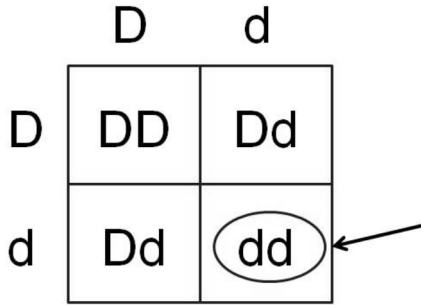


Mock EOCT Part I Section 1

Name: _____

Date: _____

1. The figure below shows a Punnet Square for an inherited trait.



The arrow is pointing to a circled genotype in the square. What genotype does the circled "dd" represent?

- A. the genotype in the mother's egg
- B. the genotype that only the girls will inherit
- C. the genotype that any of the children could inherit
- D. the genotype that exactly $\frac{1}{4}$ of the children will inherit

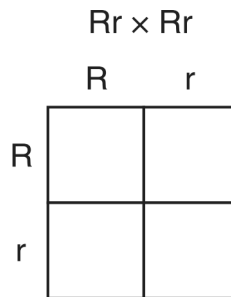
2. Fruit flies have 3 chromosomes plus sex chromosomes (X and Y). Mutations occurred within four different cells of an individual female fruit fly as shown in the table below.

Cell Type	Chromosome	Trait	Normal Phenotype	Mutated Phenotype
exoskeleton	2	head features	eyes present	eyes are absent
gamete	2	wing shape	straight wings	curly wings
muscle	X	body color	tan body	yellow body
nerve	3	antenna shape	normal antennae	leg-shaped antennae

Which of these mutations could be passed on to this fruit fly's offspring?

- A. absent eyes
- B. curly wings
- C. yellow body
- D. leg-shaped antennae

3. The diagram below represents a cross between two pea plants.



In pea plants, the allele for round seeds (R) is dominant to the allele for oval seeds (r). In a cross between the two plants above, what percentage of the offspring will have round seeds?

- A. 100%
- B. 75%
- C. 50%
- D. 25%

4. Which of the following *best* describes the inheritance of a sex-linked trait?
- a recessive allele carried by females that affects only males
 - a dominant allele carried by females that affects only males
 - an allele carried on the Y chromosome that can affect both males and females
 - an allele carried on an X chromosome that can affect males or females
5. If a corn plant has a genotype of Tty, what are the possible genetic combinations that could be present in a single grain of pollen from this plant?

- | | |
|---------------|-------------------|
| A. Ty, ty | B. TY, ty |
| C. TY, Ty, ty | D. Ty, ty, tY, TY |

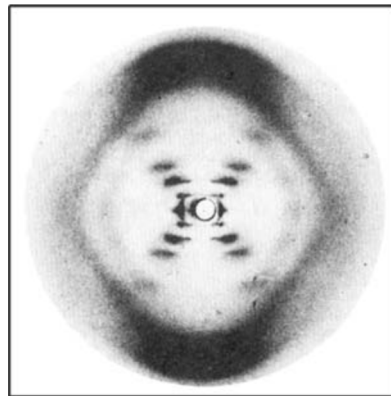
6. In certain breeds of dogs, deafness is due to a recessive allele (d) of a particular gene, and normal hearing is due to its dominant allele (D). What percentage of the offspring of a normal heterozygous (Dd) dog and a deaf dog (dd) would be expected to have normal hearing?
- A. 0% B. 25% C. 50% D. 100%

7. Which sequence of DNA bases would pair with the ones shown in the partial strand below?

1 2 3
 ATG TGA CAG

- 1 2 3
 ATG TGA CAG
- 1 2 3
 TAC ACT GTC
- 1 2 3
 GTA AGT GAC
- 1 2 3
 CAT TCA CTG

8. The diagram below shows Rosalind Franklin's x-ray diffraction image of DNA.



How did this evidence affect the work of Watson and Crick?

- It was used to determine the physical structure of DNA.
- It was used to identify the four bases that make up DNA.
- It was used to develop the theory of independent assortment.
- It was used to show that DNA was the molecule of inheritance.

