. Johnny’s doctor taps him on the knee and his leg kicks out (straightens). What motion did his knee make? **Extension**
9. Jewel has just pointed her toe in dance class. What motion did she make? **Plantar Flexion**
10. Joe has just stretched both arms upwards to try and wake himself up in class. What motion did he make at his shoulders? **Flexion (Abduction is also acceptable)**
11. Jessica has just turned her foot to point out to the side in ballet class. What motion did she make with her hip? **Lateral Rotation (aka- External Rotation)**
12. Jamal is doing jumping jacks. What motion occurs at his hips as his feet move toward the middle? **Abduction**
13. Jennifer swings her leg, straightened, out to the side to close a door with her foot. What motion did she make with her leg? **Abduction**

### BONES

14. Is the auricular surface of the os coxae found on the medial or lateral side of the bone? **Medial**
15. Is the acetabulum found on the medial or lateral side of the bone? **Lateral**
16. Is the ischial tuberosity found on the anterior or posterior side of the bone? **Posterior**

Determine if the os coxae in your box is from the left or right side. **They are not all the same!**

Compare it to the articulated skeleton to be sure.

17. What does the word “foramen” mean? **A hole through a bone (usually round)**
18. Which portion of the femur fits in the acetabulum? **Head**
19. How does the pubic arch of a male compare to the pubic arch on a female pelvis?

   - The public arch (or subpubic angle) of a female is usually wider than in a male (Female is usually greater than 100° whereas in a male it is usually less than 90°.)
20. In general, what is the purpose of the bony bumps (e.g., greater trochanter, ischial tuberosity, tibial tuberosity)? **These “bumps” mark points where muscles, tendons, and ligaments attach.**

For the greater and lesser trochanters:

   a. Which is more proximal? **Greater**
   b. Which is larger? **Greater**
   c. Which is more medial? **Lesser**

21. On the femur, what is the easiest way to tell which condyle is the medial condyle and which is the lateral condyle? **The head of the femur should ALWAYS be medially located. Find it and follow it distally down the shaft to the condyles. The condyle on the same side as the head is the MEDIAL condyle.**

22. What does the word “epicondyle” mean? **The prefix epi means upon or above. Therefore, epi-condyle means it is found upon or above the condyle.**

23. On the femur, the epicondyles are superior/inferior to the condyles. **Superior**
24. On the femur, the epicondyles are proximal/distal to the condyles. **Proximal**
25. What does the word fossa mean? **Flattened or shallow depression**
26. The shaft of the femur is proximal/distal to the trochanters. **Distal**

Determine if the femur in your box is from the left or right side. **Compare it to the articulated skeleton to be sure.**

28. What features helped you determine if the femur was from the right or left side of the body? **Proximally: the head of the femur should be medially located and distally the intercondylar fossa should be posteriorly located.**
29. Will the patella be found on the anterior or posterior side of the knee? **Anterior**
30. How can you tell the difference between the tibia and fibula? **The fibula is an elongated thin bone without pronounced condyles. The tibia is larger and has two pronounced condyles on its superior surface.**

31. Is the head of the fibula on its proximal or distal end? **Proximal**

32. What features help you decide if you are looking at the lateral malleolus or the head of the fibula? **The head of the fibula is has a smooth articular surface located on the end of the bone; on the distal end, the articular surface is on the side of the bone and the end is more textured/rougher. (Also, the head is more rounded and knoblike and this proximal end tends to be thicker and broader.)**

33. On the tibia, what is the best way to identify the medial condyle? **The medial condyle is on the same side of the bone as the medial malleolus. Find the medial malleolus (distal end of the tibia and follow the shaft proximally to the superior surface.**

34. Is the tibial tuberosity on the anterior or posterior portion of the tibia? **Anterior**

35. If you touch your feet together, which of these will be touching: lateral malleoli or medial malleoli? **Medial**

36. Do all the toes have the same number of phalanges? **No, the big toe has two phalanges. All other toes have three.**

37. Is the big toe on the medial or lateral side of the foot? **Medial**

38. Which is more proximal: metatarsals or tarsals? **Tarsals**

39. What is the difference between the tarsals and the talus? **The talus is one of the tarsals. Tarsals (ankle bones) include other bones – such as the calcaneus (and several that are not on your list).**

40. What is the easiest way to tell medial from lateral on the knee joint (model or cadaver)? **Find the fibula. All structures on that side will be lateral. REMEMBER: The fibula is located Laterally. [fibuLA=Lateral]**

41. What two bony structures does the lateral collateral ligament attach? **Femur and FibuLA**

42. Which of the collateral ligaments is larger (ie. is thicker/wider): medial or lateral? **Medial**

43. Can you see the anterior cruciate ligament from both the anterior and posterior side of the knee? **Yes**

44. Can you see the posterior cruciate ligament from both the anterior and posterior side of the knee? **No (at least not without trying really, really hard)**

45. On the posterior side, does the anterior cruciate ligament attach more on the medial or lateral side of the intercondylar fossa? **Medial**

46. The medial meniscus helps to pad which two bony regions? **Medial condyle of the femur and the medial condyle of the tibia**

47. Is the quadriceps femoris tendon more proximal or distal than the patellar ligament? **Proximal**

48. Is the quadriceps femoris tendon more superior or inferior than the patellar ligament? **Superior**

49. The patellar ligament attaches to the patella and which bony landmark on the tibia? **Tibial tuberosity**

50. From their anatomy, which of the cruciate ligaments is more likely to prevent the tibia from sliding anteriorly (or the femur sliding posteriorly)? **Anterior cruciate ligament**

