

Assessment Items for Diversity of Life, exported from Blackboard

1. Which statement describes species-level diversity?
 - a. Genetic variation among individuals in a single population
 - *b. Numerous species of organisms in the same area
 - c. Multiple habitat types in a region of land

2. Which is an example of species-level diversity?
 - a. A region of land consisting of grassland, forest, and wetland habitats
 - b. Genetically-distinct varieties of a single crop, like corn
 - *c. Your gut microbiome, which consists of bacteria, archaea, and yeast

3. Five species of prairie dog are in the genus *Cynomys*. What level of biodiversity does this statement describe?
 - a. Genetic diversity
 - *b. Species diversity
 - c. Ecosystem diversity

4. In a food chain, a plant is eaten by a grasshopper (insect), and the grasshopper is later eaten by a mouse (mammal). What level of biodiversity is represented in this food chain?
 - *a. Species diversity
 - b. Ecosystem diversity
 - c. Genetic diversity

5. Which definition describes a regulating ecosystem service?
 - *a. Maintaining the current abundance or quality of a resource
 - b. Offering a unique experience that humans value

- c. Providing a harvestable resource that humans consume or sell
- d. Sustaining an entire community of organisms by making an essential resource available

6. Which is an example of regulating ecosystem service?

- a. Production of food
- b. Nutrient cycling
- *c. Purification of water
- d. Ecotourism

7. Lynx are a species of wildcat that prey on snowshoe hares (a species of rabbit). Predation by lynx keeps snowshoe hare population growth controlled. Without lynx predation, snowshoe hare populations would grow so large that they would cause major damage to the plant community in their habitat. What type of ecosystem service are lynx providing in this example?

- a. Cultural service
- *b. Regulating service
- c. Provisioning service
- d. Supporting service

8. Which is an example of regulating ecosystem service?

- *a. Soil erosion control along a river bank
- b. Recreational activities, such as fishing and camping
- c. Production of hardwood lumber for home construction
- d. Transformation of solar energy to chemical energy (photosynthesis)

9. Select all that apply: Seeds of a nonnative plant species are accidentally introduced into a field. After several generations of growth, this nonnative plant has a stable and noticeable population in the community, but it is not the dominant plant species in the field, and has not caused ecological or economic damage to the region within and surrounding the field. What characteristic(s) of an invasive species does this plant exhibit?

- *a. nonnative
- b. not a dominant species

- c. does not cause ecological damage

10. Which species is an example of an invasive species?

- a. A native species that outcompetes other species to become the most abundance species in the community
- b. A native species that fills a critical role in maintaining its community, despite its low abundance
- *c. A nonnative species that outcompetes other species for resources and causes environmental or economic damage
- d. A nonnative species that fills an empty niche in a community and does not appreciably alter community structure

11. Select all that apply: A description of an invasive species should include which characteristic(s)?

- a. easily controlled or removed
- b. poor competitor
- *c. nonnative
- *d. causes ecological damage

12. Kudzu is a nonnative plant in North America that quickly becomes the dominant plant species in an area, outcompeting the native species for resources. Consequently, areas with kudzu have lower native plant species diversity and abundance than areas without kudzu. What does the relationship between kudzu and the North American plant community demonstrate?

- a. The effect of a keystone species on a community
- b. The effect of commensalism on a community
- *c. The effect of an invasive species on a community
- d. The effect of a parasite on a community

13. Remora fish attach themselves to sharks with their mouths, without causing injury to the shark. The remora fish travel with the shark until it feeds. Then, the remora fish detach from the shark and consume any extra food the shark drops. The shark is unaffected by the remora fish, while the remora fish benefit from traveling with the shark. The relationship between the remora fish and the shark is an example of what type of interaction?

- a. Mutualism

- *b. Commensalism
- c. Exploitation
- d. Competition

14. The burdock plant produces spiny seeds that cling to the fur of rodents (and other mammals). The seeds travel with the rodents for a distance, until the seeds are dislodged from the fur. The farther away the seeds are from their parent plant (and from sibling seeds), the less likely the seeds will compete with their relatives for resources as they grow. Meanwhile, rodents carrying many burdock seeds have similar survival and reproductive rates as rodents carrying very few or no seeds. The relationship between a burdock plant and a rodent is an example of what type of interaction?

- a. Exploitation
- b. Mutualism
- c. Competition
- *d. Commensalism

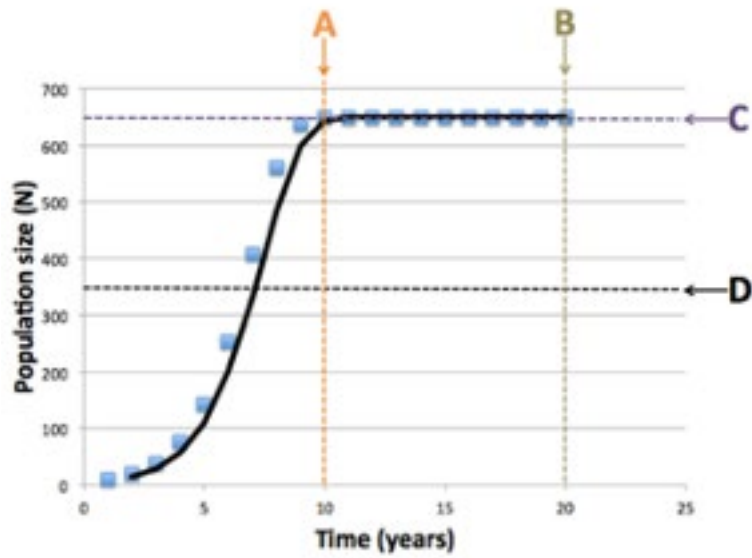
15. Which statement describes commensalism?

