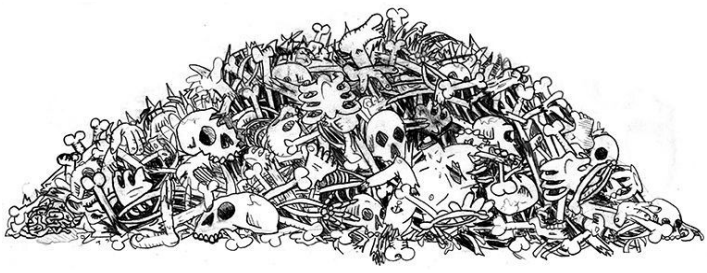
SSSS

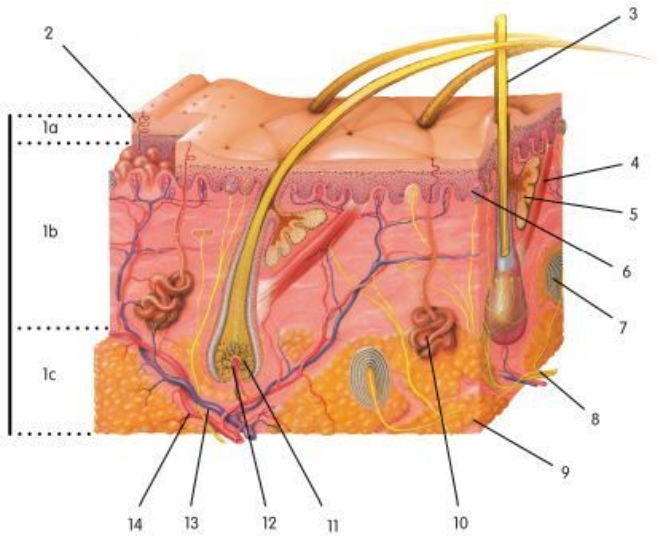
Anatomy & Physiology

2020-2021



Integumentary system:

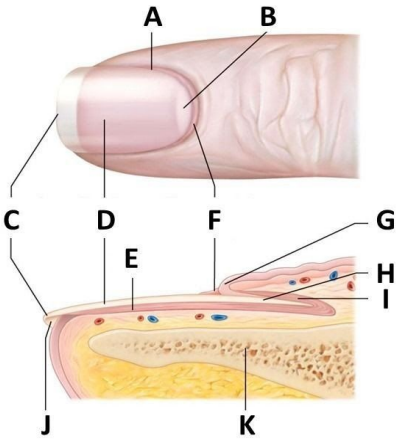
Label this skin diagram:



11 and 12 are the same thing

1a)	3)	7)	11)
1b)	4)	8)	12)
1c)	5)	9)	13)
2)	6)	10)	14)

2) Label this diagram:



A)	B)	C)	D)
E)	F)	G)	H)
I)	J)	K)	

3) Cold sensory receptors begin to give off sensations when the skin surface temperature goes below ___ degrees (Fahrenheit) and is most simulated at ___ degrees (Farenheit).

a) 98, 55
b) 95, 65
c) 95, 77
d) 93, 65

4) Hives are called _____.
   a) Hirsutism
   b) Urticaria
   c) Ecchymosis
   d) Cicatrix

5) Babies are born with _____ hair.
   a) Terminal
   b) Lanugo
   c) Vellus
   d) Non- terminal

6) ABCDE is used to separate cancer from other skin disorders. What does it stand for?
   a) Asymmetry, border, color, diameter, evolving
   b) Acute, bordering, contrast, developing, element
   c) Alkaline, border, congested, dilation, exercise
   d) Asymmetry, border, contrast, diameter, exercise

7) When does the changing of vellus hair into terminal hair begin?
   a) 6 months into pregnancy until childbirth
   b) Two months after childbirth
   c) During puberty
   d) After puberty

8) You begin to feel numb when the surface of your skin is at what temperature?
   a) 57 degrees Fahrenheit
   b) 48 degrees Fahrenheit
   c) 32 degrees Fahrenheit
   d) 41 degrees Fahrenheit

9) Match the following receptors to the motion they detect:

Meissner's corpuscles	A) Deep pressure and high frequency vibration
Pacinian corpuscles	B) Stretch
Merkle's disk	C) Fine touch and low-frequency vibrations
Ruffini endings	D) Light touch

