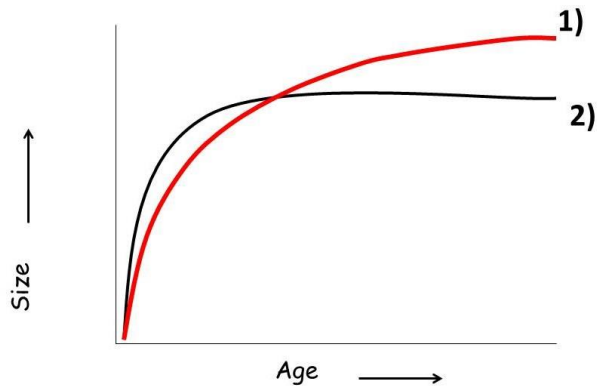


FT 211 Exam 3

1) Growth refers to a quantitative description of how long an organism has been alive

a. True

\*b. False



2)

From the figure above select the growth curve that represents fish growth

\*a. 1)

b. 2)

c. None of the above

3) All of the following are metrics for measuring fish Growth EXCEPT

a. Length

\*b. Wet Length

c. Wet Weight

d. Dry Weight

e. All of the above are metrics for measuring fish growth

4) Select the variable that does not have an effect on fish growth

a. Species of fish

b. Temperature

c. Food availability

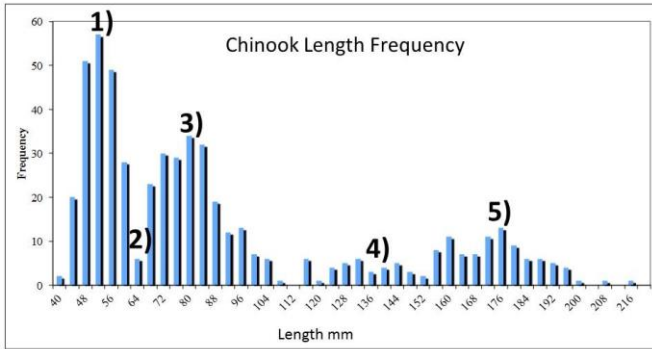
d. Genetics

\*e. All of the above have an effect on fish growth

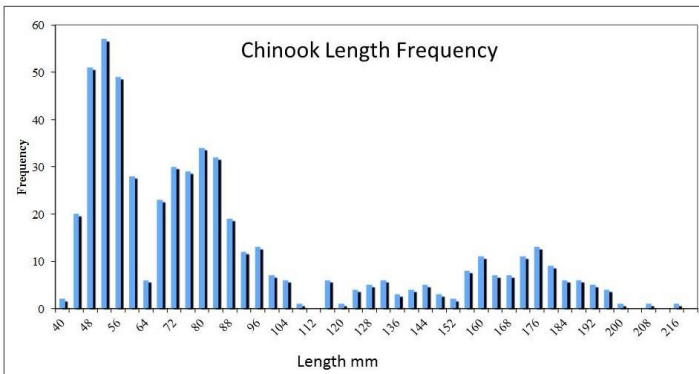
f. None of the above have an effect on fish growth

Type: E

5) List one of the three primary ways in which we can estimate growth in wild fish populations



- 6) From the above histogram identify the age 2 size class of Chinook Salmon
- 1)
  - 2)
  - \*c. 3)
  - 4)
  - 5)



- 7) From the above figure how large is the average size of an age 2 Chinook Salmon?
- 56mm
  - 72mm
  - \*c. 84mm
  - 104mm
  - 136mm
  - f. None of the above

- 8) One of the downfalls of mark recapture estimates is that you have to capture TONS of fish
- \*a. True
  - b. False

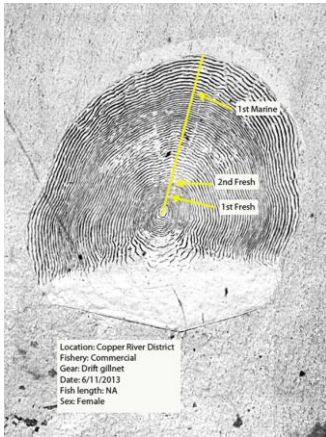
- 9) Tagging a fish and recapturing it can help you get an idea of the size of the population but will not tell you much about the growth of the fish
- a. True
  - \*b. False

