

9 Which is the best example of how science and improvements in technology affect life?

- (A) A birdwatcher feeds seeds to birds in the winter.
- (B) A person plants a garden in her backyard to grow vegetables.
- (C) A student watches a garter snake eat a mouse.
- (D) A dairy farmer chooses cows that produce more milk.

10 A 7th grade science student travels to a rainforest and observes the leaves of jungle plants. He then travels to a desert and observes leaves on native plants there. He concludes that large, flat leaves give plants in the jungle an advantage, and plants in the desert do better if they have small leaves. Which statement best describes the student's conclusion?

- (A) It is a good conclusion because he based it on observable evidence.
- (B) It is a good conclusion because he already learned about it in science class.
- (C) It is a poor conclusion because he only saw what he expected to see.
- (D) It is a poor conclusion because he didn't do an experiment.

11 Students dropped different colored toothpicks in lawn grass. They were given one minute to pick up as many toothpicks as they could. Students found that they had more red and blue toothpicks than green.

Ecologists observed that the Varying hares (rabbits) fur is brown in the summer and white in winter. They found that the population remained about the same in winter and summer.

According to these investigations, how does color affect organisms?

- (A) It helps them find communities to live in
- (B) It helps them stand out from their surroundings
- (C) It helps them find more food
- (D) It helps them escape predators

12 The more classification levels shared by two organisms:

- (A) the easier it is to tell two organisms apart.
- (B) the more distantly related the two organisms are.
- (C) the more characteristics they have in common.
- (D) the closer they live together in their environment.

- 13** Which answer below best describes improvements that can be made in the types of crops farmers grow?
- (A) The crops farmers grow will probably stay the same. Scientists have learned all there is to know about crops.
 - (B) The crops farmers grow will probably stay the same. We don't need any new crops.
 - (C) The crops farmers grow may change because new technology can provide new information about crops.
 - (D) The crops farmers grow may change because scientists like to change things.

- 14** The human genetic material for insulin (a chemical that helps our bodies use sugar) is inserted into bacteria cells. The bacteria then produce human insulin, which is harvested and given to people with diabetes. What does this demonstrate?
- (A) Science affects human life.
 - (B) All bacteria are helpful to humans.
 - (C) Bacteria cannot be helpful to humans.
 - (D) Science provides information, but it is irrelevant to life.

- 15** Read the following situation and answer the question.

Your mother sends you to the store to buy some tomatoes. You notice when you get there that there are several choices to make. Among those choices you notice a sign that announces a new genetically altered tomato that resists "rotting," "stays firmer longer" and has a "longer shelf life."

How would you go about testing (doing) sciences to support or reject these claims?

- (A) It is not possible for a student to test these claims
- (B) Buy a genetically engineered tomato and a regular tomato and compare the two
- (C) Buy 2 regular tomatoes and compare them
- (D) Buy 2 genetically engineered tomatoes and compare them

d. Bony fishes

2. If the number of kinds of organisms in a group is a measure of successful adaptation, which group of fishes appear to have been the most successful?

- a. Armored fish
- b. Bony fish
- c. Cartilaginous fish
- d. Each group is equally successful

3. If the above criteria are used, which group appears to have been the least successful?

- a. Bony fish
- b. Reptiles
- c. Birds
- d. Amphibians

4. Which group of animals best shows the idea that variety probably diminishes before the group becomes extinct?

- a. Amphibians
- b. Armored fishes
- c. Birds
- d. Mammals

ESSAY RESPONSE	
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- 23 Read the passage.
Which of the underlined statements is the best example of science and technology affecting

Early in the morning the sun shines through the window (1) and Bernard, a farmer, wakes up. He eats breakfast (2) and goes to work. When he gets to the field, he irrigates his recently-planted new variety of corn (3). Then he plows his neighboring field. After plowing, he goes home for lunch and reads the paper (4).

life?