9. 5' ATCAGCGCTGGC 3'

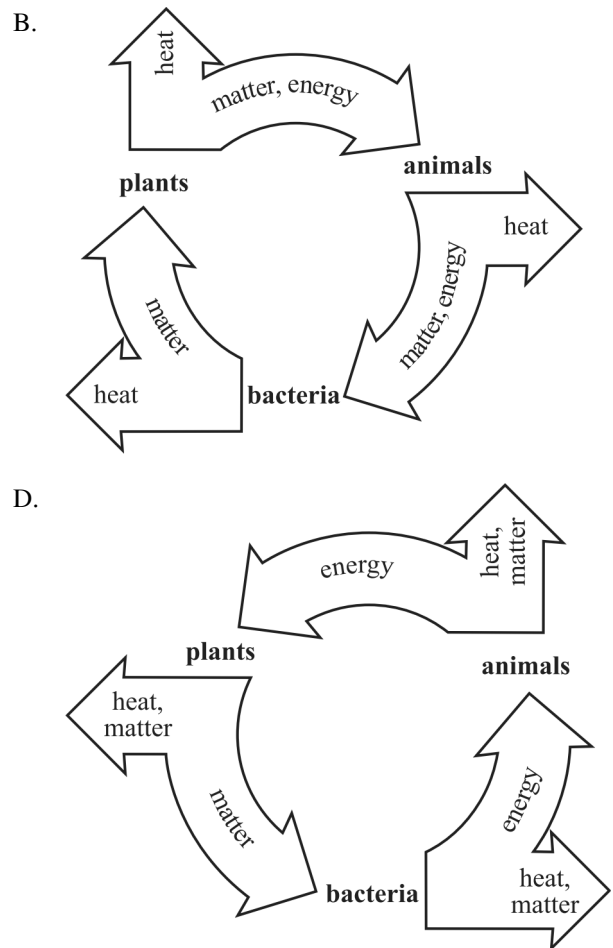
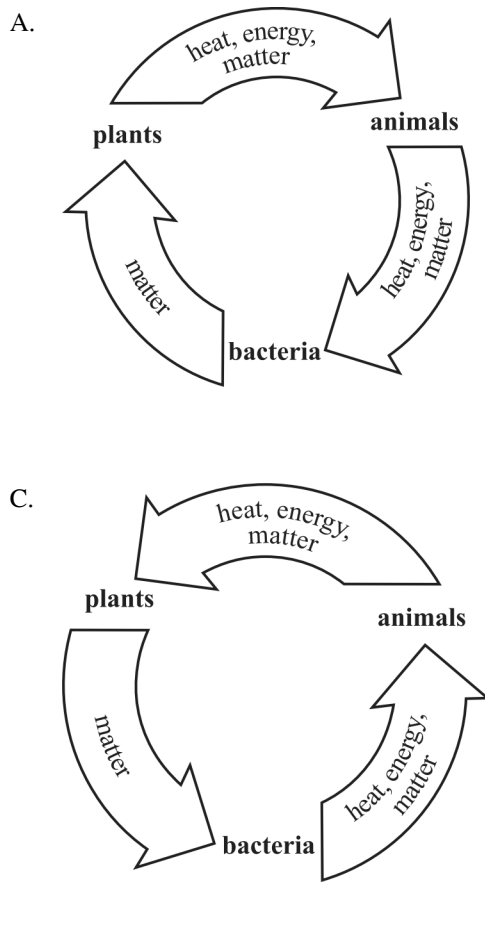
The above sequence of DNA is part of a gene. How many amino acids are coded for by this segment?

- A. 4 B. 8 C. 12 D. 20

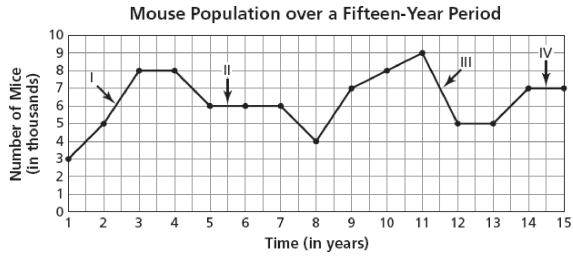
10. What is a primary role of decomposers in an ecosystem?