- 10) One of the challenges with getting growth information from tagging is tag loss
- \*a. True

b. False

11) All of the following are examples of structures used for aging **EXCEPT**

- a. Scales
- b. Otoliths
- c. Cleithra
- d. Opercula
- \*e. Gill filaments
- f. Vertebrae
- g. Fin Rays

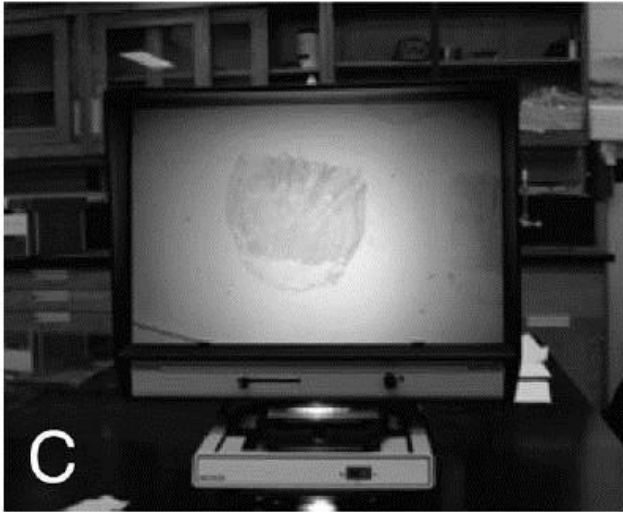


12) The above image is of a fish \_\_\_\_\_ used in determining age

- \*a. Scale
- b. Otolith
- c. Cleithra
- d. Opercula
- e. Gill filament
- f. None of the above

13) Fish grow faster in

- a. Summer and freshwater
- \*b. Summer and saltwater
- c. Winter and freshwater
- d. Winter and saltwater
- e. None of the above



14)

The above is an antiquated piece of reference or library equipment that is regularly used in age determination of salmon

- a. Slide projector
- b. Light table
- \*c. Microfiche machine
- d. Electron microscope
- e. None of the above

Type: E

15) In your own words describe what an Otolith is

Type: E

16) What structure could you use to age a shark (a Cartilaginous fish)? Explain

17) What could you use to age a clam or other Bivalve

- \*a. Shell
- b. Siphon
- c. Foot
- d. Eye stalk
- e. None of the above

Type: E

18) In your own words describe the difference between marking and tagging fish

19) All of the following are assumptions of tagging fish **EXCEPT**

- a. A tagged fish looks like a tagged fish
- b. Tagged fish keep tags
- c. Tagging doesn't alter behavior
- \*d. Tagging reduces growth
- e. None of the above

20) Tag retention is effected by all of the following **EXCEPT**

- a. Type of tag
- b. Attachment location
- c. Species being tagged
- d. Individual doing the tagging
- \*e. All of the above effect tag retention

21) Fin Clipping is considered an internal type of mark

- a. True
- \*b. False

22) Which of the following are considered Body Tissue Tagging

- a. Fin Clip
- b. Fin Punch
- c. Operculum Punch
- \*d. All of the above



23)

The above picture represents what type of tagging gun

- \*a. T-bar or Floy tag
- b. Transbody tag
- c. Carlin tag (or dangler tag)
- d. Spaghetti tag



24)

The above picture represents what type of tag

- a. Floy tag
- b. Peterson tag
- c. Carlin tag (or dangler tag)
- d. Spaghetti tag
- \*e. Jaw tag

25) One of the reasons that Jaw tags are used less is

- a. They are highly visible
- \*b. They can interfere with feeding
- c. They can cut fishing line
- d. They get snagged in nets

Type: E

26) List two methods for branding or 'scar marking' fish

27) One of the disadvantages of internal anchor tags is internal and external abrasions