- a. An interaction between two species that benefits both species
- b. An interaction between two species that benefits one species, but harms the other
- *c. An interaction between two species that benefits one species, but neither harms nor helps the other

16. Which is an example of commensalism?

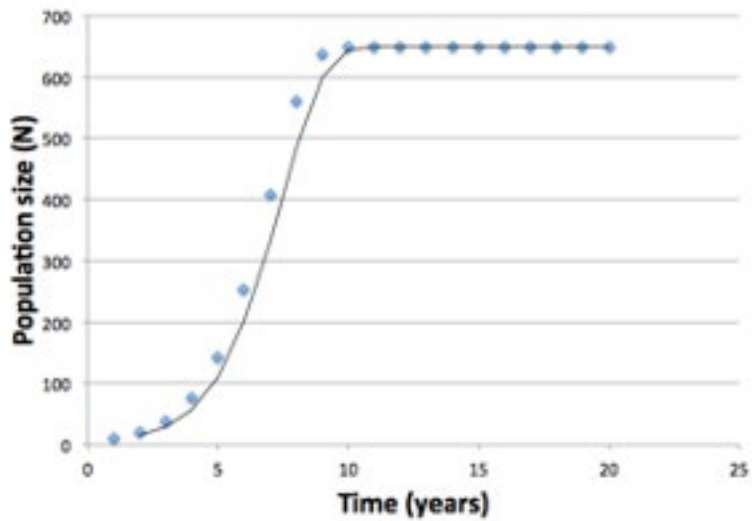
- *a. Wildflowers growing beneath an oak tree benefit from the shade from sun damage that the tree provides, but the tree is unaffected by the wildflowers' presence.
- b. Both bobcats and foxes eat rabbits. If bobcats are present in an area, the foxes are harmed by the reduction in food availability. For the same reason, bobcats are also harmed if foxes are in an area.
- c. Mosquitos bite humans and consume their blood. Humans can be harmed if they receive too many mosquito bites, while mosquitos benefit from the blood meal.

17. On the graph below, which line indicates K (carrying capacity)?



- a. A
- b. B
- *c. C
- d. D

18. On the graph below, what is the value of K (carrying capacity)?

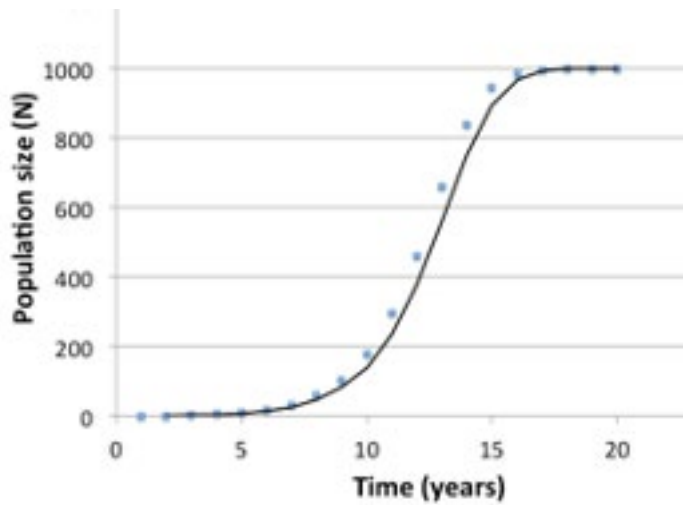


- a. 10
- b. 20
- c. 350

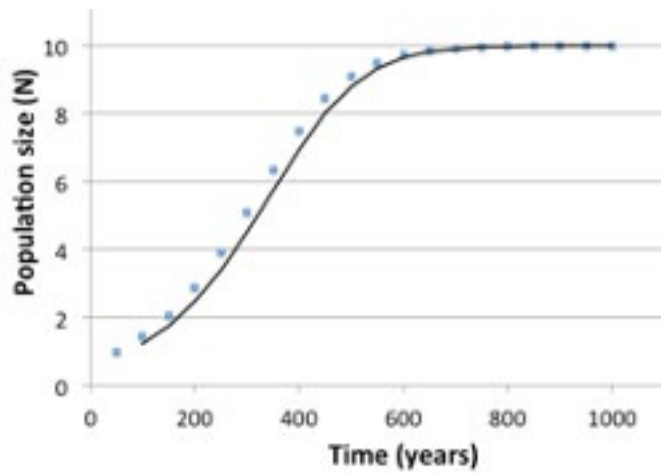
*d. 650

19. A population is currently at its carrying capacity of 1000. Which graph could show their population growth over time?

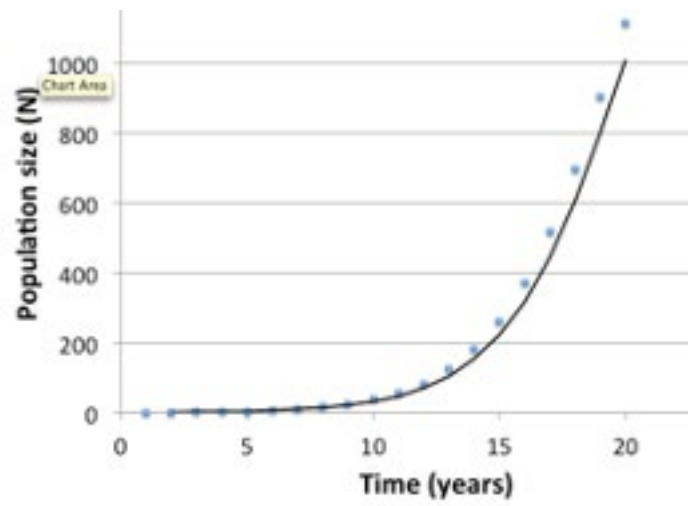
*a. Graph:



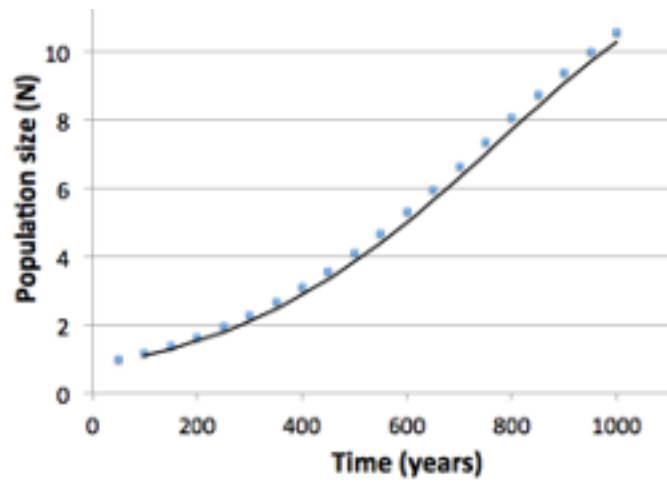
b. Graph:



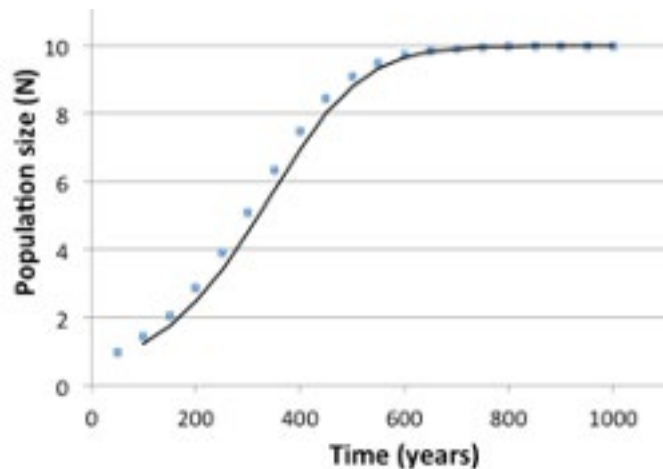
c. Graph:



d. Graph:



20. On this graph, what is the value of K?



- a. 6
- *b. 10
- c. 600
- d. 1000

21. Each event below would increase the death rate in a population. Of these events, which was likely caused by an increase in population density?

- a. A natural disaster, like an earthquake
- *b. Competition for access to limited resources
- c. Exposure to an environmental toxin

22. A disease spread by close contact causes several populations of willow trees to decrease in number. Dense populations experience higher death rates than populations less dense populations. What type of regulation is this disease an example of?

- *a. Density-dependent regulation of growth
- b. Density-independent regulation of growth
- c. Inverse density-dependent regulation of growth

23. A population of guppies (a species of fish) lives for years in an aquarium. Initially, their owner had only 5 guppies in this aquarium. Now, the population contains 32 individuals. As the population grew, the owner increased the amount of food she provided them each day; however, despite increasing the food availability, the owner notices that some guppies have become sick since the population

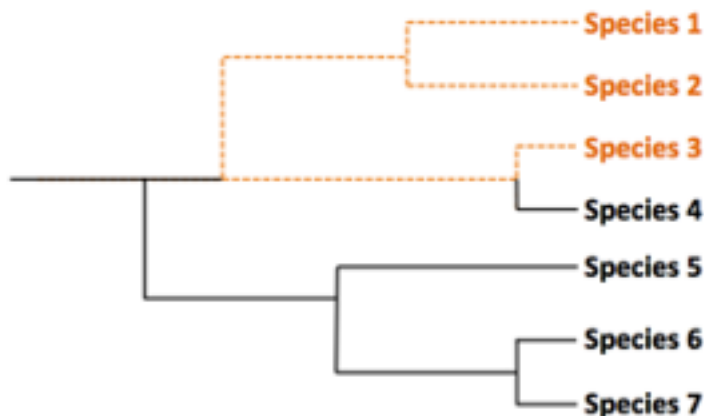
reached 30 individuals. The sickly include similar numbers of young and old fish. Further, in the last week, more guppies have passed away than usual within such a short timespan. What type of regulation is this disease an example of?

- a. Inverse density-dependent regulation of growth
- *b. Density-dependent regulation of growth
- c. Density-independent regulation of growth

24. Select all that apply: Which could occur during density-dependent regulation of population growth?

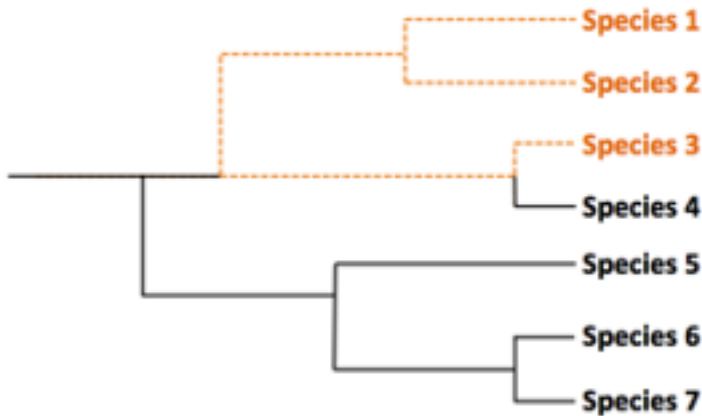
- a. Birth rates remain the same despite changes to population density
- b. Death rates remain the same despite changes to population density
- *c. Birth rates change when population density changes
- *d. Death rates change when population density changes

25. In the phylogenetic tree shown below, a group of species is highlighted in orange and their shared ancestry is shown by dotted lines. Is this highlight group a monophyletic group?



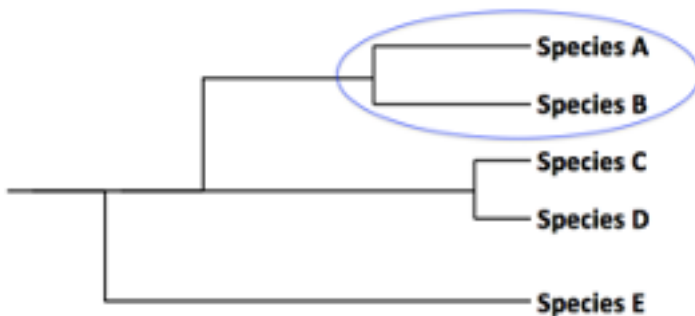
- a. Yes, because all members of this group share a common ancestor
- *b. No, because all the descendants of the common ancestor are not included
- c. Cannot be determined by the information on this cladogram

26. Select all that apply: In the phylogenetic tree shown below, how could you change the highlighted lineages to create monophyletic group?