- A. They eliminate matter by taking nitrogen from the ecosystem.
B. They eliminate matter by taking phosphorus from the ecosystem.
C. They cycle matter by returning carbon and other matter to the ecosystem.
D. They cycle matter by returning oxygen and other matter to the ecosystem.

11. Which diagram correctly models the movement of heat, energy, and matter in an ecosystem?



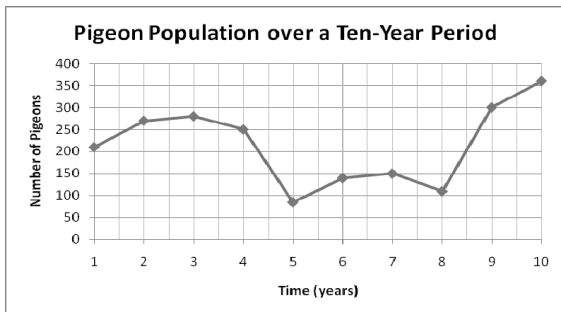
12. The graph below shows the population of mice living in a certain area over a fifteen-year period.



Which numeral on the graph points to a time when the birth rate exceeded the death rate of the mice?

- A. I B. II C. III D. IV

13. The graph below shows a population of pigeons living in a neighborhood over a ten-year period.

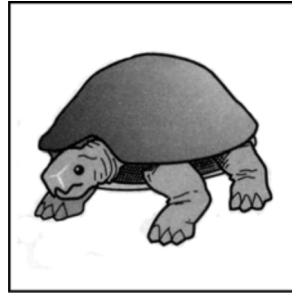


Which of the following statements could account for the change in population seen between years 7 and 8?

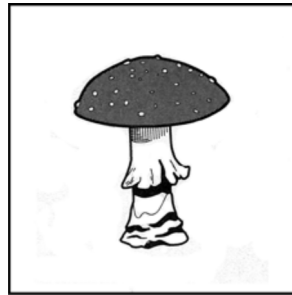
- A. The birth rate of the pigeons increased.
 B. The emigration rate of the pigeons decreased.
 C. The death rate of the pigeons exceeded the birth rate.
 D. The neighborhood reached its carrying capacity for the pigeon population.

14. A group of students is building a model of an ecosystem. Which of the following organisms should the students select to act as a decomposer?

A.



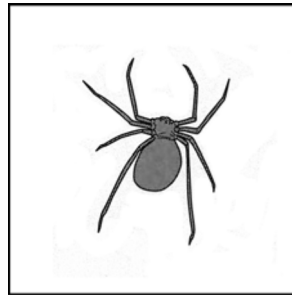
B.



C.



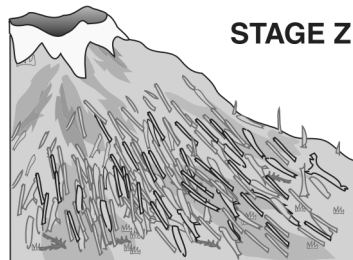
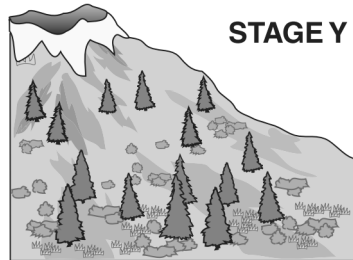
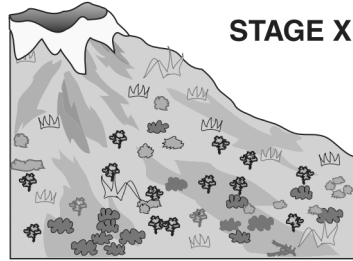
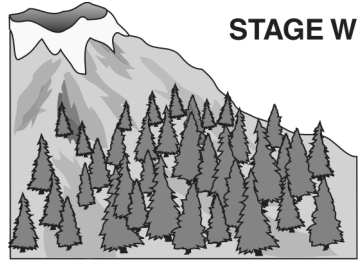
D.