10) How thick is the epidermis?
   a) 0.1 mm
   b) 1 mm
   c) 0.5 cm
   d) 1 cm

11) In which layer of your epidermis are merkel cells found?
   a) Stratum corneum
   b) Stratum lucidum
   c) Stratum granulosum
   d) Stratum spinosum
   e) Stratum basale

12) Where in the hair follicle does pigmentation and hair growth first occur?
a) Germinal matrix
b) Cuticle
c) Cortex
d) Medulla

13) What kind of surgery is most effective on a squamous cell carcinoma?
a) Curettage & electrodessication
b) MOHs surgery
c) Cryosurgery
d) Laser surgery

14) What is white hair caused by?
a) Decrease in melanin
b) Decrease in tyrosinase
c) Accumulation of air bubbles in the medullary shaft
d) Decrease in melanocytes

15) What do proprioceptors detect?
a) Pain
b) Change in muscle and tendon length
c) Tickles
d) Pressure

16) Which of the following types of skin cancer is the most fatal?
a) Basal cell carcinoma
b) Squamous cell carcinoma
c) Merkel cell carcinoma
d) Melanoma

17) What chemical in poison ivy causes a rash?
a) Glycolic acid
b) Phorbol
c) Diterpene
d) Urushiol

18) A patient's posterior torso, posterior left leg and entire left arm was burned while attempting to put out a fire. What percentage of his body is burned?
a) 18%
b) 27%
c) 31.5%
d) 36%

19) What are small rounded purple/red spots that are 1-2mm in size due to bleeding under the skin called?
a) Petechiae
b) Purpura
c) Hematoma
d) Hemorrhages

Answer questions 20-32 using the following images

20) What skin infection is image A? List 3 symptoms and one treatment using medication.

21) What disease is shown in image B? What type of that disease? List two specific drugs used to treat this disease.

22) What bacteria can cause this type of infection shown in image C? What is another term for this infection?

23) What is this rash in image D caused by? List three possible causes.

24) What is the main difference in appearance between image E and eczema?

25) In what area of the body does the disease in image F occur the most often? Can it be cured?

26) What is the condition in image G usually a response to? Can insects cause this? If so, what type of insect? What type of disease is this? (Viral, chronic, bacterial, autoinflammatory… etc)

27) How is the disease in image H usually transmitted? Can they go away without treatment?

28) List two types of bacteria that can cause the infection shown in image I. In what age group does this infection appear most often?

29) What is the name of the disease in image J? What is it also called? Is it contagious? Explain why.

30) What type of infection is shown in image K? What can happen if this is not treated?

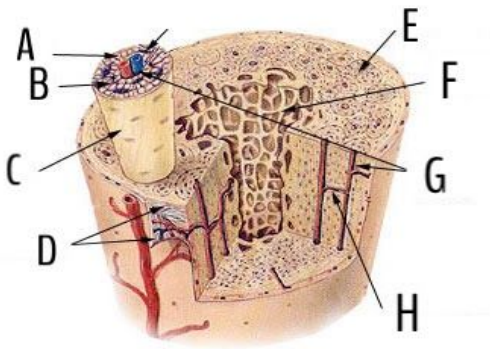
31) What purpose does a desmosome serve? (Select all that apply)
   a) Provide stronger adhesions between cells
   b) Synthesize extracellular matrix and collagen
   c) Give mechanical strength to tissues
   d) Play a critical role in healing

32) What can the failure of a desmosome's function lead to? (Select all that apply)
   a) Skin disease
   b) Heart disease
   c) Nail disease
   d) There is no effect

33) What are stretch marks also called?
   a) Cleavage lines
   b) Fold marks
   c) Wrinkles
   d) Striae

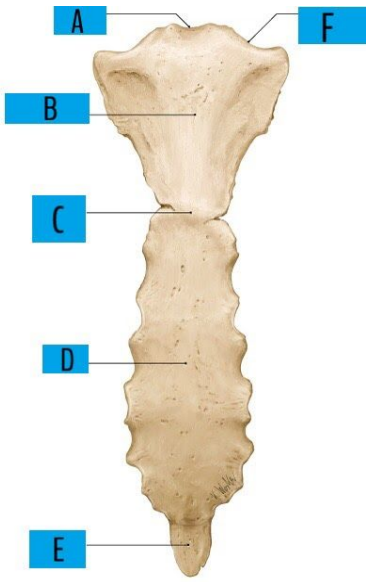
Skeletal system:

34) Label the cross section of a bone:



A)	B)
C)	D)
E)	F)
G)	H)

35)



36) List these given bones from largest to smallest given their length: **Fibula, ulna, sternum, femur, 7th rib, 8th rib, tibia, humerus, radius**

37) What type of bone cyst commonly occurs in large bones near the growth plate?

a) Nonossifying fibromas
b) Unicameral bone cyst
c) Fibrous cortical defects
d) Aneurysmal bone cyst

38) Why is a Gadolinium based liquid injected into your body before an MRI?

a) To clear out your bladder
b) To lessen the radiation
c) To improve the quality of the scan
d) To soften the tissues inside your muscle

39) What bones are formed through intramembranous ossification?

a) Flat bones of the skull, scapula, and clavicles
b) Ribs, sternum and clavicles
c) Flat bones of the skull, mandible and clavicles
d) All the bones in the body except the flat bones of the skull

40) Rickets is a syndrome caused by _____, it is most commonly found in _____.

a) Lack of magnesium; children
b) Overdose of vitamin D; ederly men
c) Lack of vitamin D; children
d) Overdose of magnesium; elderly women

41) What ingredient in cola has been shown to be the cause of osteoporosis?

a) Caffeine

b) High fructose corn syrup
c) Phosphoric acid
d) Iron

42) When blood calcium levels rise, PTH levels:
a) Rise
b) Lower
c) Stays the same
d) Rises then lowers

43) The prepatellar bursa in your knee is located :
a) In the synovial cavity
b) Between the patella and the femur
c) Before the patellar ligament
d) In front of/outside the patella

44) How many pounds of pressure does it take to fracture the skull?
a) 520
b) 102
c) 6
d) 378

45) What type of joint is the temporomandibular joint?
a) Ball and socket
b) Pivot
c) Planar
d) Ginglymoarthrodial

46) A fissure is a:
a) Narrow slit through a bone through which blood vessels and nerves pass
b) A prominent but narrow ridge raising off a bone
c) A cavity within a bone, air filled and lined with a mucous membrane
d) A tube-like passageway through a bone

47) Appositional growth is growth in _____ while interstitial growth is growth in _____.
a) Width; length
b) Length; width
c) Adults; children
d) Cartilage; membrane

48) How many bones are in the human hand (including the wrist)?
a) 24
b) 108
c) 54
d) 32

49) Bone injuries in what part of your body occur the most often?
a) Arms
b) Legs

c) Head
d) Back

50) How long do bones last until a brittle mineral frame is left behind after death?
a) 50 years
b) 80 years
c) 100 years
d) Bones don't break down

51) What effect does childbirth have on the mother's pelvic girdle?
a) It increases the width of the pelvic girdle
b) It leaves grooves on the pelvic girdle
c) It displaces the pelvic girdle
d) It inflames the pelvic girdle

52) What is the purpose of fontanels?
a) Give flexibility to the skull during childbirth
b) Connect the bones of the skulls
c) Ossification center for cranial bones
d) Give the skull more strength

53) Male skulls are _____ while female skulls are _____?
a) Larger and have a more pronounced mastoid process; rounder and have a less pronounced mastoid process
b) Larger and have a less pronounced mastoid process; rounder and have a more pronounced mastoid process
c) Rounder and have a more pronounced mastoid process; Larger and have a less pronounced mastoid process
d) Rounder and have a less pronounced mastoid process; Larger and have a more pronounced mastoid process

54) When does a baby's spine finish forming in his/her mother's womb?
a) 10-12 weeks
b) 4 weeks
c) 8 weeks
d) 21 weeks

55) In which of the following growth plate zones do chondrocytes undergo rapid mitosis?
a) Zone of reservation
b) Zone of maturation
c) Zone of ossification
d) Zone of proliferation

56) What is the main difference in the structure of your atlas and your axis?
a) The axis contains a spinous process and the atlas doesn't
b) The atlas contains a spinous process and the axis doesn't
c) The atlas contains a transverse foramen and the axis doesn't
d) The axis contains a transverse foramen and the atlas doesn't

Case Studies

57) Rita is a 16 year old female who has been recently diagnosed with osteoporosis. She has a very active lifestyle consisting of sports such as tennis and track. Rita has a habit of drinking soda and energy drinks due to her activity level, other than that she has a balanced diet. She has a family history of osteogenesis imperfecta but her body is producing normal amounts of collagen. She experiences frequent nose bleeds and has brittle discolored teeth. Based on the information given, what is most likely the reason Rita has been diagnosed with osteoporosis? What information supports your choice? What can be done to improve Rita's situation?