- (A) 1
- (B) 2
- (C) 3
- (D) 4

- 24 Students dropped different colored toothpicks in lawn grass. They were given one minute to pick up as many toothpicks as they could. Students found that they had more red and blue toothpicks than green.

Ecologists observed that the Varying hares ("rabbits") fur is brown in the summer and white in winter. They found that the population remained about the same in winter and summer.

What advantage does the model presented in the classroom have over the natural setting?

- (A) The time is unrealistic. Instead of a few minutes, considerable time lapses for organisms to adapt.
- (B) The process that is modeled cannot be observed and counted.
- (C) Different lifelike conditions can be easily brought into the model.
- (D) The toothpick color cannot accurately reflect live organisms.

- 25 Many animals that live near the North Pole are white. Why is being white a helpful inherited trait for the North Pole environment?

- (A) white absorbs more heat
- (B) white blends in with the surroundings
- (C) white reflects sunlight
- (D) white helps animals to move faster

- 26 Birds in a desert climate survive on soft parts of cactus. Scientists observed that during a drought, many of the birds died. The ones that survived had larger beaks and were able to crack open and eat hard seeds that would ordinarily not be used. The next generation of birds all had large beaks.

How did inherited traits help some birds survive?

- (A) all surviving birds migrated
- (B) inherited traits helped birds get water
- (C) inherited traits helped birds change foods
- (D) the inherited traits changed the environment

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What advantage does the model presented in the classroom have over the natural setting?

- (A) It shows how easily people would find animals of different colors
- (B) It is more accurate because classroom models better represent nature than nature itself
- (C) It is easier to calculate the results because of the controlled environment
- (D) It bears no advantage over the natural testing environment

- 28 Birds in a desert climate survive on soft parts of cactus. Scientists observed that during a drought, many of the birds died. The ones that survived had larger beaks and were able to crack open and eat hard seeds that would ordinarily not be used. The next generation of birds all had large beaks. How did inherited traits help some birds survive?

- (A) All surviving birds migrated.
- (B) Inherited traits helped birds get water.
- (C) Inherited traits helped birds eat different food.
- (D) The inherited traits changed the environment.

- 29 Which statement correctly gives a difference about the exchange of genetic material in sexual and asexual reproduction?

- (A) Genetic material comes from two parents in sexual reproduction and just one parent in asexual reproduction.
- (B) Variation in genetic material is more likely in asexual reproduction than in sexual reproduction.
- (C) For both types of reproduction, the amount of genetic material in the offspring is the same as in each parent.
- (D) Cells that are involved in both types of reproduction are identical to begin with.

30 In the early 1800s, Jean-Baptiste Lamarck described how giraffes developed such long necks. He explained that a giraffe's neck grew longer as she stretched to reach leaves high in trees. The giraffe then passed on her longer neck to her offspring, so the next generation had longer necks than the generation before. Since Lamarck's time, we have learned more about how traits are passed from parent to offspring.

Which statement below best evaluates Lamarck's ideas using current science knowledge?

- (A) Neck length is an inherited trait and can be changed by the giraffe's behavior, so Lamarck's ideas are valid.
- (B) Neck length is an inherited trait and cannot be changed by the giraffe's behavior, so Lamarck's ideas are not valid.
- (C) Neck length is an acquired trait, so giraffes' necks will be different lengths depending on the time of year they are born.
- (D) Neck length is an acquired trait, so giraffes' necks will change as they age.

31 You are given 3 unknown organisms labeled A, B, C. When looking at the DNA of the three unknown organisms, you find that the DNA of organism C is a combination of the DNA from organism A and organism B. Which statement below is the most logical reason?

- (A) Organisms A, B, and C were reproduced asexually
- (B) Organisms A, B, and C were siblings
- (C) Organism A and B are the parents of C
- (D) Organism A, B, and C are unrelated

32 Female animals form _____ cells for sexual reproduction.

- (A) egg
- (B) ovary
- (C) sperm
- (D) zygote

33 Which answer below best describes the future of our knowledge about inherited traits that are passed from parents to child?

