

Life Science Test Questions

Below are sample questions from the Third International Mathematics and Science Study (TIMSS) achievement tests in Science administered to twenty-six countries. TIMSS is a research project sponsored by the International Association for the Evaluation of Educational Achievement (IEA). These questions may be used in the classroom, as a tool for evaluation, or to provide examples of test-question writing.



Grades 3 and 4

1. What is the MOST important reason for people to use a sunscreen when they are out in the sunlight?
- A. It protects the skin against dangerous rays from the sun.
 - B. It makes the skin more tanned.
 - C. It makes the skin smooth.
 - D. It makes the skin feel cooler.

Answer: A

2. Which one of these groups contains only animals with a backbone?
- A. Earthworm, snake, crayfish
 - B. Spider, clam, dragonfly
 - C. Crayfish, snake, horse
 - D. Clam, fish, earthworm
 - E. Horse, snake, fish

Answer: E

3. Write down one thing that your heart does that helps the other parts of your body.

Answer: Correct answers include pumping blood in a circulating system out to the body and back to the heart.

4. Write down the reason why we get thirsty on a hot day and have to drink a lot.

Answer: A correct response would refer to perspiration, its cooling effect, and the need to replace water.

5. The human brain is inside the skull. Write down one advantage of the skull being thick and strong.

Answer: A correct response refers to protection against concussion and injuries of the brain.

6. Write down one reason why animals could NOT live in a world without plants.

Answer: A correct response shows some understanding of the food chain.

7. This chart shows four groups of animals. In which group do fish belong?

| | Land Animal | Water Animal |
|---------------------|-------------|--------------|
| Does have bones | A | B |
| Does not have bones | C | D |

Answer: B

8. Write down two changes that occur in children's bodies as they become adults.

Answer: A correct response refers to growth such as increases in height, weight, strength, etc.

9. One way for animals to protect themselves is by escaping (running, flying, or swimming away). What are two other ways they protect themselves?

Answer: Correct responses include general action such as defense, attack, and fight.

10. Keisha is pushing her bicycle up a hill. Where does Keisha get the energy to push her bicycle?

- A. From the food she has eaten.
- B. From the exercise she did earlier.
- C. From the ground she is walking on.
- D. From the bicycle she is pushing.

Answer: A

11. A powder made up of both white and black specks is most likely to be

- A. a solution
- B. a pure compound
- C. a mixture

D. an element

Answer: C

12. In a box there is a mixture of iron fillings and sand. Which is the easiest way to separate the iron fillings from the sand?

- A. Pour water on the mixture.
- B. Use a magnifying glass.
- C. Use a magnet.
- D. Heat the mixture.

Answer: C

13. Which is not used as an energy source?

- A. Flowing water
- B. Iron ore
- C. Sun
- D. Oil

Answer: B

Grades 7 and 8

1. What is the BEST reason for including fruits and leafy vegetables in a healthy diet?

- A. They have a high water content.
- B. They are the best source of protein.
- C. They are rich in minerals and vitamins.
- D. They are the best source of carbohydrates.

Answer: C

2. What features do all insects have?

| | Number of Legs | Number of Body Parts |
|----|----------------|----------------------|
| A. | 2 | 4 |
| B. | 4 | 2 |
| C. | 6 | 3 |
| D. | 8 | 3 |

Answer: C

3. When you bend your arm at the elbow, the bones and muscles in your arm are acting as a system. What simple machine does this system represent?

- A. Inclined plane

- B. Pulley
- C. Wedge
- D. Lever

Answer: D

4. AMOUNT OF OXYGEN PRODUCED IN A POND

| Location | Oxygen Produced |
|--------------|---------------------|
| Top Meter | 4 grams/cubic meter |
| Second Meter | 3 grams/cubic meter |
| Third Meter | 1 gram/cubic meter |
| Bottom Meter | 0 grams/cubic meter |

Which statement is consistent with the data in the table?

- A. More oxygen production occurs near the surface because there is more light there.
- B. More oxygen production occurs near the bottom because there are more plants there.
- C. The greater the water pressure, the more oxygen production occurs.
- D. The rate of oxygen production is not related to depth.

