CHAPTER 2: KINEMATIC CONCEPTS FOR ANALYZING HUMAN MOTION

1. Which of the following is not an example of a sagittal plane movement?
   A. flexion
   B. hyperextension
   C. lateral flexion
   D. plantar flexion

2. The cardinal frontal plane divides the body into equal _____.
   A. right and left halves.
   B. front and back halves.
   C. top and bottom halves.
   D. medial and lateral halves.

3. Movements in the transverse plane occur around which axis?
   A. mediolateral
   B. anteroposterior
   C. longitudinal
   D. horizontal

4. Elbow extension takes place in what plane?
   A. sagittal
   B. frontal
   C. transverse
   D. longitudinal

5. Abduction takes place around which axis?
   A. anteroposterior
   B. mediolateral
   C. longitudinal
   D. horizontal

6. A dancer performs a pirouette in which plane?
   A. sagittal
   B. frontal
   C. transverse
   D. longitudinal

7. Which of the following statements is false?
   A. the hip is distal to the knee
   B. the shoulder is superior to the hip
   C. superficial muscles are closer to the skin than deep muscles
   D. the triceps are posterior to the biceps
8. Nodding the head “yes” occurs in which plane?
A. sagittal
B. frontal
C. transverse
D. oblique

9. Most human movement falls into which category?
A. rectilinear
B. curvilinear
C. angular or rotational
D. general

10. Which of the following terms best describes translational motion along a curved line?
A. rectilinear
B. curvilinear
C. rotational
D. general

11. Which of the following categories of motion is mutually exclusive with each of the others?
A. translational motion
B. rectilinear motion
C. curvilinear motion
D. rotational motion

12. Which of the following motions occurs primarily in the sagittal plane?
A. running
B. a cartwheel
C. a pirouette
D. all of the choices are correct

13. Which of the following motions occurs primarily in the frontal plane?
A. running
B. cartwheel
C. pirouette
D. all of the choices are correct

14. Abduction occurs in which plane?
A. sagittal
B. frontal
C. transverse
D. it depends on the action being performed
15. Primarily in which plane does the swinging of a baseball bat occur?
   A. sagittal  
   B. frontal  
   C. transverse  
   D. obtuse

16. Which of the following limb movements occur during "jumping jacks”?
   A. flexion and abduction  
   B. extension and adduction  
   C. flexion and extension  
   D. adduction and abduction

17. Which imaginary cardinal plane bisects the body into right and left halves?
   A. sagittal  
   B. frontal  
   C. transverse  
   D. none of the above

18. During the preparatory phase for an underhand softball pitch, the hand holding
   the ball is drawn behind the body prior to the forward swing of the arm. When the
   hand is drawn behind the body, which of the following movements occurs at the
   shoulder?
   A. flexion  
   B. extension  
   C. hyperextension  
   D. circumduction

19. In which of the following planes does a forward roll occur?
   A. sagittal  
   B. frontal  
   C. transverse  
   D. oblique

20. Which of the following are transverse plane movements at the shoulder?
   A. horizontal abduction  
   B. medial rotation  
   C. both horizontal abduction and medial rotation  
   D. none of the choices are correct

21. Which of the following terms means “farther from the head”?
   A. distal  
   B. proximal  
   C. superior  
   D. inferior
22. Which of the following is/are examples of superficial muscle(s)?
   A. biceps
   B. triceps
   C. gastrocnemius
   D. all of the choices are correct

23. Which of the following describes the knee joint relative to the ankle joint?
   A. distal
   B. proximal
   C. medial
   D. lateral

24. Which of the following terms would accurately describe the biceps muscle?
   A. anterior
   B. posterior
   C. medial
   D. lateral

25. Which of the following is/are true regarding anatomical reference position?
   A. palms face forward
   B. erect posture
   C. starting position for describing motion
   D. all of the choices are correct

26. In anatomical position what is the position of the elbow?
   A. 180°
   B. 0°
   C. need more information
   D. none of the choices are correct

27. Foot pronation occurs at which joint?
   A. ankle
   B. subtalar
   C. both the ankle and the subtalar
   D. pronation does not occur in the foot

28. Internal rotation is synonymous with which of the following?
   A. medial rotation
   B. lateral rotation
   C. external rotation
   D. none of the choices are correct
29. In anatomical position, the forearm is in what position?
A. pronated
B. supinated
C. flexed
D. abducted

30. Which of the following is true regarding horizontal adduction?
A. also called horizontal flexion
B. occurs in the transverse plane
C. it is also called horizontal flexion and it occurs in the transverse plane
D. none of the choices are correct

31. Which of the following is true regarding circumduction?
A. combines flexion, extension, adduction, and abduction
B. synonymous with rotation
C. circumduction both combines flexion, extension, adduction, and abduction and is synonymous with rotation.
D. none of the choices are true

32. Which is true about the Cartesian coordinate system?
A. It is a special reference system used by biomechanists.
B. It can be used to describe two-dimensional or three-dimensional motion.
C. It is both a special reference system used by biomechanists and it can be used to describe two-dimensional or three-dimensional motion.
D. none of the choices are correct

33. In two-dimensional Cartesian coordinate systems, what unit is used for the vertical axis?
A. x
B. y
C. z
D. any of the above can describe the vertical axis

34. Which of the following units is unique to three-dimensional Cartesian coordinate systems (i.e. do not exist in 2-D systems)?
A. x
B. y
C. z
D. all of the above are unique to 3-D systems

35. Which view is best for observing normal human gait?
A. side view
B. front view
C. back view
D. does not matter
36. Which of the following could be defined by a movement analyst as a mechanical system?
A. entire human body  
B. right arm  
C. projected ball  
D. all of the choices are correct

37. In anatomical position, what term describes the radius relative to the ulna?
A. medial  
B. lateral  
C. posterior  
D. anterior

38. What term is used to describe the motion of bringing the foot closer to the lower leg?
A. flexion  
B. extension  
C. dorsiflexion  
D. plantar flexion

39. Which of the following is a linear movement in the frontal plane?
A. shoulder adduction  
B. shoulder girdle elevation  
C. shoulder flexion  
D. both shoulder adduction and shoulder girdle elevation

40. Shaking the head “no” involves which of the following movements?
A. lateral and medial rotation  
B. left and right rotation  
C. internal and external rotation  
D. all of the above are correct