58) Joe was driving his car to work when he crashed his car into a delivery truck. His knee slammed against the dashboard of his car during the accident. Joe was sent to the hospital immediately and within hours, his knee became swollen. Shown below is his MRI scan. What is Joe's diagnosis? What surgery has to be done? Where from Joe can you find a material that is needed in the surgery?

59) Bob was playing basketball with his friends when the ball slipped out of his hand causing his pinky to bend outwards. He experienced extreme sudden pain and felt that his joint was unstable. His pinky began to swell and there was bruising around the area of pain. Bob also had a limited range of motion when he tried moving his pinky. What type of injury does Bob have? Can he use RICE as a treatment method? What does RICE stand for?

60) Harry went for a walk after dinner around his local park. It had been snowing the day prior and Harry happened to slip on some ice. Harry fell on his back and tried to get up using his arms for support. He fell once again and this time on his left arm. After getting an x-ray taken, it was determined that he had a subluxated shoulder joint. What is the difference between a subluxation and a dislocation? Which one is more severe and more painful? Does Harry need to undergo surgery?

61) Ruby is a 33 year old caucasian female. She smokes 2-5 cigarettes on a daily basis. After giving birth to her daughter who is now two years old, she has been experiencing immobility, swelling, and pain in her finger joints. She had symptoms similar to these prior to her daughter's birth and they improved during pregnancy. Ruby has also been losing some of her teeth. Her doctors took a sample of her synovial fluid and it came out pink. What disease does Ruby have? Is it chronic or acute? What does pink synovial fluid mean?

Identification: Identify the type of fracture/disease from questions 60 to 68 using the x ray images provided

62)

63)

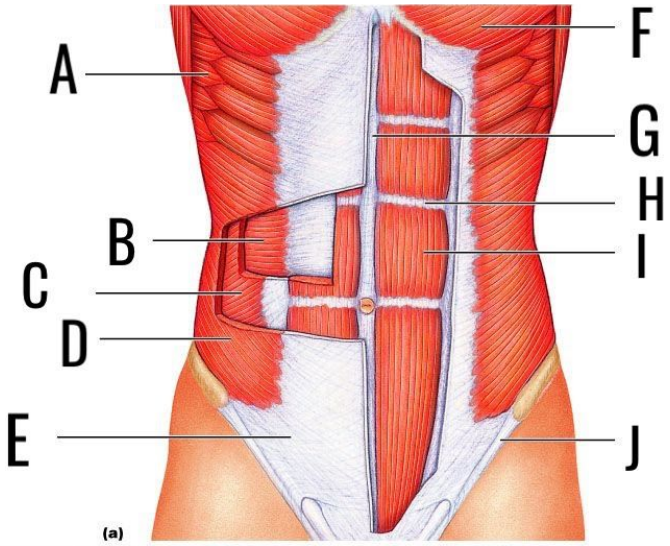
64) What bone is fractured?

65)

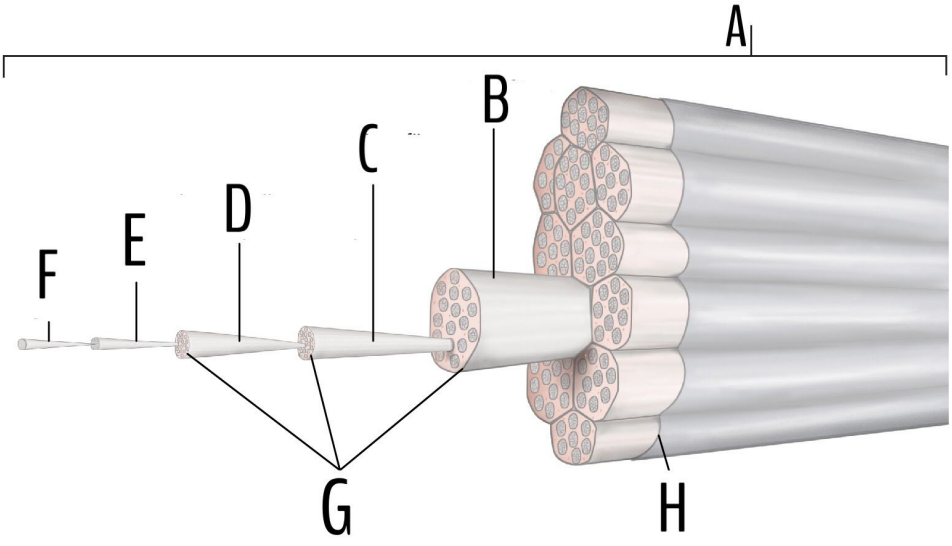
66)