Answer: A

5. Which species have been on the Earth for the shortest amount of time.

- A. Humans
- B. Insects
- C. Fish
- D. Reptiles

Answer: A

6. How are warm-blooded animals different from cold-blooded animals?

- A. Warm-blooded animals have a higher metabolism in warm weather.
- B. Warm-blooded animals are more aggressive in captivity.
- C. Warm-blooded animals always have a higher blood temperature.
- D. Warm-blooded animals normally maintain a fairly constant internal temperature at all air temperatures.
- E. Warm-blooded animals are found only in warm climates.

Answer: D

7. How could you find out how old a tree is after it is cut?

Answer: Should include counting the rings in a trunk referring to one ring for each year.

8. The male insects in a population are treated to prevent sperm production. Would this reduce the insect population?

- A. No, because the insects would still mate.
- B. No, because it would not change the offspring mutation rate.
- C. Yes, because it would sharply decrease the reproduction rate.
- D. Yes, because the males would die.

Answer: C

9. Which is made with the help of bacteria?

- A. Yogurt
- B. Cream
- C. Soap
- D. Cooking oil

Answer: A

10. What is the main function of chloroplasts in a plant cell?

- A. To absorb light energy and manufacture food.
- B. To remove waste materials by active transport.
- C. To manufacture chemical energy from food.
- D. To control the shape of a cell.

Answer: A

11. Which BEST explains why green marine algae are most often restricted to the top 100 meters of the ocean?

- A. They have no roots to anchor them to the ocean floor.
- B. They can live only where there is light.
- C. The pressure is too great for them to survive below 100 meters.
- D. If the algae lived below 100 meters they would be eaten by animals.

Answer: B

12. A girl found the skull of an animal. She did not know what the animal was but she was sure that it preyed on other animals for its food. What clues led to this conclusion?

- A. The eye sockets faced sideways.
- B. The skull was much longer than it was wide.
- C. There was a projecting ridge along the top of the skull.
- D. Four of the teeth were long and pointed.

E. The jaws could move sideways as well as up and down.

Answer: D

13. When a bird sings it is most likely singing in order to

- A. frighten away other types of birds
- B. mark the bird's territory against another type of bird
- C. attract insects
- D. wake up other animals

Answer: B

14. On cold days, snakes usually lie very still and eat very little or nothing, while birds usually move around and eat a lot of food. Which statement best explains this?

- A. Both animals are cold-blooded, but without feathers to keep warm, snakes get too cold to move.
- B. Unlike birds, snakes are warm-blooded; they must hibernate during cold weather.
- C. Unlike snakes, birds are cold-blooded; they are less affected by the cold than snakes.
- D. Unlike snakes, birds are warm-blooded; they must eat food to maintain a constant temperature.

Answer: D

15. Which of these meals would give you most of the nutrients that you need?

- A. Meat, milk, and a piece of chocolate
- B. Bread, vegetables, and fish
- C. Vegetables, fruit, and water
- D. Meat, fish, and bread

Answer: B

16. Years ago farmers found that corn plants grew better if decaying fish were buried near by. What did the decaying fish probably supply to the plants to improve their growth?

- A. energy
- B. minerals
- C. protein
- D. oxygen
- E. water

Answer: B

17. Which is the most basic unit of living things?

- A. Cells
- B. Bones

- C. Tissues
- D. Organs

Answer: A

18. Write down the reason why we get thirsty on a hot day and have to drink a lot.

Answer: Should refer to perspiration and it's cooling effect and the need to replace lost water.

19. Jose caught influenza. Write down one way he could have caught it.

Answer: Should refer explicitly to the transmission of germs.

20. What happens when an animal hibernates?

- A. There is no life in any of its parts.
- B. It stops breathing.
- C. Its temperature is higher than when it is active.
- D. It is absorbing energy for use when it is active.
- E. It is using less energy than when it is active.

Answer: E

21. What digestive substance is found in the mouth? What does it do?

Answer: Should name saliva and the fact that it helps to make food moist or soft.

22. What is the advantage of having two eyes to see with rather than one eye?

Answer: Should mention that two eyes allow for better depth perception or the perception of distance.

23. What could be the unwanted consequences of introducing a new species to a certain area? Give an example.

Answer: Should state that the natural (ecological) balance will be upset. A realistic example of a species could be given.

24. Suppose you want to investigate how the human heart rate changes with changes in activity. What materials would you use and what procedures would you follow?

Answer: Should describe a procedure in which i. Somebody (or self) measures pulse at rest using a timer or watch, ii. Then the student does an exercise (physical activity). iii. Pulse is remeasured during or after exercise.