- (A) Knowledge about inherited traits will probably change because new technology will provide new information about inherited traits.
- (B) Knowledge about inherited traits will probably change because scientists like to change things.
- (C) Knowledge about inherited traits will probably stay the same. Scientists have learned all there is to know about inherited traits.
- (D) Knowledge about inherited traits will probably stay the same. Scientists don't like to learn new information.

34 How many parents are required in sexual reproduction?

- (A) one
- (B) two
- (C) three
- (D) none

35 Which of the following is an example of sexual reproduction?

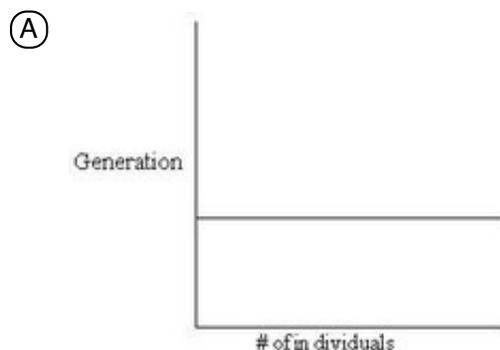
- (A) Division of an amoeba because all of the parts of an amoeba have the same genes and will produce identical offspring.
- (B) Growth of an organism is reproduction because new organisms will result.
- (C) Joining of an egg and sperm because two different cells combine to form an organism with a new combination of genes.
- (D) One cell splitting into two as in bacteria is sexual reproduction because the new cells both have identical genes.

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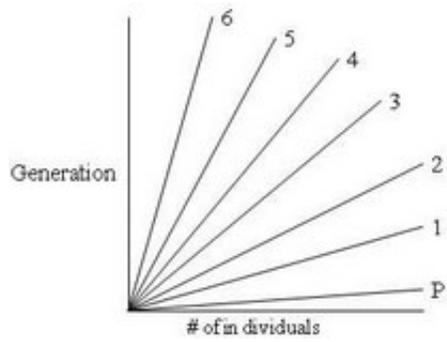
Asexual reproduction

Generation	Number of individuals
Parent	1
1 st generation of offspring	2
2 nd generation of offspring	4
3 rd generation of offspring	8
4 th generation of offspring	16
5 th generation of offspring	32
6 th generation of offspring	64

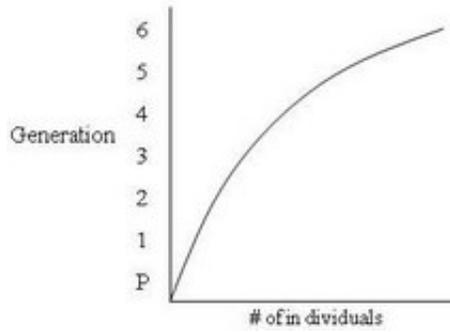
Given the data table above, which is the best display to summarize the data?



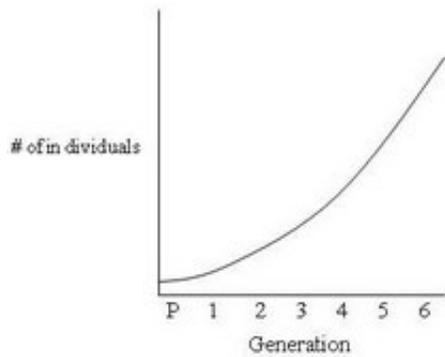
(B)



Ⓒ



Ⓓ



37 Which of the following is an example of sexual reproduction?

- Ⓐ division of one amoeba into two
- Ⓑ growth of an organism
- Ⓒ joining of egg and sperm
- Ⓓ one cell splitting to form two cells