- \*a. True
- b. False

28) Bismarck brown is an immersion dye that is tattooed onto fish

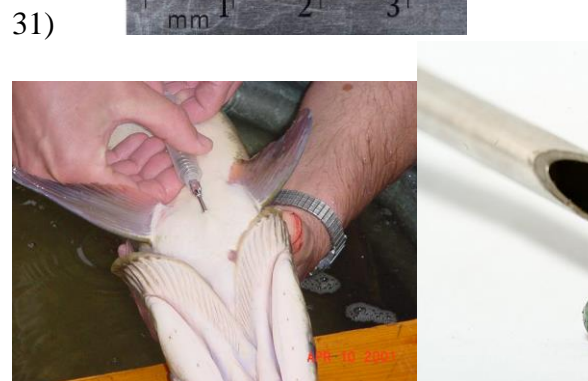
- a. True
- \*b. False

29) An internal tag that is Made of a bio-compatible material, Placed in non-obtrusive location, and is 10% of the host body weight....

- a. Should be made of a non-bio-compatible material so the fish doesn't dissolve the tag
- b. Should be placed in an obtrusive location so that the tag is obvious
- \*c. Should be reduced to 2% of the fish's body weight for implantation
- d. Should be placed in the fish



- 30)
- The above photo represents what kind of tag
- a. Visible implant tag (VIP)
  - \*b. Coded wire tag (CWT)
  - c. Passive integrated transponder tag (PIT)
  - d. Radio tag (VHF)



- The above photo represents what kind of tag
- a. Visible implant tag (VIP)
  - b. Coded wire tag (CWT)
  - \*c. Passive integrated transponder tag (PIT)
  - d. Radio tag (VHF)



- 32) The above photo represents what kind of tag
- \*a. Visible implant tag (VIP)
  - b. Coded wire tag (CWT)
  - c. Passive integrated transponder tag (PIT)
  - d. Radio tag (VHF)

33) Visible implant tags (VIP's) are planted on un-pigmented tissue and although internal, can be read externally

- \*a. True
- b. False

34) Which of the following tag is comprised of a computer chip and antenna in glass tube, is injected into the animal with a modified syringe, and can be read externally with a reading wand

- a. Visible implant tag (VIP)
- b. Coded wire tag (CWT)
- \*c. Passive integrated transponder tag (PIT)
- d. Radio tag (VHF)

35) Otoliths are typically marked in a hatchery setting to identify the hatchery of origin by which of the following techniques

- \*a. Thermal marking
- b. Chemical marking
- c. X-ray fluorescence marking
- d. Tetracycline marking
- e. None of the above

Type: E

36) Based on what you know of marking identify a technique that might work to mark a mermaid

37) \_\_\_\_\_ Observation refers to a group of observation techniques and is sometimes the best way to figure out what is happening in an aquatic system when other methods are not effective

- \*a. Direct
- b. Indirect
- c. Proxy



- d. Sample
- e. None of the above

38) Observation techniques can typically provide insight on all of the following EXCEPT

- \*a. Age
- b. Species Composition
- c. Distribution
- d. Abundance
- e. Behavior

39) One of the main limitations to observation techniques is

- a. Observation platform
- b. Length of observation
- c. Distance observations can be made from
- \*d. Water clarity or visibility
- e. None of the above

40) All of the following are biases of aerial surveys EXCEPT

- a. Type of aircraft
- b. Speed of aircraft
- \*c. Type of fuel used
- d. Altitude
- e. Individual surveying



41)

The above picture represents what kind of observation technique

- a. Stream Survey
- b. Fixed Weir
- c. Floating weir
- \*d. Counting Tower
- e. Remotely Operated Vehicle (ROV)



42)

In the above picture what is the purpose of the cable crossing above the water

- a. Power for the camp
- b. The umbilical for the ROV
- c. The radio receiver
- \*d. Lights for night counting
- e. None of the above



43)

The above picture represents what kind of observation tool

- \*a. Fixed weir
- b. Floating weir
- c. Counting Tower
- d. Stream strainer
- e. None of the above

44) In deep water flowing systems snorkelers or divers would typically move in which direction

