***Basic Biomechanics, 8e* (Hall)**

**Chapter 1 What Is Biomechanics?**

1) Which of the following is the most appropriate definition of biomechanics?

A) the study of human movement

B) the study of biological organisms

C) the study of movement mechanics

D) the study of the mechanical aspects of biological organisms

2) Which of the following terms is applied to the study of systems in a constant state of motion?

A) statics

B) dynamics

C) anthropometrics

D) plyometrics

3) What term is given to considerations such as the size, shape, and weight of body segments?

A) cybernetic

B) anthropometric

C) kinematic

D) kinetic

4) Which of the following is an example of a static situation?

A) a cyclist riding at a constant velocity

B) a person balancing motionless on one foot

C) both a cyclist riding at a constant velocity and a person balancing motionless on one foot

D) neither a cyclist riding at a constant velocity nor a person balancing motionless on one foot

5) Which of the following are anthropometric factors?

A) the length of a forearm

B) the shape of a body

C) the weight of the trunk

D) all of these answers are correct

6) Which of the following is included in sports medicine?

A) clinical aspects of exercise and sport

B) scientific aspects of exercise and sport

C) both clinical aspects of exercise and sport and scientific aspects of exercise and sport

D) neither clinical aspects of exercise and sport nor scientific aspects of exercise and sport

7) Biomechanics has roots in which of the following disciplines?

A) physics

B) biology

C) both physics and biology

D) neither physics nor biology

8) Which of the following questions about the long jump should be answered quantitatively?

A) What is the horizontal velocity at take-off?

B) What is the angle at take-off?

C) Both what is the horizontal velocity at take-off? and what is the angle at take-off?

D) Neither what is the horizontal velocity at take-off? nor what is the angle at take-off?

9) Which of the following characterizes a formal problem?

A) a goal or answer

B) a set of given information

C) a set of operations that can be used to arrive at the desired answer from the given information

D) all of these answers are correct

10) What does the word qualitative mean?

A) general

B) numerical

C) pertaining to quality

D) all of these answers are correct

11) Which of the following statements is true regarding qualitative analysis?

A) It is always of a general nature.

B) It does not involve the use of numbers.

C) Both it is always of a general nature and it does not involve the use of numbers.

D) Neither it is always of a general nature nor it does not involve the use of numbers.

12) Which of the following professionals regularly make use of qualitative observations?

A) teachers

B) coaches

C) clinicians

D) all of these answers are correct

13) Which of the following are components of a structured approach to problem solving?

A) writing down the given information

B) drawing a diagram representing the problem situation

C) rereading the problem to look for additional information that may be inferred from the problem statement

D) all of these answers are correct

14) Which of the following countries uses the metric system?

A) France

B) Germany

C) Japan

D) All of these answers are correct

15) Which of the following conversions is accurate?

A) 2.54 cm = 1 in

B) 2.54 in = 1 cm

C) 4.45 lb = 1 N

D) None of these answers is correct

16) Which of the following is an example of equipment designed to enhance performance?

A) Klapskate

B) Aerodynamic helmet

C) Both klapskate and aerodynamic helmet

D) None of these answers is correct

17) Biomechanical research has contributed to which of the following?

A) injury prevention

B) enhanced sport performance

C) equipment design

D) all of these answers are correct

18) Which of the following could be performed by a biomechanist?

A) quantitative analysis of human movement

B) qualitative analysis of human movement

C) both quantitative analysis of human movement and qualitative analysis of human movement

D) none of these answers is correct

19) Which type of analysis involves identifying, analyzing and answering a question of interest?

A) quantitative

B) qualitative

C) both quantitative and qualitative

D) none of these answers is correct

20) Choose the term or phrase that is not synonymous with the others.

A) Metric system

B) English system

C) International system of units

D) S. I.

21) What is the base unit for mass in the metric system?

A) newton

B) kilogram

C) meter

D) slug

22) Which of the following is true regarding mechanics?

A) branch of physics

B) analyzes the actions of forces on particles

C) both branch of physics and analyzes the actions of forces on particles

D) none of these answers is correct

23) Which of the following defines inference?

A) the process of elimination

B) the process of forming deductions from available information

C) the process of observation in a qualitative analysis

D) none of these answers is correct

24) Astronauts who travel out of the earth's gravitational field have experienced which of the following?

A) increased bone density

B) reduced strength

C) both increased bone density and reduced strength

D) none of these answers is correct

25) Which of the following affects the flight of a discus?

A) speed at release

B) projection angle

C) orientation angle relative to the wind

D) all of these answers are correct

26) The high incidence of knee injuries among snow skiers is partially due to which of the following?

A) rigid boot which limit ankle motion

B) bindings which release during a fall

C) both rigid boot which limit ankle motion and bindings which release during a fall

D) none of these answers is correct

27) Choose the term that describes the application of mechanical principles in the study of living organisms.

A) biomechanics

B) dynamics

C) English system

D) kinematics

28) Choose the term that describes the branch of mechanics dealing with systems in a constant state of motion.

A) quantitative

B) sports medicine

C) statics

D) tennis elbow

29) Choose the term that describes the branch of mechanics dealing with systems subject to acceleration.

A) biomechanics

B) dynamics

C) English system

D) kinematics

30) Choose the term that describes the study of the description of motion, including considerations of space and time.

A) dynamics

B) English system

C) kinematics

D) kinesiology

31) Choose the term that describes the study of the action of forces.

A) kinetics

B) mechanics

C) metric system

D) qualitative

32) Choose the term that describes the study of human movement.

A) kinesiology

B) mechanics

C) metric system

D) qualitative

33) Choose the term that describes "involving the use of numbers."

A) quantitative

B) sports medicine

C) statics

D) tennis elbow

34) Choose the term that describes "involving a nonnumeric description of quality."

A) qualitative

B) sports medicine

C) statics

D) tennis elbow

35) Choose the term that describes the system of weights and measures used internationally in scientific applications.

A) kinetics

B) mechanics

C) metric system

D) qualitative

36) \_\_\_\_\_\_\_\_ refers to an excessive loss of bone mineral mass and strength resulting in one or more fractures.

37) The branch of biomechanics which studies the actions of forces is called \_\_\_\_\_\_\_\_.

38) A field that focuses on the prevention of work-related injuries and the improvement of working conditions and worker performance is known as \_\_\_\_\_\_\_\_ biomechanics.

39) Sport shoes are designed to prevent \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_ and enhance \_\_\_\_\_\_\_\_.

40) List four innovations in sport equipment developed by biomechanists.

41) Explain how equipment innovation has improved performance and/or prevented injury.

42) Name three professions related to kinesiology and explain how each will benefit from a knowledge of biomechanics.

43) Explain the difference between qualitative and quantitative problems and give an example of each one that is related to a kinesiology topic.

44) Within the fields of kinesiology and exercise science, the living organism most commonly of interest to the biomechanist is the human body.

45) The kinetics of an exercise or sport skill execution is commonly known as form or technique.

46) Force can be thought of as a push or a pull acting on a body.