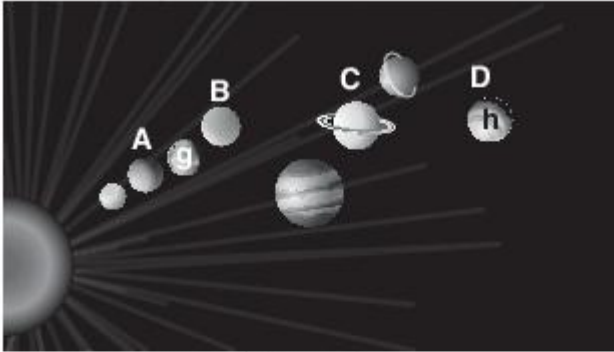


**Directions:** Review the content below and answer the questions that follow

**Earth's Movement and the Seasons**

Given below are two figures. Figure 1 shows the solar system. Figure 2 shows the position of Earth and the Sun during a certain time of the year.



**Figure 1**



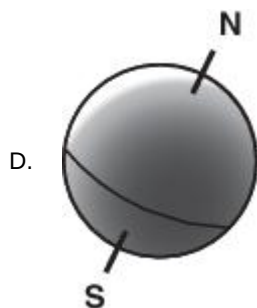
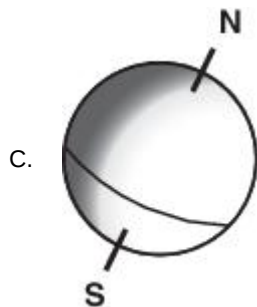
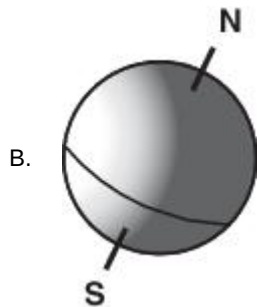
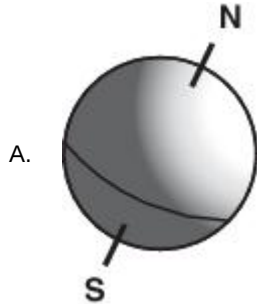
**Figure 2**

1. Which of these BEST describes the polar regions during the period of the year shown in figure 2, because of Earth's tilt?
  - A. The North Pole is very dark, and Earth is not spinning.
  - B. The South Pole is very light, and Earth is not spinning.
  - C. The North Pole is very cold with many hours of darkness.
  - D. The South Pole is very cold with many hours of darkness.
2. How do the rays of the Sun, as shown in figure 2, affect the seasons on the northern and southern parts of Earth?
  - A. Both the northern and southern parts of Earth are in winter, as both receive the slanting rays of the Sun.
  - B. Both the northern and southern parts of Earth are in summer, as both receive the direct rays of the Sun.
  - C. The southern parts of Earth are in summer and receive more direct rays of the Sun than the northern parts of Earth.
  - D. The northern parts of Earth are in summer and receive more direct rays of the Sun than the southern parts of Earth.
3. Derek has to arrange the celestial objects that lie between planet g and planet h, as shown in figure 1, according to their distance from the Sun. Which should he select?
  - A. Earth, Jupiter, asteroid belt, Saturn, Uranus
  - B. Mars, asteroid belt, Jupiter, Saturn, Uranus
  - C. Earth, Saturn, Jupiter, asteroid belt, Neptune
  - D. Mars, asteroid belt, Saturn, Jupiter, Neptune
4. A, B, C, and D represent four planets of the solar system, as shown in figure 1. Which planet is the largest?
  - A. Mars
  - B. Neptune
  - C. Saturn
  - D. Venus

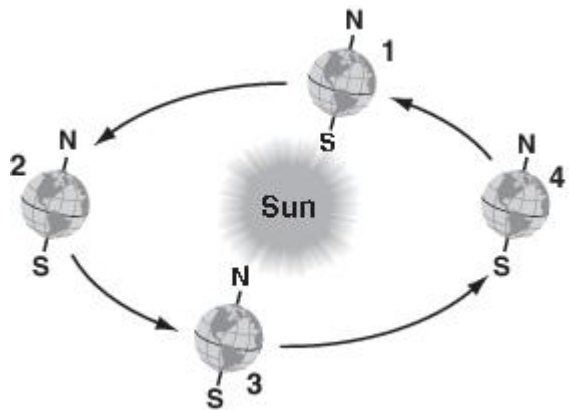
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**Directions:** Please choose the best answer choice for each of the following questions.

5. Suzy is going to use each picture below in a diagram that shows the regions of Earth lit by the Sun during different months. Which picture BEST shows the region of Earth lit by the Sun in September?



6. Melissa noticed that trees shed their leaves during one season and bloom in another season. Which BEST describes the cause of the changing seasons?
- the shape of Earth's orbit
  - Earth's rotation on its axis
  - Earth's distance from the Sun and the length of Earth's orbit
  - the tilt of Earth on its axis and Earth's revolution around the Sun
7. The diagram below shows the different positions of Earth around the Sun during a year.