- a. Upstream against current
- \*b. Downstream with current

45) The primary benefit to visual observations using SCUBA diving over snorkeling is

- a. Scuba diving is noisier than snorkeling
- b. You get to wear more equipment
- c. You can stay underwater longer
- d. You can reach deeper depths
- e. A & B

\*f. C & D

46) When snorkeling in moving water always tie a rope to the snorkeler

a. True

\*b. False



47)

The above picture represents what piece of observation equipment

\*a. Remotely operated vehicle (ROV)

b. Manned submersible

c. Autonomous Underwater Vehicle (AUV)

c. ALVIN

d. U 571



48)

In the above picture the diver is most likely are performing what kind of direct observation survey

a. Direct Enumeration

b. Mark-Recapture Estimate

\*c. Line Transect Estimate

d. Habitat Use Estimate

49) Biota is one of the three primary components in fisheries. Which of the following best describes Biota?

\*a. The living organisms in an ecosystem

b. The users and competitors of water

c. The environment in which an organism lives

d. Microscopic organisms living on fish

e. None of the above

50) Planning is an essential part of fisheries research, but not necessarily management

a. True

\*b. False

51) Improper planning will result in all of the following EXCEPT

a. Increase safety risks

b. Loss of time

\*c. Increase in productivity

c. Loss of time sensitive data

d. Waste of resources

52) Goals are narrow, precise, tangible, and concrete

a. True

\*b. False

Type: E

53) In your own words briefly define sample. (Why do we sample?)

54) Humans are the ones that manage and studied fisheries, we do not need to collect information on people themselves

a. True

\*b. False

55) The collection, analysis, interpretation, presentation, and organization of data is

a. Data analysis

b. Calculus

c. Data visualization

\*d. Statistics

e. none of the above

56) Databases are all of the following EXCEPT

a. Repositories of information

b. Logically organized

c. Facilitate retrieval of specific information

d. Provide for customized output reports

e. Relational

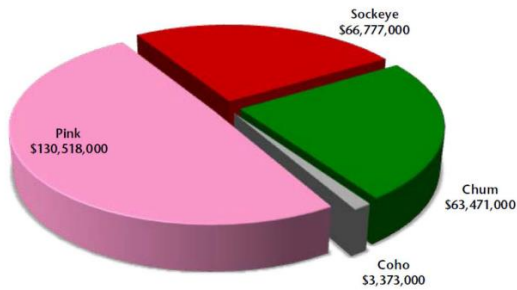
\*f. Databases are all of the above

57) Sorting data and looking for outliers is a common form of quality controlling data

\*a. True

b. False

Figure 3.4: Ex-Vessel Value of PWSAC Salmon by Species, 2007-2011 Total



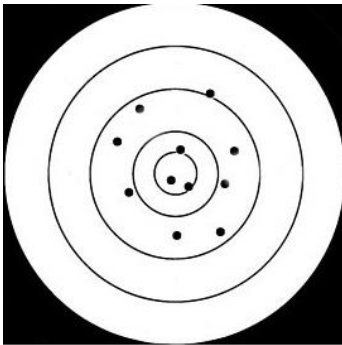
58)

The above image is what kind of graph?

- \*a. Pie chart
- b. Bar chart
- c. Histogram
- d. Scatter plot
- e. Line graph

59) All of the following are examples of qualitative data EXCEPT

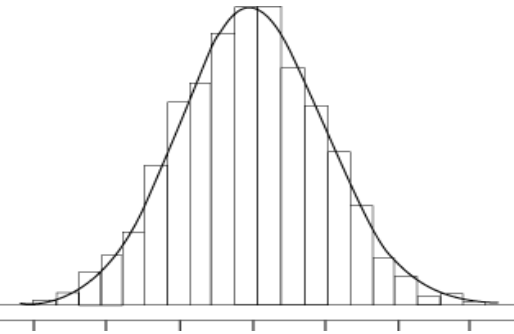
- a. Sex of fish
- \*b. Number of offspring
- c. Species of fish
- d. Life stage
- e. All of the above are qualitative data