**ABDOMEN**

51. Where is the xiphoid process? **The inferior projection of the sternum**

52. Based on their anatomy, will the abdominal muscles cause hip flexion? Why or why not? **No. The rectus abdominis does not cross the hip. [It produces forward bending at the waist due to its attachment points on the superior surface of the pubis (near the pubic symphysis) and the xiphoid process of the sternum.]**

53. List these muscles from superficial to deep: transversus abdominis, external abdominal oblique, internal abdominal oblique. **External abdominal oblique, internal abdominal oblique, transversus abdominis**

54. What does “oblique” mean? **On a slant or at an angle** What does “rectus” mean? **Straight**

55. Starting from the midline, which abdominal muscle fibers run: **a. superior-laterally External abdominal oblique**

- infero-laterally Internal abdominal oblique
- c. vertically Rectus abdominis
56. What function do all of the deep muscles of the hip have in common (i.e., piriformis, gemellus superior, obturator internus, gemellus inferior, quadratus femoris)? **External rotation (aka - lateral rotation) of the hip/thigh**

57. What can be a way to tell the difference between piriformis and gemellus superior? **The sciatic nerve usually emerges between these two muscles**

58. What is the common origin for all three gluteal muscles? **Ilium**

59. Which of the gluteal muscles does not insert on the greater trochanter? **Gluteus maximus**

60. How does the size/shape/location of the greater trochanter help with rotation? **By being further from the central axis of the femur more torque is generated (the longer lever arm makes it easier to turn the bone)**

61. Do you think the muscles doing lateral rotation of the hip are more likely to originate from the anterior or posterior side of the ischium? Why? **Posterior. A muscle attached to the anterior side would cause medial rotation.**

62. Where does “quadratus femoris” get its name? **Four-sided muscle that is near the femur**

63. Which thigh is showing hip extension (A, B, C, D, or E)? **B**

   Give four muscles that contribute to hip extension: **Gluteus maximus, Biceps femoris: long head, Semimembranosus; Semitendinosus**

64. Which leg is showing an ABducted hip (A, B, C, D, or E)? **C**

   Give two muscles that contribute to abduction of the thigh: **Gluteus medius, Gluteus minimus**

65. What hip action is being shown in figure A? **Flexion**

   What muscle is primarily causing this action? **Iliopsoas**

66. What hip action is being shown in figure E? **Adduction**

   Give four muscles that contribute to this hip action: **Gracilis, Adductor longus, Adductor brevis, Adductor magnus**
67. Where does ‘iliotibial band’ get its name? **It extends from the ilium to the tibia**
   Is it on the medial or lateral side of the thigh? **Lateral**
68. Which is more superficial: adductor longus or adductor brevis? **Adductor longus**
69. Are the hamstring muscles found on the more posterior or anterior side of the thigh?
   **Posterior**
70. Which two hamstring muscles are found on the lateral side? **Biceps femoris: long and short heads**
71. Which two hamstring muscles are found on the medial side? **Semitendinosus, Semimembranosus**
72. Which is more superficial: semitendinosus or semimembranosus? **Semitendinosus**
    **REMEMBER: SemiTendinosus is on Top.**
73. Three of the four hamstring muscles originate from which bony landmark? **Ischial tuberosity**
74. Which single hamstring muscle does not share this origin? **Biceps femoris: short head**
    **What is different about the action of this muscle from the other three? It does not assist with hip extension.**
    **Why? It does not cross the hip (its origin is on femur, not the ischial tuberosity)**
    **What action do all four hamstring muscles share?** **Knee flexion**
75. All of the heads of the quadriceps femoris muscle have what common function? **Knee extension**
    **What common insertion do they share?** **Tibial tuberosity**

**LEG/FOOT**

76. Both the flexor hallucis longus and extensor hallucis longus insert on which bone? **1st phalanx**
77. What does that tell you about the word “hallucis”? **It is the 1st phalanx (or great toe)**
78. Why do both the soleus and gastrocnemius cause plantar flexion? **They run down the posterior aspect of the leg and insert on the calcaneus. With contraction the calcaneus is pulled towards the origination causing plantar flexion.**
79. Why does only the gastrocnemius cause knee flexion but soleus does not? **Gastrocnemius crosses the knee (it has an origination on the condyles of the femur) while soleus does not cross the knee**
80. Just based on the name, would you expect fibularis longus to be on the medial or lateral side of the leg? **Lateral. REMEMBER the fibula is LAteral.**
81. What is unusual about the arrangement of flexor hallucis longus and flexor digitorum longus (muscle location vs. insertion location)? **The tendons cross and the muscle bellies are located on opposite sides as compared to what the names suggest (I.e., the great toe is on the medial side of the foot, but the flexor hallucis longus is lateral to flexor digitorum longus)**
82. Would the tendons that pass under the extensor retinaculum be from muscles on the anterior or posterior side of the leg? **Anterior**
83. Flexor hallucis brevis is not on our list, but where do you think it would be located? **In the foot (intrinsic muscle); on the plantar (sole) side**
84. Is tibialis posterior superficial or deep to soleus? **Deep**
85. Is soleus superficial or deep to gastrocnemius? **Deep**
86. Do the tendons for flexion of the toes pass through the plantar or dorsal side of the foot? **Plantar side**
87. What is the action shown:
   a. in A: **Dorsiflexion**
   b. in B: **Plantar flexion**
   c. in C: **Eversion**

88. What is a common insertion for the two muscles that cause action B? **Calcaneus**

89. Are the muscles that cause action C on the anterior, posterior, medial, or lateral side of the leg? **Lateral**

90. Besides tibialis anterior, what two muscles on your list might be able to help with action A? **Extensor hallucis longus, extensor digitorum longus**