15. After a volcanic eruption has covered an area with lava, which of the following is the *most* likely order of succession in the repopulation of the area?

- A. lichens → grasses → shrubs → trees
- B. mosses → grasses → lichens → trees
- C. grasses → trees → mosses → lichens
- D. shrubs → grasses → trees → lichens

16.



When the Mount St. Helens volcano erupted, the blast covered much of the surrounding area with ash. Based on the diagram above, which list shows the sequence of secondary succession that followed that eruption?

- A. X, Y, Z, W
- B. Z, X, Y, W
- C. W, Y, X, Z
- D. Z, Y, W, X

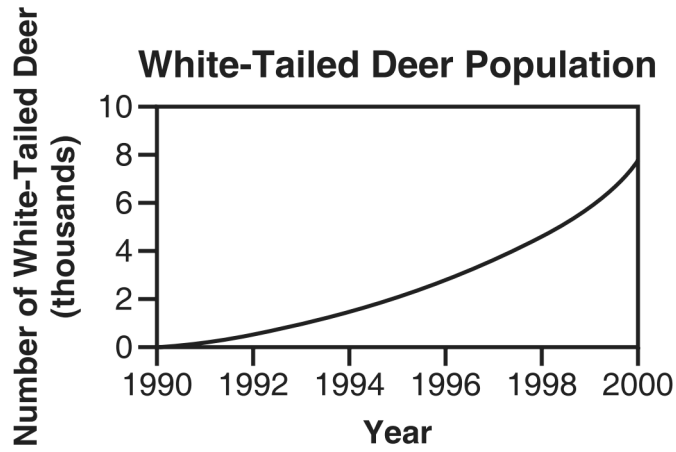
17. A wetland was drained to build a mall. Two years later, there were no more toads in that area. Why did the toads disappear?

- A. The toads were destroyed by the construction equipment.
- B. The toads died because toads cannot breathe out of water.
- C. The toads were frightened and went into the woods.
- D. The toads got their food from the wetland ecosystem.

18. How does too much fishing in an area affect its ecosystem?

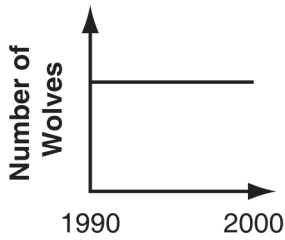
- A. The fish will lay many more eggs to replace the fish that were caught.
- B. Organisms that eat the fish could become endangered due to starvation.
- C. Organisms that the fish eat will become endangered.
- D. People could eat too many fish and become ill.

19.

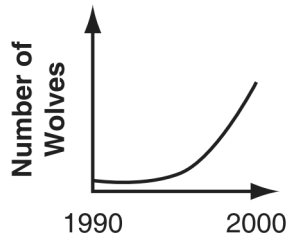


The graph above shows how a white-tailed deer population recovered over a ten-year period after a population crash. Wolves in the same area feed primarily on deer. Which graph shows the *most likely* change in wolf population for the same ten-year period?

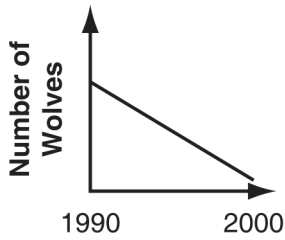
A. **Wolf Population**



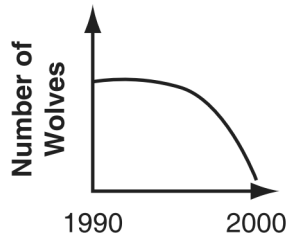
B. **Wolf Population**



C. **Wolf Population**



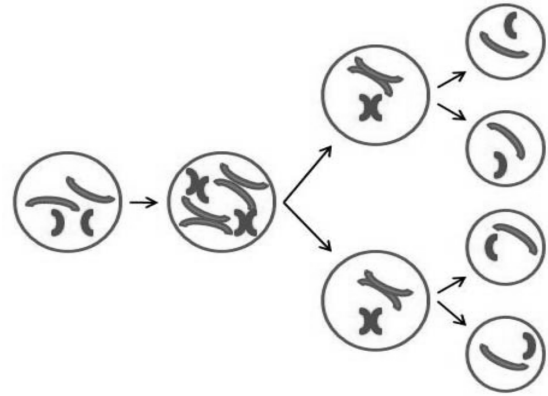
D. **Wolf Population**



20. The genome of a goldfish contains 96 chromosomes. How many chromosomes will each daughter cell have after mitosis of a goldfish cell is complete?