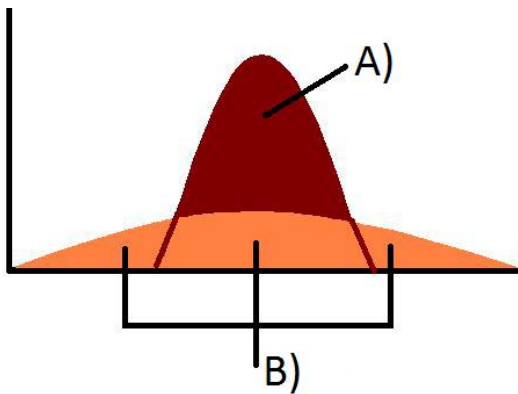
60)

The above image is an example of

- a. good accuracy, good precision
- \*b. good accuracy, bad precision
- c. bad accuracy, good precision
- d. bad accuracy, bad precision



- 61) Which term best describes the above data distribution
- \*a. normally distributed
  - b. Skewed Right
  - c. Skewed Left
  - d. Bimodal distribution
  - e. None of the above



- 62) In the above figure which data set has a larger Variance?
- a. A)
  - \*b. B)

- 63) Manipulating one variable and then looking for a response is an example of a Observational study
- a. True
  - \*b. False

- 64) Of the hazards in fisheries choose the one that is most hazardous to Biologists
- \*a. Airplane accident
  - b. Wildlife attack
  - c. Drowning
  - d. Electric Shock
  - e. Exposure

- 65) Accidents could have typically been avoided and are caused by a chain of errors that could have been broken
- \*a. True
  - b. False

66) Safety is the responsibility of

- a. Employee
- b. Supervisor
- c. Organization
- \*d. All of the above

67) Survival training often focuses on improvisation and the use of modified tools to create shelter, fire, and signaling devices

- \*a. True
- b. False

68) Float planning should be done

- a. When traveling offshore in a boat
- b. When going to be gone for multiple days
- c. When direct communication will be compromised
- \*d. Always
- e. None of the above



69)

The above picture is an example of what kind of a safety equipment that should be carried aboard most boats

- a. Handheld signaling device
- \*b. Emergency position indicating radio beacon
- c. Handheld VHF radio
- d. Aerial flare
- e. None of the above

70) The purpose of an emersion suit is to

- a. Provide additional floatation to the survivor
- \*b. provide additional thermal protection to the survivor
- c. provide a highly visible wearable suit to the survivor
- d. provide an abrasion and fire resistant suit to the survivor
- e. None of the above

71) Having and knowing where all of the following safety equipment is in the aircraft EXCEPT \_\_\_\_\_ is crucial to remaining safe

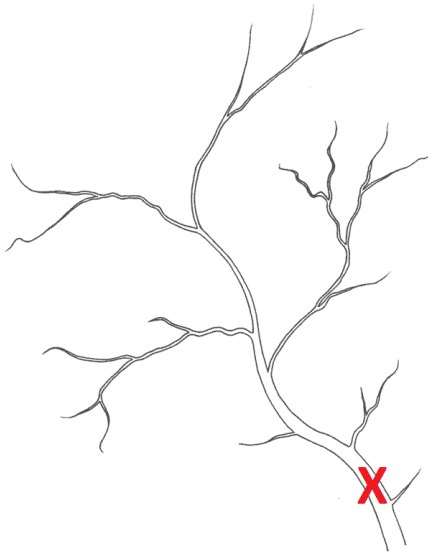
- a. Fire Extinguisher
- b. ELT
- c. Survival Equipment
- d. Electrical Shutoff Switch
- \*e. All of the above are crucial

72) When traveling in bear country the most important thing is

- a. Avoidance
- b. Keeping attractants away
- c. traveling in groups of 3 or more
- d. Understand Bear Behavior
- e. carrying a firearm
- \*f. All of the above are important

73) The most accurate way to identify a specific location on the ground is with

- \*a. GPS
- b. GIS
- c. Township and range coordinates
- d. Universal transverse mercator (UTM) coordinates
- e. none of the above

