**Evolution/Ecology Test**

\*\*\*Check worleybiologyecology.weebly.com for additional review materials

--Under biology🡪 Evolution and Ecology

\*\*\*SOL Review Extra Credit is due by May 28th (the date of our SOL).

\*google j lab SOL. Choose 20 questions & biology & click on more options.

You can do tests from as many years as you would like (the more you do the

more extra credit you will get), and you can take the tests as many times as

you like to get as high of a score as possible. However, make sure after you

complete the test that you **add YOUR FIRST & LAST NAME to the test and email it to** [**worleybiologyecology@gmail.com**](mailto:worleybiologyecology@gmail.com)**. Otherwise you will not**

**receive credit.**

**What to Study for the Evolution test**

1. Moth gizmo (corrected in class, not posted online)

2. Evolution video notes (Key posted)

3. Evolution packet (Key posted)

4. p. 389 & p. 413 HW (Chapters 15 & 16) (correct answers posted online)

**Vocabulary & Scientists to be familiar with. You may define & sketch these terms (at least 20 of your choice) OR make flash cards (include a sketch) for extra credit.**

1. natural selection

2. evolution

3. radiometric dating

4. stratigraphy

5. mutation

6. population

7. Jean-Baptiste Lamarck

8. Charles Darwin

9. genetic drift

10. convergent

evolution

11. parallel evolution

12. coevolution

13. selection pressure

14. molecular clocks

15. genetic isolation

16. gene flow

17. genetic drift

18. founder effect

19. directional selection

20. stabilizing selection

21. disruptive selection

22. Ecology

23. primary succession

24. secondary succession

25. abiotic

26. biotic

27. population

28. community

29. ecosystem

30. biome

31. biosphere

32. biomass

33. energy pyramid

34. numbers pyramid

35. autotroph

36. heterotroph

37. scavenger

38. mimicry

39. acquired characteristics

40. theory of use & disuse

41. vestigial organs

42. embryology

43. decomposer

44. pioneer species

45. climax community

46. trophic level

47. food chain

48. food web

49. primary consumer

50. secondary consumer

51. producer

52. consumer

53. niche

54. habitat

**Optional Sample Questions: (Will post the key online)**

**Matching I:**

D1. Ecology a. Occurs after a catastrophic event such

as a mudslide or volcanic eruption, exposing bare rock

B 2. Abiotic b. Non-living factors in an ecosystem

F3. Biotic c. Occurs after an area has been cleared

for development, then left dormant

A4. Primary Succession d. The study of the relationship of

organisms with each other and with their

environment

C5. Secondary Succession e. An area where the climate and

organisms are similar (A group of similar

ecosystems)

G6. Biomass f. Living factors in an ecosystem

E7. Biome g. The sum of the mass of an entire level

on a pyramid

**Matching II:**

E8. Autotroph a. Organism that only eats plants

F9. Heterotroph b. Organism that has a diet consisting

mainly of meat

C10. Scavenger c. Organism that eats dead animals that

were not killed by the original organism

A11. Herbivore d. Organism that eats both plants and

animals

B12. Carnivore e. Organism that makes its own food;

Producer

D13. Omnivore f. Organism that feeds on other oganisms;

Consumer

G14. Decomposer g. Organism that breaks down dead

Organisms

**Choices:** **Choose the best answer. Answers may be used once, more than once, or not at all.**

**Choices:** Population, community, biosphere, ecosystem, organism

1. A family of five people live in a house.population
2. Also in the house are 2 cats and 3 dogs.community
3. The mother in the house takes care of the other organisms in the house.community
4. The mother not only takes care of the other organisms in the house, but she also works outside the house and interacts with neighbors, the mailman, the trash collectors, and other living and non-living aspects of her life.ecosystem
5. This family lives on the earth.biosphere

**Choices:** **Biotic or Abiotic**

1. **Rain** falling on a forest. A
2. A **rabbit** eating the top off flowers. B
3. There is less **oxygen** at the top of a high mountain than at sea level. A
4. **Bacteria** breaks down dead organisms and returns minerals to the soil. B
5. The **minerals** in the soil. A