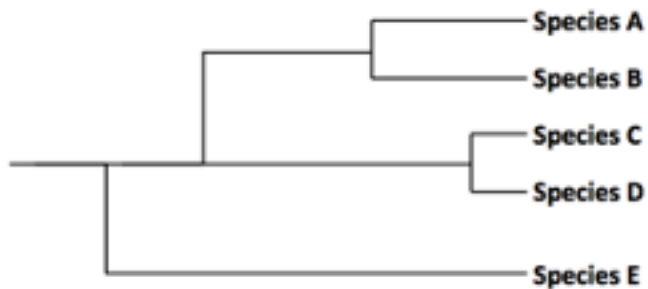
- *a. Only one species (Species 4) needs to be added to make the group monophyletic
- *b. Only one species (Species 3) needs to be removed to make the group monophyletic
- c. More than one species must be added before the group could become monophyletic

27. In the phylogenetic tree below, what kind of clade is circled?



- *a. Monophyletic
- b. Paraphyletic
- c. Polyphyletic

28. Using the phylogenetic tree below, which grouping(s) of species would create a monophyletic group? Select ALL that are correct.



- *a. Species A and B
- b. Species B and C
- *c. Species C and D
- d. Species C, D, and E
- e. Species A, B, and C

29. Which organism is in Domain Bacteria?

- a. A unicellular organism containing DNA wrapped around histone proteins, but no peptidoglycan in its cell wall
- b. A multicellular organism containing DNA wrapped around histone proteins, but no cell wall
- *c. A unicellular organism without histone proteins wrapped around its DNA, but with peptidoglycan in its cell wall

30. Which organism is in Domain Bacteria?

- a. *S. pombe* is a single-celled organism that has a cell wall containing chitin
- b. *A. petiolata* is a multicellular organisms that has a cell wall containing cellulose
- *c. *B. fragilis* is a single-celled organism that has a cell wall containing peptidoglycan

31. *B. cereus* is a unicellular organism that doesn't have any membrane-bound organelles. Its cell wall is made of peptidoglycan, and its DNA is not associated with histone proteins. Which Domain does this species belong to?

- *a. Bacteria
- b. Archaea
- c. Eukarya

32. Select all that apply: *S. solfataricus* is a single-celled organism that lives in extremely hot environments, where temperatures rise about 100°C for long periods of time. It has no membrane-bound organelles and does not have peptidoglycan in its cell wall. Its DNA is protected from the cytoplasm by histone proteins. What characteristic(s) does this organism have in common with a bacterium?

- *a. unicellular
- *b. no membrane-bound organelles
- c. no peptidoglycan in its cell wall
- d. DNA protected by histone proteins
- e. surviving prolonged exposure to >100°C

33. You encounter a small plant growing at the edge of a pond in very moist soil. It has shallow root-like structures growing from its base, and another small brown structure growing from the top that contains spores. What type of plant is this?

- a. angiosperm
- b. gymnosperm
- *c. bryophyte
- d. seedless vascular plant

34. Select all that apply: Which characteristics distinguish bryophytes from other plant phyla?

- a. Bryophytes produce spores
- *b. Bryophytes lack vascular tissue and true roots
- c. Bryophytes have an independent gametophyte generation
- *d. Bryophytes have a dependent sporophyte generation

35. How are bryophytes distinct from gymnosperms?

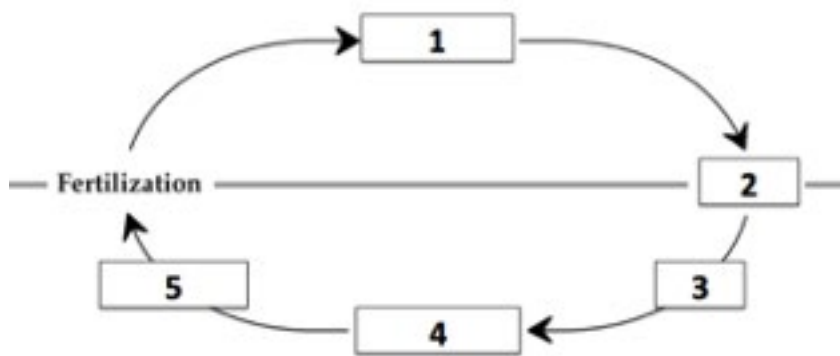
- a. Bryophytes have vascular tissues to transport water and nutrients throughout their body
- *b. Bryophyte have a dependent sporophyte generation

c. Bryophytes don't produce spores

36. Which plant is an example of a bryophyte?

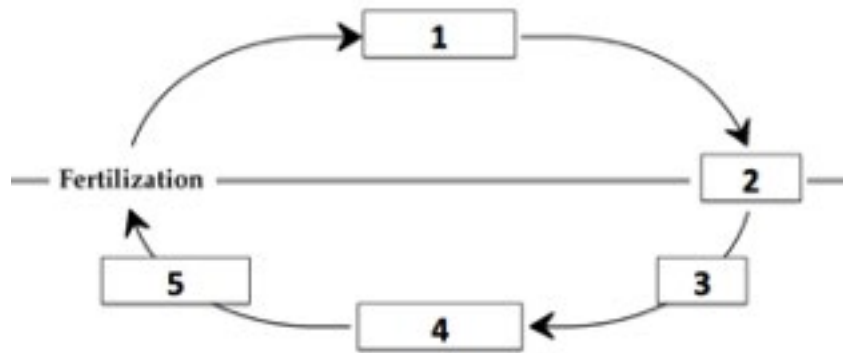
- a. A pine tree, capable of producing pollen and seeds
- b. A fern, with vascular tissues throughout its stems and roots
- *c. A moss, with a nonphotosynthetic, dependent sporophyte
- d. A green algae, without distinct tissue layers