- 41 Sickle Cell Anemia is a blood disease caused by a person's genetic information. How does knowing that this disease is genetic help people?
- (A) Genetic diseases are inherited traits, so treatment will be different than treatment for diseases people can catch.
 - (B) Genetic diseases are inherited traits, so we can learn what kind of germs carry Sickle Cell Anemia.
 - (C) Genetic diseases are acquired traits, so we can learn how to avoid catching Sickle Cell Anemia.
 - (D) Genetic diseases are acquired traits, so people with the disease can change their diet and lifestyle to get better.
- 42 A farmer planted the same variety of corn in two different fields, one in a field he had used before and one in a field that was new. The corn in the new field grew larger kernels than the corn in the old field. The farmer concluded that he should eat the corn from the new field and save the corn from the old field for seed. Was this conclusion a good one? Why or why not?
- (A) Yes. Anyone can form good conclusions based on data and the corn from the old field can grow large kernels as well as the corn from the new field
 - (B) No. The farmer is not a scientist and should not form conclusions. Also the corn from the new field will grow larger kernels when it is planted next year
 - (C) No. The farmer is not a scientist and should not form conclusions even though the corn from the old field can grow large kernels as well as the corn from the new field
 - (D) No. Although anyone can form good conclusions based on data, the corn from the new field will grow larger kernels when it is planted next year
- 43 A farmer planted the same variety of corn in two different fields, some in a field he had used before and some in a field that was new. The corn in the new field grew larger kernels than the corn in the old field. The farmer concluded that he should eat the corn from the new field and save the corn from the old field for seed. Was his conclusion a good one?
- (A) Yes, because the new field seems to be a better environment for corn that he wants to plant.
 - (B) Yes, because the corn in both fields is genetically the same and will be equally good seed.
 - (C) No, because the corn from the good field now has better genes and will be better seed.
 - (D) No, because the corn in the old field seems to be worn out and will be bad seed.
- 44 Pat's mom is a concert pianist. People keep telling Pat that she will also be a great pianist one day because she will "get it from her mom." How could you describe this statement?
- (A) Inference - piano playing is an acquired trait
 - (B) True - piano playing is an inherited trait
 - (C) True - piano playing is an acquired trait
 - (D) Inference - piano playing is an inherited trait

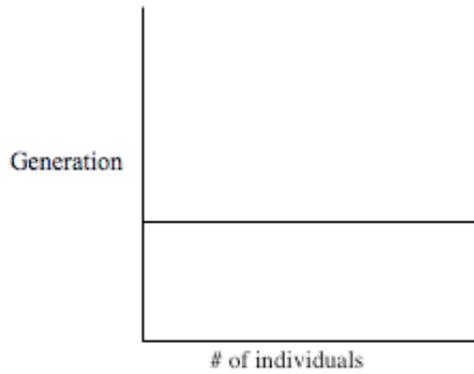
Look at the data table. Which of the graphs best displays the data?

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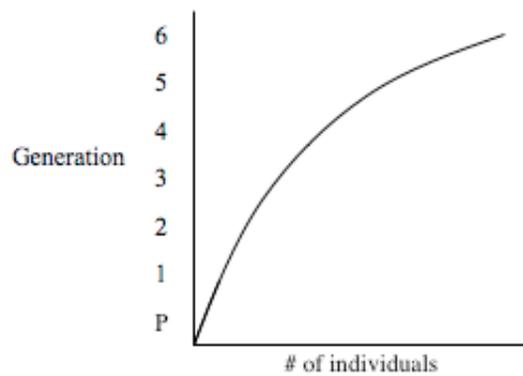
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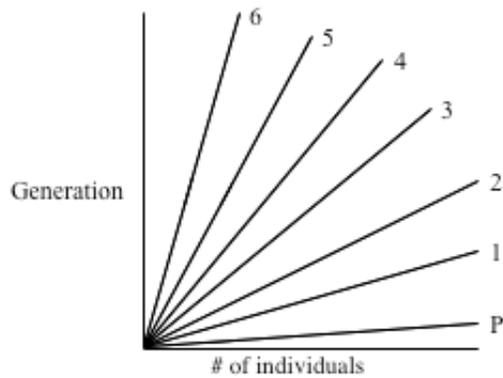
(A)