**Choices: Niche or Habitat**

1. A cow grazing in a field niche
2. A cow giving milk niche
3. A bear lives in the woods habitat
4. A bear fishes for its dinner niche

**Choices: Living/Once living or Never living**

1. Fire never living
2. A stream never living
3. Yeast living
4. A skin cell living

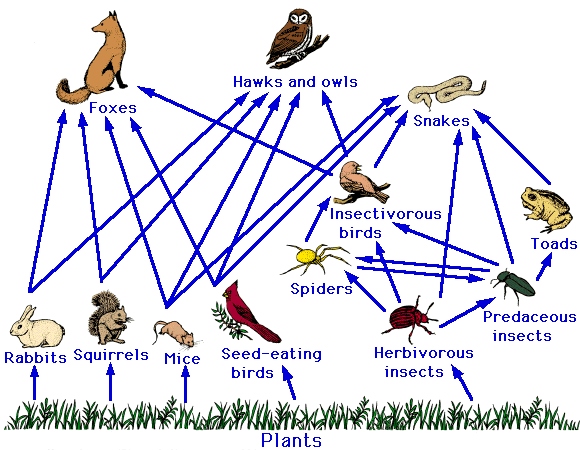
**Choices: Temperate Forest, Dessert, Grassland, Rainforest, Taiga or Boreal Forest, Tundra**

1. Long, dry periods, no large trees, wildflowers; burrowing mammals and grazing animals grassland
2. Soil permanently frozen; lichen, moss, reindeer, elk tundra
3. Hot, dry, very little rain; cacti, reptiles and small mammals desert
4. Long, cold winters, short summers; conifers, moose, elk taiga or boreal forest
5. Rain falls almost every day, tall trees; monkeys, colorful birds, flying squirrels rainforest
6. Frequent rain, cold winters; deciduous trees; wolves, deer, birds deciduous or temperate forest
7. The biome in Virginia. Temperate or deciduous forest

**True/False: Change every false statement to make it true**

1. Climax communities always have large hardwood trees. False
2. Only about 10% of the energy is transferred from one organism to the other in a food chain. T
3. Food webs show all of the organisms a single species eat as well as the interaction of groups of organisms. T
4. The greatest amount of energy in an ecological pyramid is located the top. F
5. Plants are responsible for changing carbon dioxide into oxygen through photosynthesis in the carbon dioxide/oxygen cycle. F
6. Animals are responsible for converting nitrogen in the air into a form plants can use. F

Using the food web below, answer the following questions:



1. List the producer(s) in the food web. grass
2. Which predators are at the top of the food chain? Fox, hawk and owl, snake
3. Of the following, who is a primary consumer? plant, mouse, hawk mouse
4. Of the following, who is a secondary consumer? squirrel, mouse, toad, hawk
5. Of the following, who is a tertiary consumer? spider, snake, insectivorous bird
6. Which of the following are herbivores? mouse, spider, fox
7. Which of the following are carnivores? owl, mouse, rabbit
8. What do snakes eat?mice, birds, insects, toads
9. Why are there more organisms at the bottom of a food web or a food pyramid, than at the top?There is more energy available
10. Draw a food chain for the squirrel.

**Short Answer:**

Target has just cut down a forest to make a new store. They realize that they accidentally cut down too many trees, but don’t have money to replant, so they leave the field fallow. What will happen over the next 25 years? Will this land undergo primary or secondary succession?

This field will undergo secondary succession, because soil is already present at the site. First, grassy and weedy species that do well in full sun will come into the area. Then, small trees (saplings) and shrubs will come grow in the area. During all of these changes the animal community will change with the plant community. Then, we would expect to see taller conifers, which grow more quickly, in the area. Finally, we would expect to see a mature forest dominated by hardwood (deciduous trees) in the area. This is the climax community (a relatively stable ecosystem) common in this area.