Muscular system

67) Label this diagram:



68)



69) What do your quadriceps consist of?
   a) Rectus femoris, sartorius, vastus lateralis, vastus medialis
   b) Adductor longus, rectus femoris, gracilis, vastus medialis
   c) Rectus femoris, adductor longus, vastus intermedius, vastus lateralis
   d) Rectus femoris, vastus lateralis, vastus medialis, vastus intermedius

70) At what age do people begin experiencing sarcopenia? At what rate?
   a) Age 35; 3-5% per decade
   b) Age 30; 3-5% per decade
   c) Age 40; 3-5% per decade
   d) Age 45; 2-3% per year

71) What is the unhappy triad commonly referred to?
   a) A blown knee
   b) A dislocated hip
   c) A torn shoulder
   d) A strained ankle

72) What type of collagen fibers are tendons primarily composed of?
   a) Type I
   b) Type II
   c) Type III
   d) Type IV

73) What effect does endurance exercise have on muscles? (Select all that apply)
   a) Endurance exercises induce hypertrophy
   b) Causes muscles to produce more hemoglobin
   c) Causes the muscle to have more mitochondria
   d) Triggers angiogenesis

74) Where is myoglobin found in the muscle?
   a) Epimysium
   b) Perimysium
   c) Sarcoplasm
   d) Sarcoplasmic reticulum

75) What type of muscle fibers to sprinters usually have?
   a) Type I
   b) Type II
   c) Type IIX
   d) Type IX

76) What are elastic filaments made of?
   a) Myosin
   b) Actin
   c) Titin
   d) Troponin

77) Which of the following cells is a muscle forming stem cell?
a) Myoblast
b) Satellite cells
c) Pericytes
d) Astrocytes

78) What causes muscle fatigue?
a) Lack of fast twitch fibers
b) Build up of lactic acid
c) Lack of glycogen storage
d) Overproduction of ADP and buildup of pyruvic acid

79) Around how many hours after death does rigor mortis begin to develop?
a) 1-2 hours
b) 10-12 hours
c) 5-6 hours
d) 3-4 hours

80) What percentage of your muscle contains water?
a) 55%
b) 60%
c) 75%
d) 80%

81) Hypertrophy is a result of _____.
a) An increase in myofibrils thereby increasing the thickness of muscle fibers
b) A lengthened and more developed sarcoplasmic reticulum
c) A decrease in glycolytic storages around the muscle
d) An increase in both length and width of the sarcomere

82) What type of muscle fibers do old people possess more of?
a) FG
b) SO
c) FO
d) SG

83) The muscles of a professional sprinter are most likely to have _____.
a) 80 percent fast-twitch muscle fibers and 20 percent slow-twitch muscle fibers
b) 20 percent fast-twitch muscle fibers and 80 percent slow-twitch muscle fibers
c) 50 percent fast-twitch muscle fibers and 50 percent slow-twitch muscle fibers
d) 40 percent fast-twitch muscle fibers and 60 percent slow-twitch muscle fibers

84) The muscles of a professional marathon runner are most likely to have _____.
a) 80 percent fast-twitch muscle fibers and 20 percent slow-twitch muscle fibers
b) 20 percent fast-twitch muscle fibers and 80 percent slow-twitch muscle fibers
c) 50 percent fast-twitch muscle fibers and 50 percent slow-twitch muscle fibers
d) 40 percent fast-twitch muscle fibers and 60 percent slow-twitch muscle fibers

85) Which aspect of creatine phosphate allows it to supply energy to muscles?
a) ATPase activity
b) Phosphate bonds
c) Carbon bonds
d) Hydrogen bonds