- A. 24 B. 48 C. 96 D. 192

21. The distribution of chromosomes in one type of cell division is shown in the diagram below.



Which process and type of resulting cells are represented in the diagram?

- A. mitosis, which produces gametes
B. mitosis, which produces body cells
C. meiosis, which produces gametes
D. meiosis, which produces body cells

22. Which statement about plant and animal cells is true?

- A. Both have a cell wall to give them support.
B. Both have a large vacuole to store water.
C. Both use mitochondria to produce energy.
D. Both use chloroplasts to store energy.

23. There are many different enzymes located in the cytoplasm of a single cell. How is a specific enzyme able to catalyze a specific reaction?
- Different enzymes are synthesized in specific areas of the cytoplasm.
 - Most enzymes can catalyze many different reactions.
 - An enzyme binds to a specific substrate (reactant) for the reaction catalyzed.
 - Enzymes are transported to specific substrates (reactants) by ribosomes.

24. Proteins are large macromolecules composed of thousands of subunits. The structure of the protein depends on the sequence of
- lipids.
 - monosaccharides.
 - amino acids.
 - nucleosides.

25. Use the pictures below to answer the question.



cell



organ

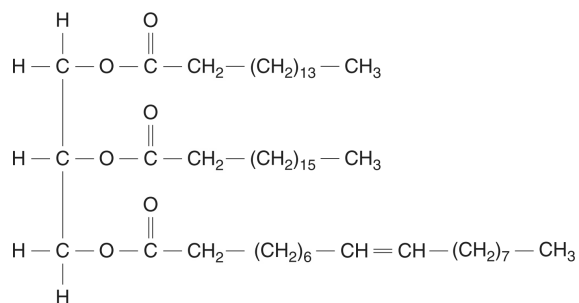


tissue

Which shows the correct order from simplest to most complex?

- Cell → Tissue → Organ
- Organ → Tissue → Cell
- Cell → Organ → Tissue
- Tissue → Organ → Cell

26. The diagram below represents a fat molecule.



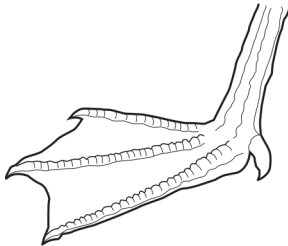
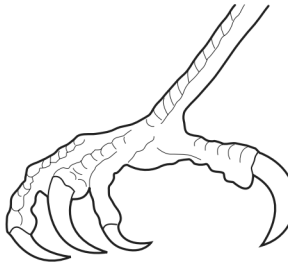

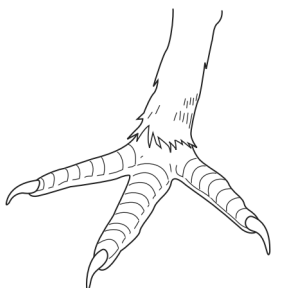
A fat molecule belongs to which category of organic molecules?