1. Both insects and bats have developed wings, but they are not closely related. This is most likely an example of

a. co-evolution

b. convergent evolution

c. microevolution

d. genetic drift

2. Which best describes Lamarck’s older (& incorrect theory of evolution)?

a. Organisms change in their lifetime based on which organs they use or do

not use. They can then pass on these changes to their offspring.

b. Organisms change through natural selection as populations over long

periods of time.

c. Organisms experience many random genetic mutations, and this is the cause of evolution.

d. Organisms *always* change as a result of direct competition with another species.

**3. Genetic Isolation A**

**4. Artificial Selection E**

**5. Selection Pressure C**

**6. Gene Pool B**

**7. Natural Selection D**

**8. Convergent evolution A**

**9. Parallel Evolution B**

**10. Coevolution C**

**A. When two groups of organisms differentiate enough that they can no longer interbreed**

**B.** All of a population’s or species’ genes

**C. An environmental factor which causes a certain trait to become more or less common**

**D. A mechanism for change in populations (driven by the environment and differential survival)**

**E. Breeding organisms with specific traits in order to produce offspring with desirable traits**

A. Occurs when *unrelated* species occupy similar environments in different parts of the world, and evolve in a similar way.

B. When two related populations are physically separated but occupy similar niches, so evolve in a similar way.

C. When two species have a very close

ecological relationship and evolve

together. EX: flowering plants and

pollinators.

Choose the best term for the following examples.

a. Convergent Evolution b. Coevolution c. Parallel Evolution

11. A parasite and a host evolve together because they have a close ecological relationship. This is called an evolutionary arms race. Example: antibiotic resistant pathogens. B

12. Two related species live on different continents, but still look similar because they adapted in similar ways to similar environments. Example: Jaguars and leopards. C

13. Two UNRELATED species look similar because they evolved in similar ways to similar environments. Example: sharks and dolphins. A

14. Which of the following is the first piece of evidence that lead scientists to believe that organisms changed over time?

a. molecular clocks

b. stratigraphy

c. fossil record

d. embryology

15. Which scientist proposed the incorrect theory use & disuse to explain how organisms changed over time? (Giraffes stretching their necks over their lifetime to reach leaves and passing this trait on to offspring)?

a. Mendel

b. Darwin

c. Linnaeus

d. Lamarck

16. Which scientist proposed the correct theory of how evolution takes place?

a. Mendel

b. Darwin

c. Linnaeus

d. Lamarck

17. Which scientist performed the fundamental genetic research necessary to understand evolution?

a. Mendel

b. Darwin

c. Linnaeus

d. Lamarck

18. In Artificial selection, what “chooses” the traits?

a. proteins

b. meiosis

c. humans

d. nature or the environment

19. In natural selection, what “chooses” the traits?

a. proteins c. humans

b. meiosis d. nature or the environment

20. Darwin was the naturalist aboard the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which sailed to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ islands.

a. H.M.S Beagle; Galapagos b. H.M.S. Naturae; Galapagos

c. H.M.S Beagle; Cayman

d. H.M.S. Naturae; Cayman

21. If beetles have less to eat during a few months and their average size as a population changes during one generation, is this evolution?

a. yes b. no

22. Which of the following is not a method to use for dating objects?

a. stratigraphy

b. use and disuse

c. molecular clocks

d. carbon dating

23. In the peppered moth activity, which moth phenotype was the most fit (survived and reproduced more) when the leaves were light?