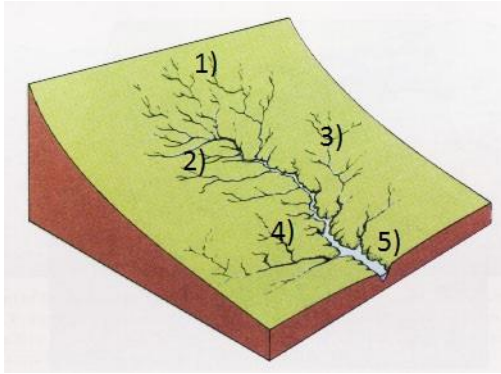


74)

Based on the stream order ranking we went over in class what is the order of the stream X

- a. 1
- b. 2
- c. 3
- \*d. 4
- e. 5





75)

Identify the location on the above figure where there would be a steep gradient river

- \*a. 1
- b. 2
- c. 3
- d. 4
- e. 5

76) In order to measure stream discharge you need to know

- a. flow and velocity
- b. flow and depth
- \*c. velocity and depth
- d. gradient and flow
- e. None of the above

77) The reason care and handling of fish is important is because?

- \*a. It can reduce unnecessary harm and mortality to fish
- b. Fish are slippery and special techniques are necessary to hang on to them
- c. Fish slime is harmful to humans and we need to know what proper PPE is necessary
- d. All of the above

78) The following statement about permits is true

- a. There are numerous agencies that issue permits related to fish and fish sampling
- b. Permits need to be applied for well in advance of sampling
- c. Multiple permits may be necessary depending on the type of sampling, location, and organism sampled
- \*d. All of the above



79)

When collecting fish, shellfish, or aquatic plants not otherwise covered by a sport, personal use, commercial, or aquatic farm license a \_\_\_\_\_ permit is necessary.

- a. IACUC Permit
- \*b. ADF&G Fish Resource Permit

- c. ADF&G Fish Transport Permit
- d. US FWS Endangered Species Permit
- e. All of the above



80)

Which of the following are TRUE about stress in fish. Select all that apply.

- a. Stress is defined as an inability to maintain normal physiological state
- b. Stress reduces survival & the ability to handle other stressors
- c. Stress is caused by handling, the environment and water quality and crowding
- d. Some species are more susceptible to stress than others
- \*e. All of the above



81)

Which of the above pictures is the most correct way to handle a fish

- \*a. 1)
- b. 2)
- c. 3)
- d. 4)

82) As water temperature increases oxygen solubility (waters capacity to hold oxygen)\_\_\_\_\_

- a. Increases
- \*b. Decreases
- c. Stays the same
- d. Fish have gills they don't need oxygen
- e. None of the above

83) The fish anesthetic that is comprised of a white powder and is a carcinogen is

- \*a. MS-222
- b. Clove Oil
- c. Benzocaine
- d. Lidocaine
- e. Ketamine hydrochloride

84) Euthanasia is \_\_\_\_\_.

- a. A way to fix or preserve fish for study later
- b. A way to anesthetize fish
- \*c. A humane way of intentionally ending a fishes life
- d. None of the above

85) Passive capture includes all of the following techniques EXCEPT

- a. Entanglement
- b. Entrapment
- \*c. Encirclement
- d. Angling

86) Under or over representation of certain Species, Size, or Sex of fish can be described as

- a. Gear efficiency
- \*b. Gear selectivity
- c. Gear loss
- d. CPUE
- e. None of the above