- proteins
- lipids
- nucleic acids
- carbohydrates

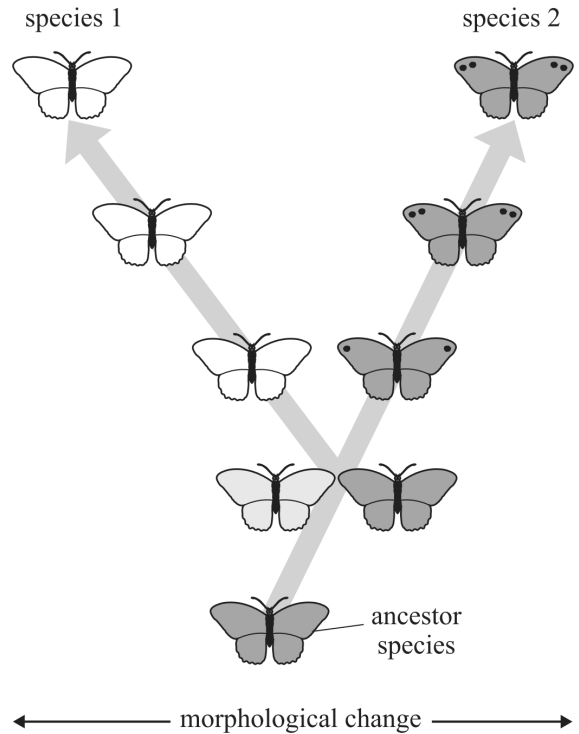
27. Cellular respiration involves a series of chemical reactions. Which of the following is a *primary* way that enzymes affect these reactions?

- A. They decrease the pH of the products.
- B. They increase the rate of the reactions.
- C. They take the place of oxygen as a reactant.
- D. They change the location of the reactions in the cell.

28. Which bird foot is *best* for swimming?

- A. 
- B. 
- C. 
- D. 

29. The illustration below shows the morphological change of two species.



Which statement explains why species 1 and species 2 are different?

- A. An individual changed itself to suit the environment.
- B. Natural selection can cause gradual speciation changes.
- C. Interbreeding of species 2 results in no genetic mutations.
- D. Extinction of ancestor species occurs as a result of interbreeding.

30. A termite population was sprayed with a certain brand of insecticide. After being sprayed, the number of surviving termites within the population were counted and recorded as a percentage of the total. This process was repeated until a total of six generations of termites had been sprayed. The results are shown in the table below.

Termite Generation	Percentage of Surviving Termites After Spraying
1	5%
2	10%
3	25%
4	40%
5	60%
6	80%

Which statement *best* explains why later generations had higher percentages of termites that survived?

- A. Earlier generations had several members that were old and weak.
- B. Earlier generations had smaller numbers of termites than later generations.
- C. Later generations were able to live through the spraying because they were used to it.
- D. Later generations were the offspring of termites that were more resistant to the spraying.

31. How is natural selection in the evolution of long necks in giraffes *best* explained?
- A. Shorter-necked giraffes were killed by long-necked giraffes.
 - B. Giraffe necks grew longer because of the bone structure of the animals.
 - C. Giraffes with longer necks survived because they were better suited to the environment.
 - D. Long-necked giraffes mated only with other long-necked giraffes.

32. The arctic fox and gray wolf are two examples of animals that change the color of their fur with the seasons. In the summer, the animals are a brownish color, and in the winter, they turn white. The change of color helps the animals to survive.

Which of the following provides the *best* explanation for this change?

- A. The color change helps protect them from predators.
- B. The color change helps them raise their young.
- C. The color change helps them regulate their body temperature better.
- D. The color change helps them be seen from a great distance.

33. Study the table below.

Student's Observation of Characteristics

Organism	Characteristic 1	Characteristic 2
W	teeth	scales
X	reproduces	grows
Y	hair	moves
Z	feathers	eats

A student records observed characteristics for four organisms. Based on this student's observations, which organism has two characteristics of *all* living things?

- A. organism W
- B. organism X
- C. organism Y
- D. organism Z

34. The following table lists characteristics of five different types of animals. Use the information in the table to answer the following question(s).

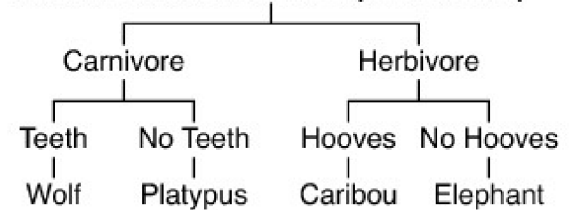
Characteristics	Type I	Type II	Type III	Type IV	Type V
Segments	fewer than 5 segments	5 or more segments	fewer than 5 segments	fewer than 5 segments	5 or more segments
Antennae	one pair of antennae	one pair of antennae	no antennae	two pairs of antennae	no antennae
Number of Legs	fewer than 10 legs	10 or more legs	fewer than 10 legs	10 or more legs	no legs
Mandibles	yes	yes	no	yes	no
Exoskeleton	yes	yes	yes	yes	no
Wings	yes	no	no	no	no

An animal has 20 body segments and has no mandibles. Which type of animal is it?