a. light moths b. dark moths

24. What adaptation allowed one peppered moth to be better suited to the environment than the other?

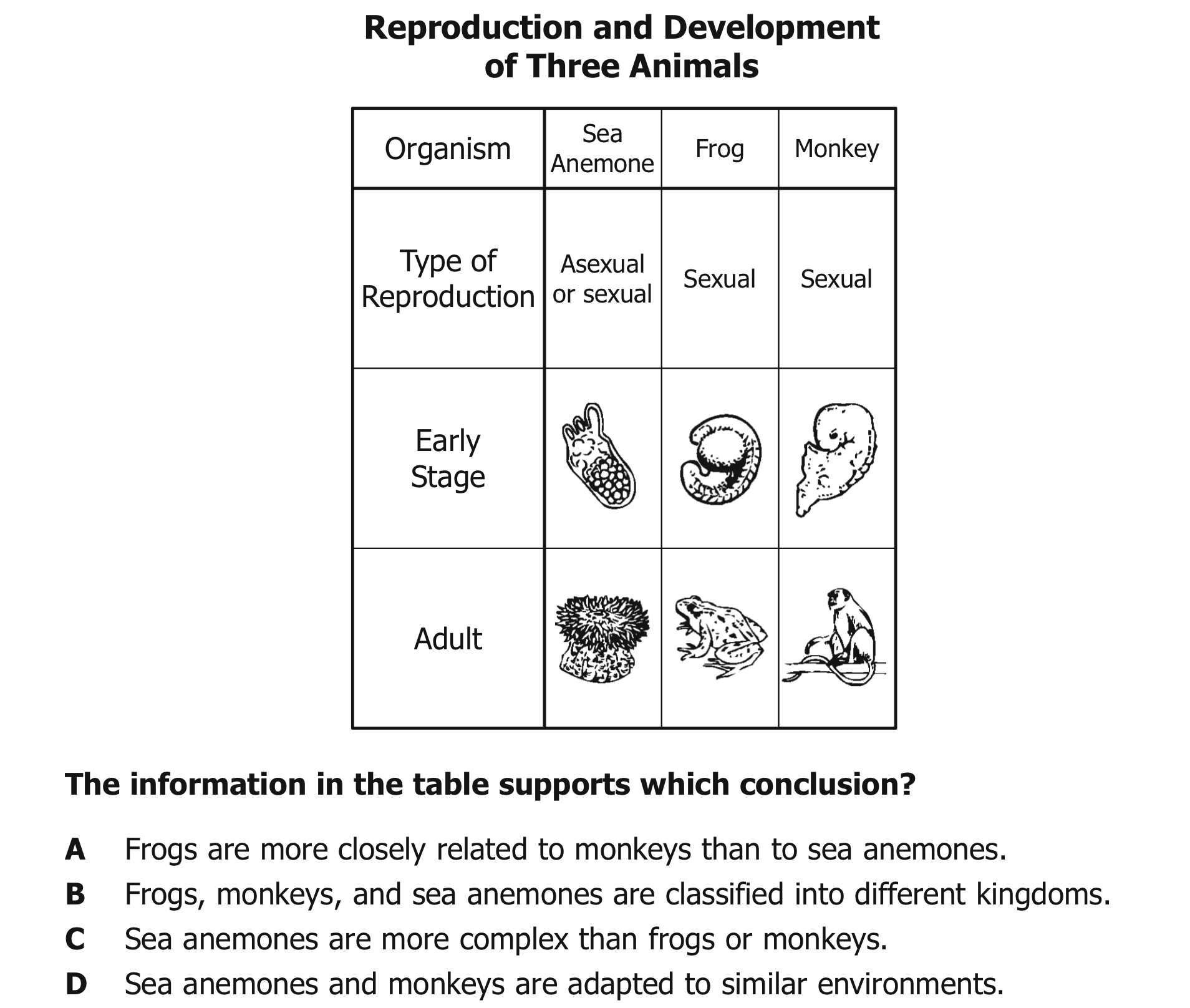
a. mimicry

b. mutation

c. predation

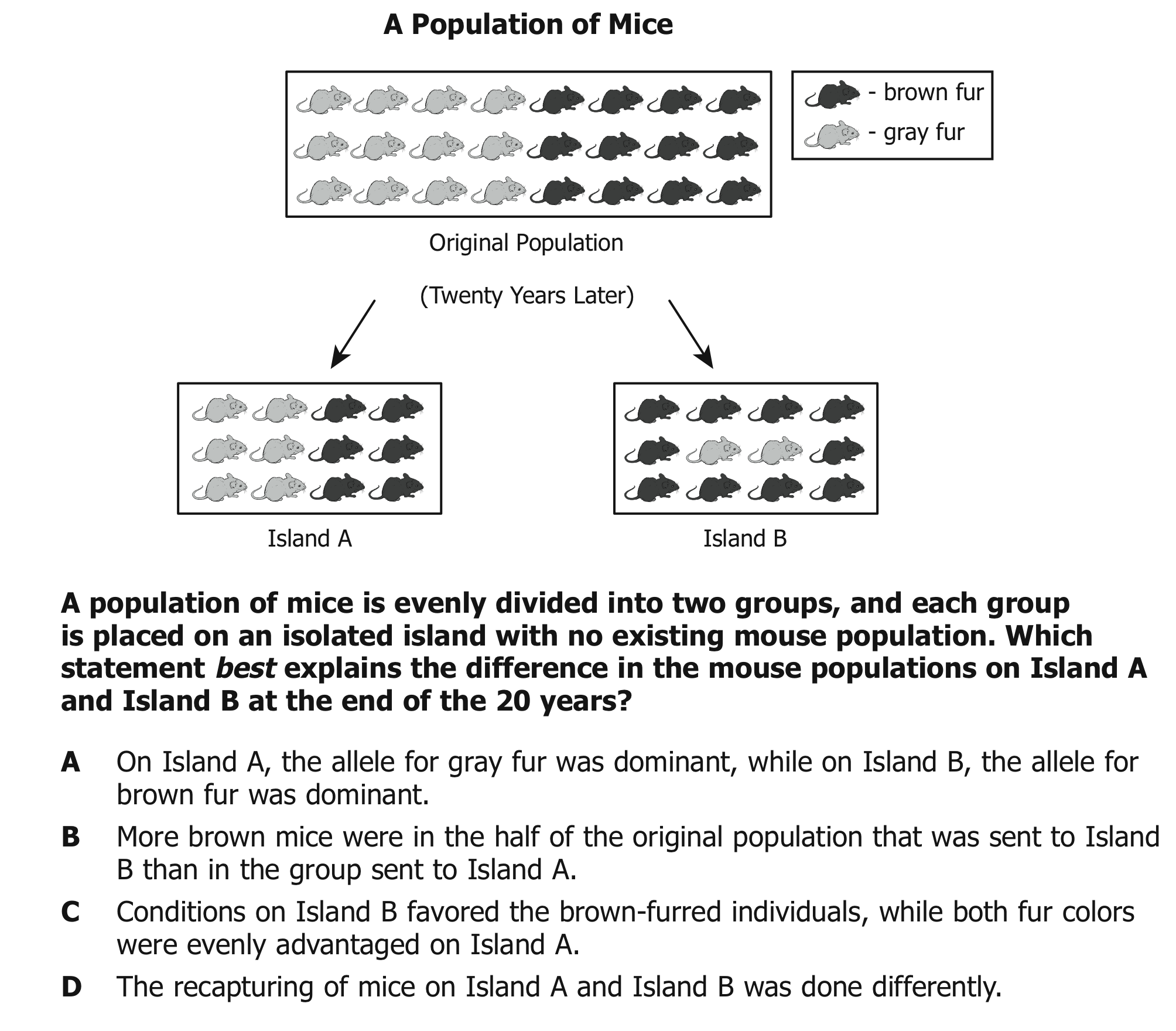
d. camouflage

e. symbiosis

25. 

-- The above method of determining the evolutionary relationship of organisms based on their early stages of development is called embryology

A (We can tell this because their embryos look more similar to one another)

26. 

C

**Sample Short answer questions. Write your answers below.**

28-30. Explain what is meant by survival of the fittest and how it relates to

natural selection. Give a specific example about how it works. List at least two conditions necessary for natural selection to occur.