87) Gear efficiency can be impacted by all of the following EXCEPT

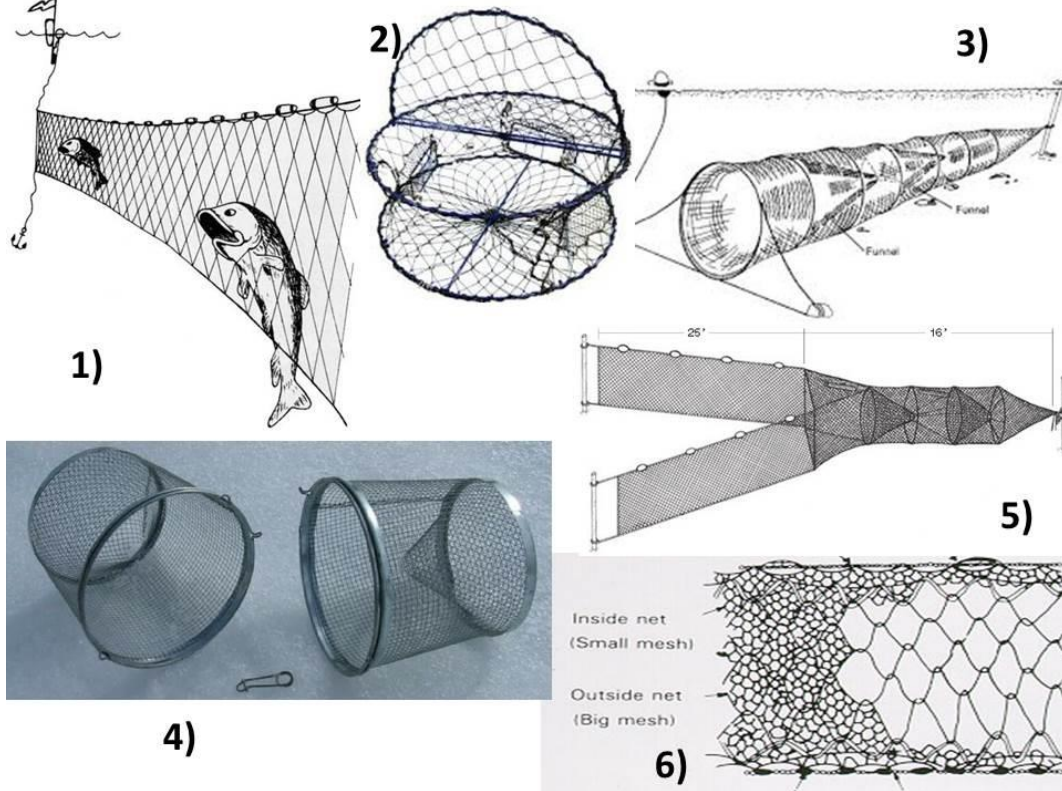
- a. Season
- b. Turbidity
- c. Current / Tides
- d. Time of day
- e. Water Temperature
- \*f. All of the above can effect gear efficiency

88) What does CPUE Stand for?

- a. Cumulative per-capita unit effort
- b. Calculated percentage of under exploitation
- \*c. Catch per unit effort
- d. Cost per unit effort

e. None of the above

Type: MT

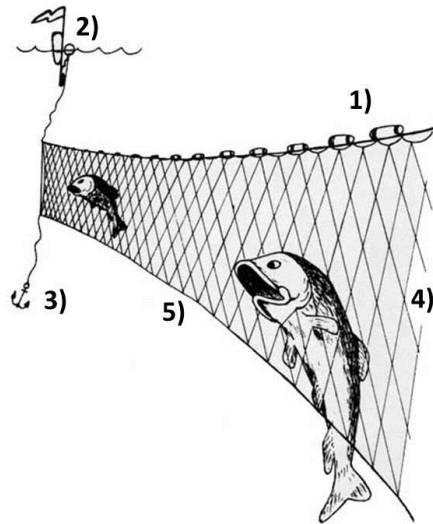


89)

Match the following with the type of passive capture device

- a. Gill net = 1)
- b. Trammel Net = 6)
- c. Hoop Net = 3)
- d. Fyke Net = 5)
- e. Crab Pot = 2)
- f. Minnow Trap = 4)

Type: MT



90)

Match the following terms below with the above picture

- a. Cork Line = 1)
- b. Lead Line = 5)
- c. Anchor = 3)
- d. Buoy = 2)
- e. Web = 4)

91) Which of the following statements are NOT true about active capture techniques