37. Which process or structure occurs in Box 1?



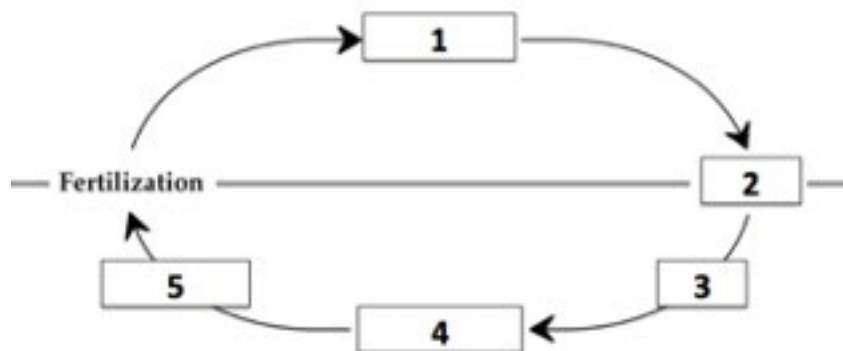
- *a. Sporophyte
- b. Gametophyte
- c. Mitosis
- d. Meiosis
- e. Spores
- f. Gametes

38. Which process or structure occurs in Box 5?



- a. Meiosis
- *b. Gametes
- c. Sporophyte
- d. Gametophyte
- e. Spores
- f. Mitosis

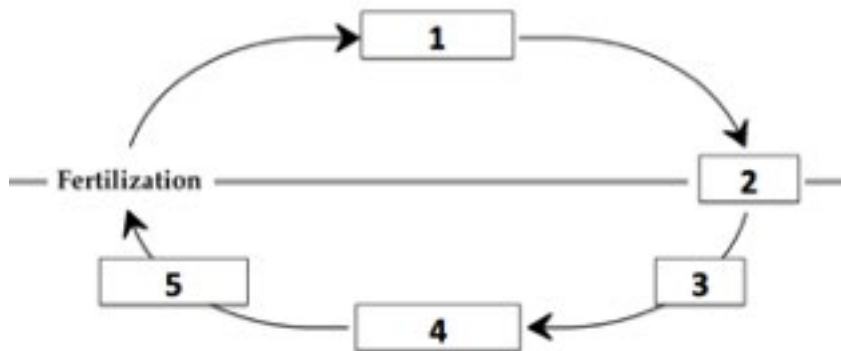
39. Which process or structure occurs in Box 2?



- a. Gametes

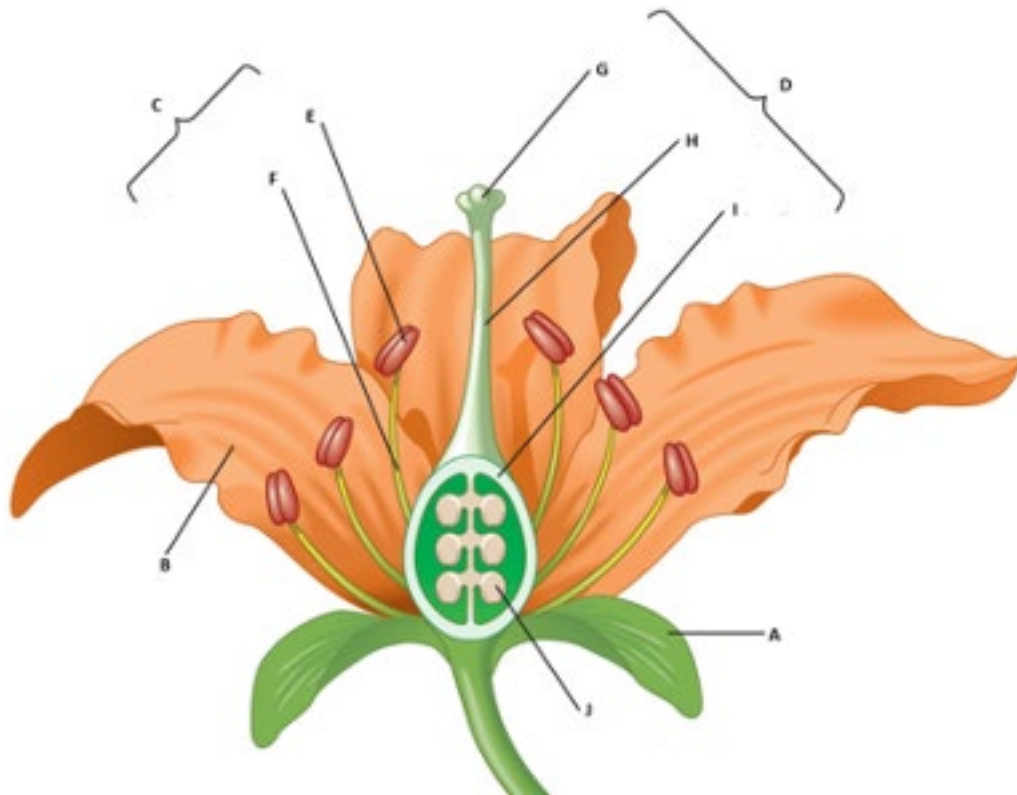
- b. Sporophyte
- c. Gametophyte
- *d. Meiosis
- e. Mitosis
- f. Spores

40. Which process or structure occurs in Box 3?



- a. Sporophyte
- b. Gametophyte
- c. Gametes
- d. Mitosis
- e. Meiosis
- *f. Spores

41. Which letter in the image below points to the ovary of a flower?



- a. C
- b. D
- c. E
- *d. I
- e. J

42. Your lab partner points to a structure within a flower that contains ovules. What is the name of this structure?

- a. sepal
- *b. ovary
- c. anther
- d. stigma

43. This flower structure will mature into a fruit, enclosing the seeds.

- a. ovule
- b. sepal
- *c. ovary
- d. style

45. Select all that apply: Why are large, white flowers with a strong fragrance associated with bat pollinators?

- *a. Bats find flowers by smell
- b. Bats are attracted to the color white
- *c. Bats have poor eyesight

46. Which organism likely pollinates the large flower depicted below? This flower is known to produce a strong fragrance from the large amount of nectar it holds.