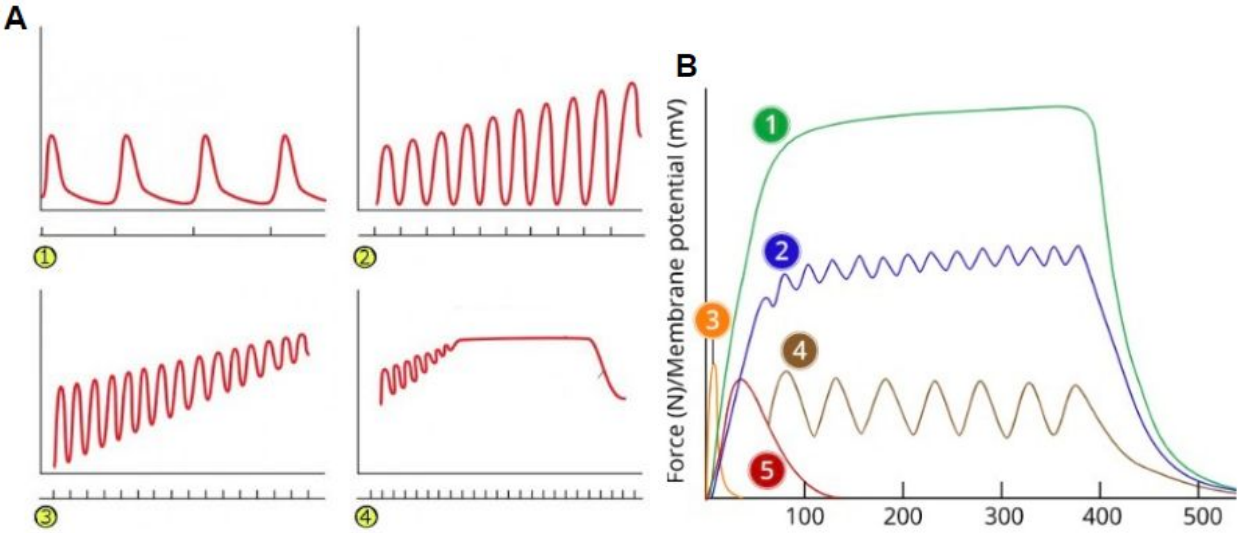
86) Where do most muscle tissue in the body arise from?
a) Embryonic endoderm
b) Embryonic ectoderm
c) Embryonic mesoderm
d) Embryonic mesoglea

87) When muscle cells die, they are _____.
a) Regenerated by myoblasts and still possess the contractile abilities as before
b) Regenerated by myoblasts and do not possess any contractile abilities
c) Replaced with adipose and connective tissue and still possess the contractile abilities as before
d) Replaced with scar tissue and do not possess any contractile abilities

88) Binding sites on actin open when:
a) ATP levels rise
b) Creatine phosphate levels rise
c) Calcium ion levels rise
d) Acetylcholine levels rise

89) Muscle relaxation occurs when:
a) Calcium ions are actively transported out of the sarcoplasmic reticulum
b) Calcium ions diffuse out of the sarcoplasmic reticulum
c) Calcium ions are actively transported into the sarcoplasmic reticulum
d) Calcium ions diffuse into the sarcoplasmic reticulum

For questions 90- 95 use the diagrams below.



90) **(DIAGRAM A)** What type of muscle contraction does image 1 show?
a) Treppe
b) Twitch

c) Tetanus
d) Incomplete tetanus

91) **(DIAGRAM A)** What type of muscle contraction does image 2 show?
a) Tetanus
b) Incomplete tetanus
c) Twitch
d) Treppe

92) **(DIAGRAM A)** What type of muscle contraction does image 3 show?
a) Incomplete tetanus
b) Tetanus
c) Treppe
d) Twitch

93) **(DIAGRAM A)** What type of muscle contraction does image 4 show?
a) Twitch
b) Treppe
c) Tetanus
d) Incomplete tetanus

94) **(DIAGRAM B)** Which number represents the stimulus?
a) 1
b) 2
c) 3
d) 4
e) 5

95) **(DIAGRAM B)** At about how many milliseconds (shown on the x axis) does the relaxation phase for line 1 begin? (Round to the nearest hundred)
a) 100 ms
b) 200 ms
c) 300 ms
d) 400 ms
e) 500 ms

For numbers 96- 101, write what kind of contraction (e.g isometric, eccentric, concentric) is required for that type of movement.

96) Bicep curls
97) Pushing a shopping cart
98) Lowering a barbell
99) Squats
100) Tree pose
101) Carrying grocery bags

Tie breakers:
A. What parts of your body are injured in the unhappy triad?

B. What does an MRI stand for?

C. Why is ATPase important during muscle contractions?