- A. Type II
- B. Type III
- C. Type IV
- D. Type V

35. According to the classification key, what characteristic does a wolf have in common with a caribou?

Animals with Backbones (Vertebrates)



- A. Backbone
- B. Flat tails
- C. Hooves
- D. Teeth

36. The table below shows the classifications of four animals.

Animal Classification

Animal	Q	R	S	T
Kingdom	Animalia	Animalia	Animalia	Animalia
Phylum	Chordata	Chordata	Chordata	Chordata
Class	Mammalia	Mammalia	Mammalia	Mammalia
Order	Carnivora	Rodentia	Rodentia	Carnivora
Family	Canidae	Muridae	Muridae	Felidae
Genus and Species	<i>Canis familiaris</i>	<i>Mus musculus</i>	<i>Mesocricetus auratus</i>	<i>Felis sylvestris</i>

According to their classification, which of the following animals are *most* closely related?

- A. Q and R
- B. S and T
- C. Q and T
- D. R and S

37. Use this dichotomous key to answer the question.

Reptiles and Amphibians

1a.	Has external gills	Go to 6.
1b.	Does not have external gills	Go to 2.
2a.	Has scales	Go to 3.
2b.	Does not have scales	Go to 4.
3a.	Has a shell	turtle
3b.	Does not have a shell	Go to 5.
4a.	Has a tail as an adult	Go to 6.
4b.	Does not have a tail as an adult	frog
5a.	Has legs	lizard
5b.	Does not have legs	snake
6a.	Has coastal grooves along the side	salamander
6b.	Does not have coastal grooves along the side	newt

Trish constructed a dichotomous key to help identify the reptiles and amphibians living in a certain area. Which phrase describes a lizard?

- A. an animal with scaly skin and a shell but no external gills
- B. an animal with scaly skin and legs but no shell
- C. an animal with legs and coastal grooves but no tail
- D. an animal with external gills and a tail but no coastal grooves

38. The table below provides information about nutrition and cellular structure for organisms in different kingdoms.

Kingdom	Nutrition	Nucleus	Unicellular or Multicellular
Fungi	heterotrophic	yes	unicellular and multicellular
Plantae	autotrophic	yes	multicellular
Animalia	?	?	?

What information *best* completes the table?

- A. autotrophic, no, unicellular
- B. autotrophic, yes, multicellular
- C. heterotrophic, no, unicellular
- D. heterotrophic, yes, multicellular

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- | | |
|--|---|
| <p>1.
Answer: C</p> <p>2.
Answer: B</p> <p>3.
Answer: B</p> <p>4.
Answer: D</p> <p>5.
Answer: A</p> <p>6.
Answer: C</p> <p>7.
Answer: B</p> <p>8.
Answer: A</p> <p>9.
Answer: A</p> <p>10.
Answer: C</p> <p>11.
Answer: B</p> <p>12.
Answer: A</p> <p>13.
Answer: C</p> <p>14.
Answer: B</p> <p>15.
Answer: A</p> <p>16.
Answer: B</p> <p>17.
Answer: D</p> <p>18.
Answer: B</p> <p>19.
Answer: B</p> <p>20.
Answer: C</p> | <p>21.
Answer: C</p> <p>22.
Answer: C</p> <p>23.
Answer: C</p> <p>24.
Answer: C</p> <p>25.
Answer: A</p> <p>26.
Answer: B</p> <p>27.
Answer: B</p> <p>28.
Answer: A</p> <p>29.
Answer: B</p> <p>30.
Answer: D</p> <p>31.
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Answer: A</p> <p>33.
Answer: B</p> <p>34.
Answer:</p> <p>35.
Answer: A</p> <p>36.
Answer: D</p> <p>37.
Answer: B</p> <p>38.
Answer: D
Objective: B.08C</p> |
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