- a. bird
- b. butterfly
- *c. bat
- d. moth

47. Select all that apply: Which is/are likely characteristics of a flower that's pollinated by a bat?

- *a. Produces large amount of nectar
- b. Produces small amount of nectar
- *c. Produces strong fragrance
- d. Produces faint odor

48. What organism likely pollinates a white flower that opens at night with a strong fragrance and lots of nectar stored in a shallow, wide tube?

- *a. bat
- b. bird
- c. bee
- d. moth

49. Select all that apply: Which is/are characteristics of monocots?

- *a. One cotyledon
- *b. Fibrous roots
- c. Netlike leaf veins
- d. Vascular tissue arrange in a ring
- *e. Whorled flower organs in multiples of 3

50. An unknown angiosperm has a fibrous root system, parallel leaf veins, and 6 whorled flower petals. These are common characteristics of what group of angiosperms?

- *a. monocots
- b. eudicots
- c. basal angiosperms

51. Which group of angiosperms likely has the characteristics pictured below?



- a. eudicots
- b. basal angiosperms
- *c. monocots

52. To which group of angiosperms does the species pictured likely belong?



- a. eudicots
- *b. monocots
- c. basal angiosperms

53. A heterotrophic organism with cell walls made of chitin is likely a member of which organismal group?

- a. plant

- *b. fungus
- c. animal
- d. bacterium

54. Select all that apply: Which statement(s) is/are true of fungi?

- *a. They are heterotrophic
- b. They are autotrophic
- c. They have cell walls made of cellulose
- *d. They have cell walls made of chitin

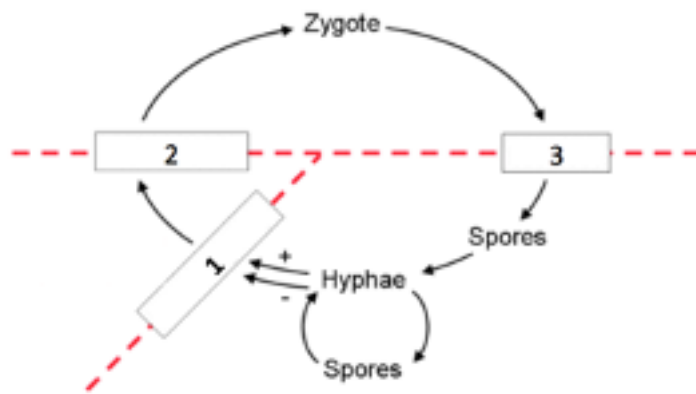
55. Select all that apply: Which organism(s) is/are an example of a fungus?

- *a. A yeast, a unicellular heterotroph with cell walls made of chitin
- b. A meadowlark, a multicellular heterotroph without cell walls
- c. A pine, a multicellular autotroph with cell walls made of cellulose

56. Select all that apply: Which characteristic(s) is/are seen in fungi?

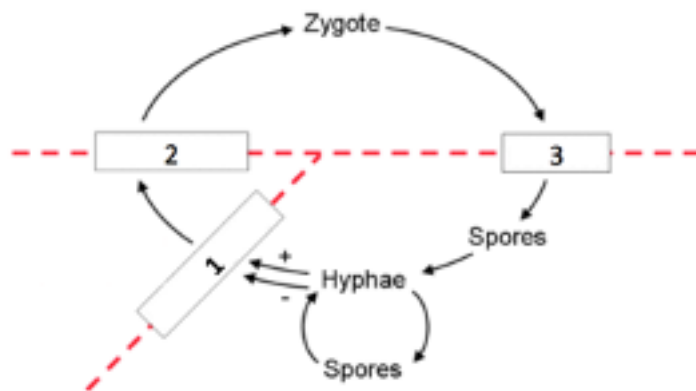
- *a. heterotrophic
- b. cell walls made of cellulose
- c. can photosynthesize
- *d. cell walls made of chitin

57. The spores created from the hyphae in the image given were generated by what process?



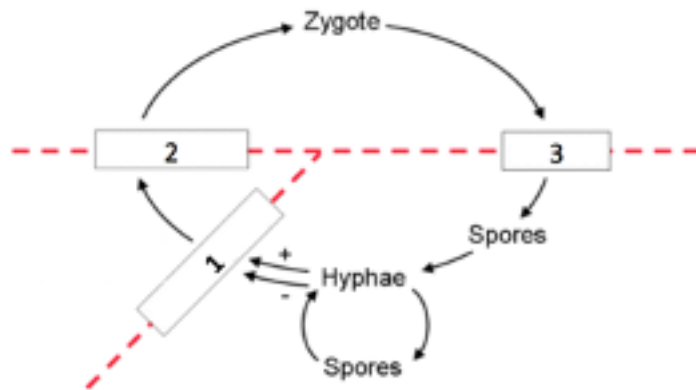
- *a. mitosis
- b. meiosis
- c. germination

58. What process is labeled 1 in the image given?



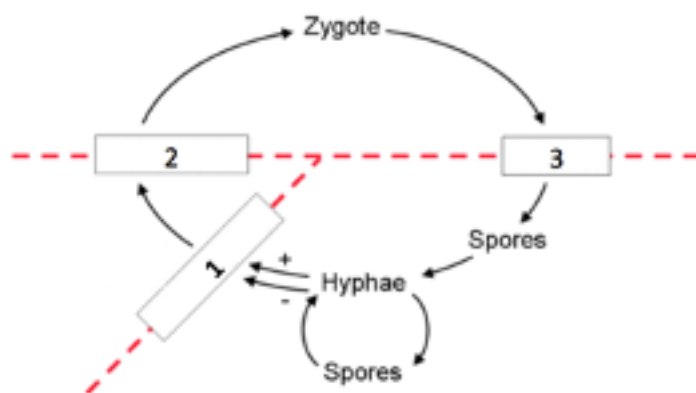
- a. meiosis
- *b. plasmogamy
- c. karyogamy

59. What process is labeled 2 in the image given?



- a. meiosis
- b. plasmogamy
- *c. karyogamy

60. What process is labeled 3 in the image given?



- *a. meiosis
- b. plasmogamy

c. karyogamy

61. What is the process that creates a heterokaryotic fungus (as opposed to a diploid fungus) by fusing two compatible mycelia?