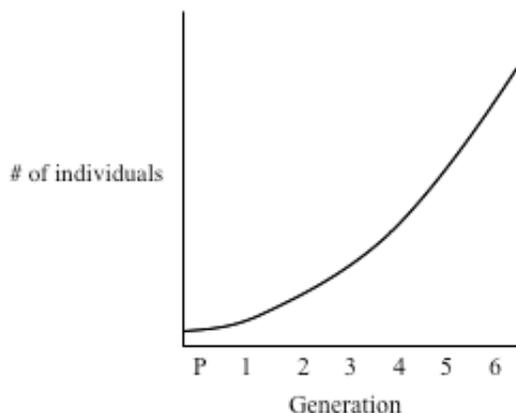
(B)



(C)



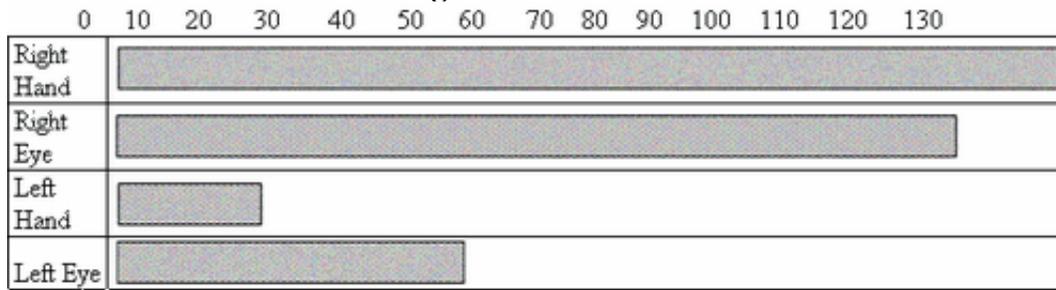
(D)



- 46** You are given 3 unknown organisms labeled A, B, C. When looking at the DNA of the three unknown organisms, you find that they all have the exact same sequence of DNA. Which statement below is the most logical explanation?
- (A) Organisms A, B, and C were reproduced asexually from a common parent
 - (B) Organisms A, B, and C were reproduced sexually from a single pair of parents
 - (C) Organism A and B are the parents of C
 - (D) Organism A, B, and C are unrelated
- 47** A farmer planted the same variety of corn in two different fields, one in a field he had used before and one in a field that was new. The corn in the new field grew larger kernels than the corn in the old field. The farmer concluded that he should eat the corn from the new field and save the corn from the old field for seed. Was the farmer's conclusion a good one?
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 - (D) No. Although anyone can form good conclusions based on data, the corn from the new field will grow larger kernels when it is planted next year.

- 48 In a classroom investigation, students compare eye dominance to hand dominance. Students made a bar graph of the results. From the bar graph below, is eye dominance related to hand dominance?

Number of students showing dominance in



- (A) need to do more testing
 (B) not enough data to make a conclusion
 (C) there is no significant relationship
 (D) there is a significant relationship
- 49 Bacteria reproduce asexually by dividing in two. If you were to examine the genetic material of two bacteria that had just been reproduced from the same parental cell, how would their genetic material compare? (Assume no mutations occur)
- (A) completely different
 (B) about 65% the same
 (C) about 50% the same
 (D) 100% the same
- 50 Which of the following is an organism that usually reproduces asexually?
- (A) ant
 (B) bacterium
 (C) clam
 (D) dolphin
 (E) earthworm
- 51 Pat's mom is a great cook. People keep telling Pat that she will also be a great cook one day because she will "get it from her mom." What kind of assumption are people making when they say this?
- (A) True - cooking ability is an inherited trait
 (B) True - cooking ability is an acquired trait
 (C) Inference - cooking ability is an inherited trait
 (D) Inference - cooking ability is an acquired trait

52 Both parents of a Siamese cat have green eyes. Their offspring also have green eyes. This would be an example of

- Ⓐ an acquired trait
- Ⓑ an inherited trait
- Ⓒ a learned trait
- Ⓓ a found trait