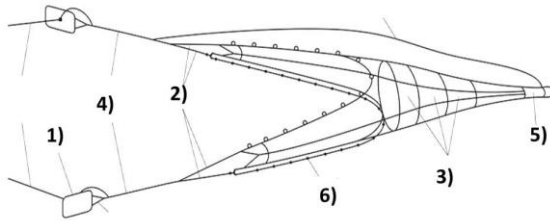
- a. The Main gear types enclose or sweep a specific area
- \*b. Rely on fish encountering and being trapped by gear
- c. Samples can be collected more rapidly but at a cost
- d. Typically two or more people are needed to safely and correctly operate the gear
- e. All of the above are true

92) In science we typically use the same size equipment as commercial fisherman

- a. True
- \*b. False

93) A trawl with a fixed web that is somewhat cumbersome and capable of sweeping a fixed area is a \_\_\_\_\_.

- a. Otter Trawl
- \*b. Beam Trawl
- c. Scallop Trawl
- d. Warp Trawl
- e. None of the above



94)

Identify the Cod end on the above picture

- a. 1)
- b. 2)
- c. 3)
- d. 4)
- \*e. 5)
- f. 6)

95) What is likely the largest disadvantage of trawling?

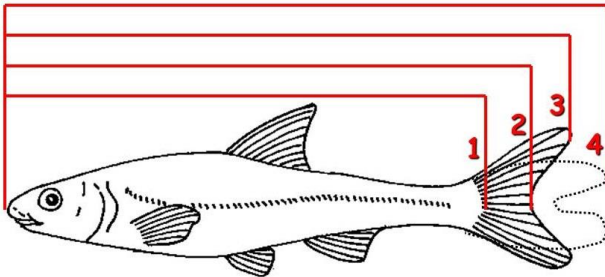
- a. Can't sample irregular bottom
- b. Need a large and powerful boat
- \*c. Bycatch of non-target species
- d. Crossed or twisted doors
- e. None of the above

96) Beach seines are best used in the following habitats

- a. deep marine habitats
- b. shallow rocky habitats
- \*c. shallow gravel or sandy habitats
- d. riverine habitats with woody debris
- e. Beach seines are suitable for all of the above habitats

97) Purse seines are best used in the following habitats

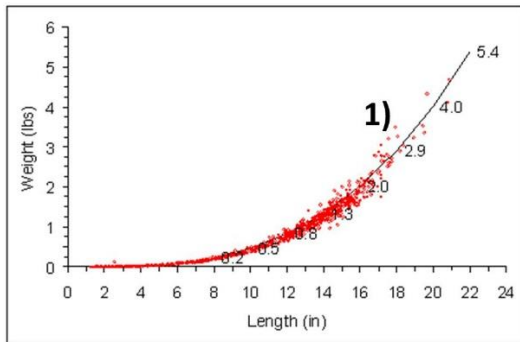
- \*a. deep marine habitats
- b. shallow rocky habitats
- c. shallow gravel or sandy habitats
- d. riverine habitats with woody debris
- e. Purse seines are suitable for all of the above habitats



98)

In the above picture identify standard length

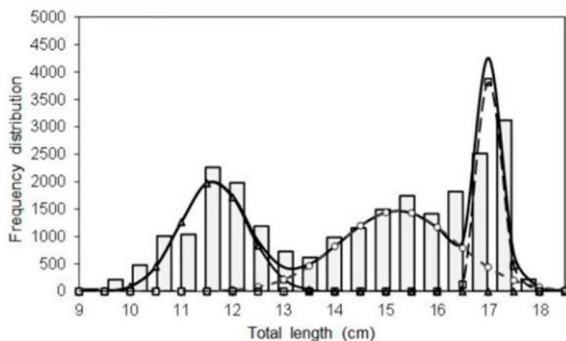
- \*a. 1)
- b. 2)
- c. 3)
- d. 4)



99)

The fish indicated by the 1) in the above image would be considered to be in \_\_\_\_\_ condition

- \*a. Good
- b. Poor
- c. you can't tell condition from length weight data



100)

Based on the above length frequency histogram you could assume that there are \_\_\_\_ age classes of fish present

- a. 2
- \*b. 3

- c. 4
- d. 5
- e. 6