*a. plasmogamy

b. karyogamy

c. germination

62. What is the process that creates a diploid fungus (as opposed to a heterokaryotic fungus) by fusing two compatible nuclei from a parent mycelium?

a. plasmogamy

*b. karyogamy

c. germination

63. Which term describes a fungus generated by plasmogamy as opposed to karyogamy?

a. diploid organism

b. haploid organism

*c. heterokaryotic organism

64. What term describes a fungus generated by karyogamy as opposed to plasmogamy?

*a. diploid organism

b. haploid organism

c. heterokaryotic organism

65. What are animals that lack a body cavity called?

a. coelomate

*b. acoelomate

c. pseudocoelomate

66. If an animal possesses a body cavity that's completely lined with mesoderm, what is it called?

- *a. coelomate
- b. acoelomate
- c. pseudocoelomate

67. If an animal possesses a body cavity that's only partially lined with mesoderm, what is it called?

- a. coelomate
- b. acoelomate
- *c. pseudocoelomate

68. Which statement describes the body cavity of a coelomate animal?

- a. Their body cavity is partially lined with mesoderm.
- *b. Their body cavity is completely lined with mesoderm.
- c. They don't have a body cavity.

69. During its development, an organism produces a blastopore via indeterminate, radial cell cleavage. This blastopore will become the anus of the gut tube, once the organism's development is complete. Based on these characteristics, this organism is a member of which group?

- *a. a Deuterostome
- b. a Protostome
- c. a Cnidarian

70. Select all that apply: Which statement(s) is/are true?

- *a. The blastopore of developing deuterostomes becomes the anus
- b. Deuterostomes experience spiral cell cleavage during development
- *c. Deuterostomes experience indeterminate cell cleavage during development

71. Select all that apply: Which organism(s) is/are a Deuterostome?

- *a. An echinoderm that experiences radial cell cleavage during development
- b. An annelid that experiences determinate cell cleavage during development

c. A mollusk that develops a mouth from the blastopore

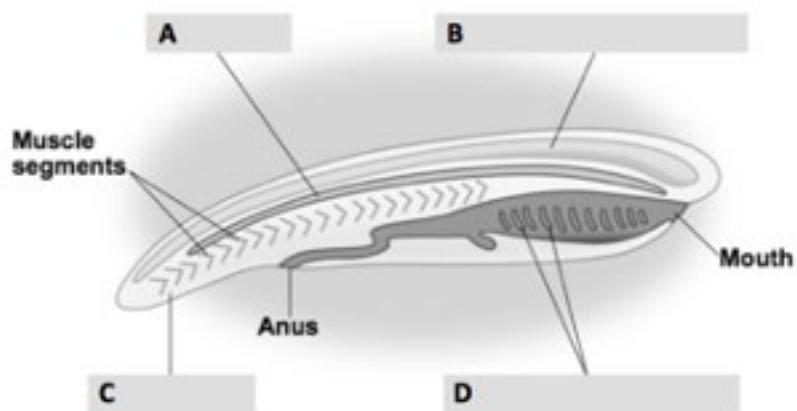
72. Select all that apply: Which characteristic(s) is/are seen in Deuterostomes?

a. Determinate cleavage

*b. Radial cleavage

*c. Blastopore becomes the anus

73. On the image of a simple chordate above, which structure is the notochord (as opposed to the pharyngeal slit, post-anal tail, or dorsal hollow nerve cord)?



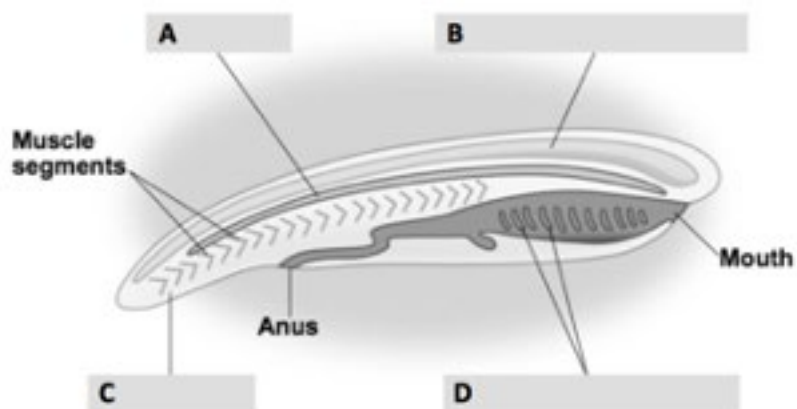
*a. A

b. B

c. C

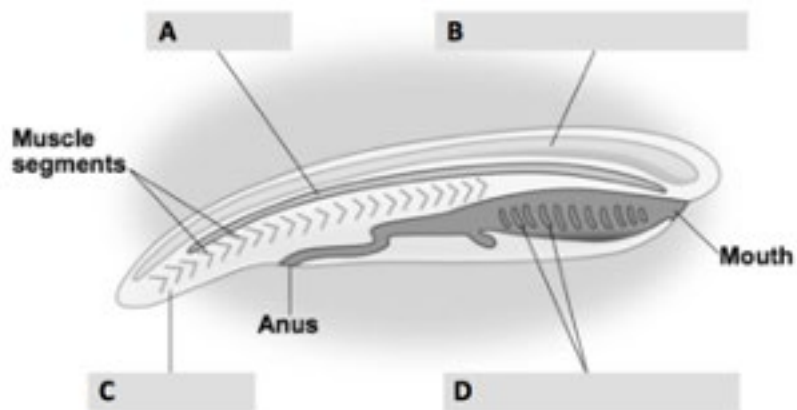
d. D

74. On the image of a simple chordate above, which structure is a pharyngeal slit (as opposed to the notochord, post-anal tail, or dorsal hollow nerve cord)?



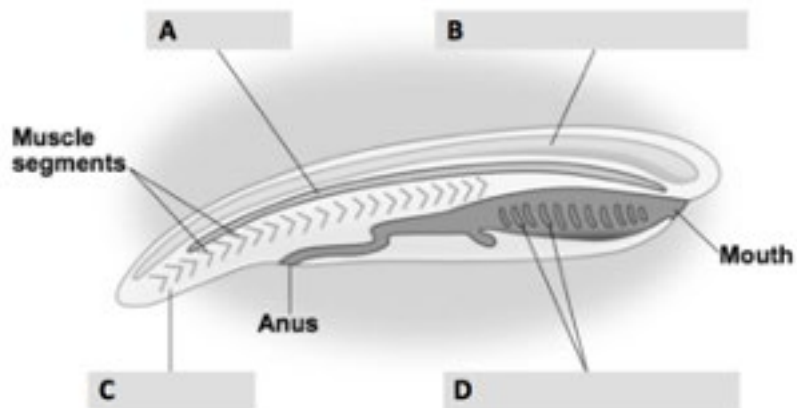
- a. A
- b. B
- c. C
- *d. D

75. On the image of a simple chordate above, which structure is the post-anal tail (as opposed to the notochord, pharyngeal slits, or dorsal hollow nerve cord)?



- a. A
- b. B
- *c. C
- d. D

76. On the image of a simple chordate above, which structure is the dorsal hollow nerve cord (as opposed to the post-anal tail, notochord, or pharyngeal slits)?



- a. A
- *b. B
- c. C
- d. D

77. A true neck, ribs, four limbs, and digits made of bone are all basal characteristics of which organismal group?

- a. Amniota
- *b. Tetrapoda
- c. Sarcopterygii
- d. Vertebrata

78. Select all that apply: Which statement(s) is/are true of Tetrapoda?

- a. Basal members produce amniotic eggs.
- b. Basal members have cartilaginous skeletons.
- *c. Basal members have four limbs and digits.
- *d. Basal members have a true neck and ribs.

79. Select all that apply: Which organism(s) is/are members of Tetrapoda?

- *a. Amphibians, who have four limbs and no amniotic egg.
- b. Coelacanth, who have muscular fins and no true neck.
- *c. Mammals, who have a true neck and no gills.

80. Select all that apply: Which characteristic(s) is/are seen in Tetrapoda?

- *a. Digits
- *b. True neck
- c. Amniotic egg
- d. Cartilaginous skeleton
- *e. Four limbs

81. A plant shoot grows towards a light source. What is this an example of?

- *a. tropism
- b. morphogenesis
- c. nastic movement

82. A plant's growth is stunted as a result of consistent trampling by cattle. What is this an example of?

- a. tropism
- *b. morphogenesis
- c. nastic movement

83. A vine grows towards, then up a wall. What is this an example of?

- *a. tropism
- b. morphogenesis
- c. nastic movement

84. A Venus fly trap closes in response to the touch of an insect. What is this an example of?

- a. tropism
- b. morphogenesis
- *c. nastic movement

85. Which plant hormone stimulates growth towards a light source, with gravity, and enhances apical dominance?

- a. Gibberellin
- b. Cytokinin
- *c. Auxin

86. Select all that apply: Which is/are functions of auxin?

- *a. Stimulates stem elongation
- b. Inhibits early seed germination
- c. Promotes lateral stem growth
- *d. Enhances apical dominance

87. Which is auxin involved in?

- a. Inhibition of apical dominance
- b. Promotes lateral growth and stem thickening
- *c. Growth towards or away from a stimulus

88. Which statement about auxin is true?

- a. Auxin inhibits stem growth against gravity
- *b. Auxin stimulates stem growth towards a light source
- c. Auxin enhances stem thickening and horizontal growth

89. As a single water molecule moves through a plant, what would this molecule do first?

- a. The water molecule evaporates from the leaf
- *b. The water molecule is pulled out of the soil by the roots
- c. The water molecule enters the xylem
- d. The water molecule exits the xylem
- e. The water molecule moves up through the xylem

90. As a single water molecule moves through a plant, what would this molecule do last?

- *a. The water molecule evaporates from the leaf
- b. The water molecule is pulled out of the soil by the roots
- c. The water molecule enters the xylem
- d. The water molecule exits the xylem
- e. The water molecule moves up through the xylem

91. As a single water molecule moves through a plant, what would this molecule do second?

- a. The water molecule evaporates from the leaf
- b. The water molecule is pulled out of the soil by the roots
- *c. The water molecule enters the xylem
- d. The water molecule exits the xylem

- e. The water molecule moves up through the xylem

92. As a single water molecule moves through a plant, what would this molecule do third?

- a. The water molecule evaporates from the leaf
- b. The water molecule is pulled out of the soil by the roots
- c. The water molecule enters the xylem
- d. The water molecule exits the xylem
- *e. The water molecule moves up through the xylem

93. Which event in sugar translocation in a plant occurs first?

- *a. Companion cells load sugar from sugar source (leaf) to sieve tube
- b. High pressure near sources drives phloem sap through sieve tubes toward areas of low pressure
- c. Water moves by osmosis from phloem to xylem or other adjacent tissues and creates low pressure
- d. Companion cells unload sugar from phloem sap into sink cells
- e. Water moves by osmosis from xylem into adjacent phloem and creates high pressure

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