- In which position is the Northern Hemisphere experiencing winter?
- position 1
  - position 2
  - position 3
  - position 4
8. The length of one year is defined by which act?
- the tilt of the Earth's axis
  - the Earth's rotation on its axis
  - the Earth's revolution around the sun
  - the rotation of the moon around the Earth
9. Which list shows the four objects arranged in order of size from smallest to largest?
- Sun, Earth, Moon, asteroid
  - Moon, Earth, Sun, asteroid
  - asteroid, Moon, Earth, Sun
  - Moon, asteroid, Earth, Sun

Go on to the next page »

10. Which of the following is the smallest object in our solar system?
- A. star
  - B. planet
  - C. galaxy
  - D. asteroid
11. A group of students is observing prairie dogs. The students see that prairie dogs make warning calls when they see a big animal nearby. Which question could the students answer by observing prairie dogs?
- A. What other species make warning calls when seeing predators?
  - B. Have prairie dogs always made warning calls, or is this a new behavior?
  - C. Does this behavior increase the chances of survival for other members of the colony?
  - D. Why do some individuals hesitate before calling out, and some individuals call out immediately?
12. A student added one piece of candy to a bottle of cola. The bottle of cola produced a fountain of cola. A student added two pieces of candy to another bottle of cola. The cola produced another fountain. What is the MOST LIKELY question the student was trying to answer?
- A. What causes the fountain to form?
  - B. Does temperature affect the height of the fountain?
  - C. Would a clear, carbonated beverage also produce a fountain?
  - D. Does the number of candies added affect the height of the fountain?

**Directions:** Review the content below and answer the questions that follow

**Temperature of Water**

James wants to know how long it takes for water to get warmer when it is left in the Sun. He writes down steps for the investigation.

1. Fill a cup with water from the sink.
2. Measure the temperature of the water.
3. Put the cup in a sunny spot next to a window in the kitchen.
4. Measure the temperature of the water every hour for a total of 5 hours.

When James finishes his investigation, he reads the data. The table below shows the data he collects.

**Water Data**

Time	Temperature of Water (°F)
9:00 AM	50
10:00 AM	55
11:00 AM	61
12:00 PM	68
1:00 PM	73

13. James notices there is less water at 1:00 P.M. than at 9:00 A.M. He decides to test that idea. What should he do?
- A. Drop a penny in the cup and see how long it floats.
  - B. Add two tablespoons of water to the cup every hour.
  - C. Count how many hours the water has been in the cup.
  - D. Mark the water level on the side of the cup every hour.

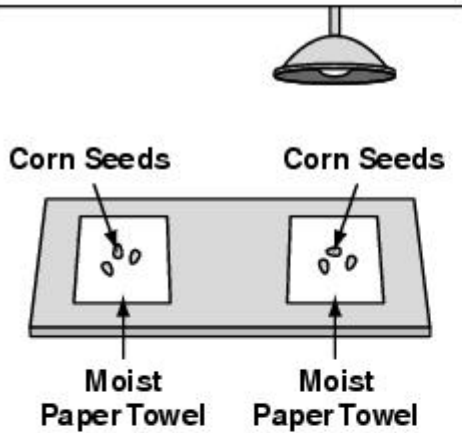
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**Directions:** Review the content below and answer the questions that follow

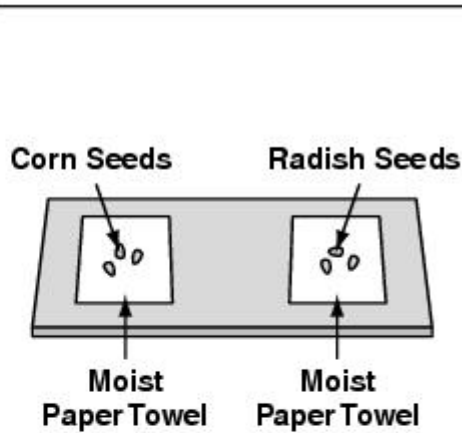
**Seed Experiment**

Below are four options for setting up an experiment that measures how quickly seeds can germinate and grow.

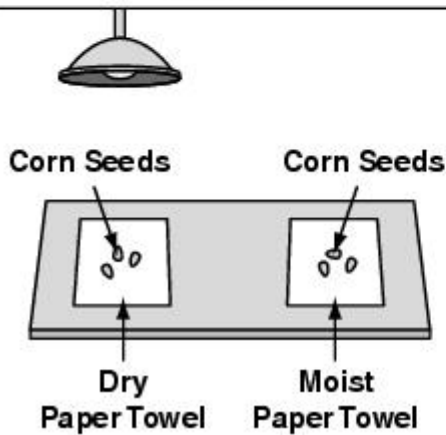
**Option 1**



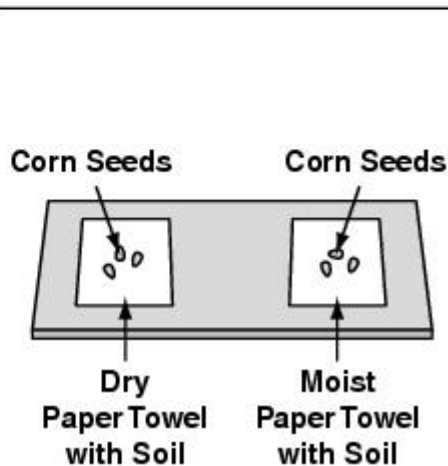
**Option 2**



**Option 3**



**Option 4**



14. Which experiment option would BEST test how temperature affects the germination of corn seed?
- A. Option 1
  - B. Option 2
  - C. Option 3
  - D. Option 4

Go on to the next page »

**Directions:** Please choose the best answer choice for each of the following questions.

15. Sydney cut a small branch from a bush. She put the cut end of the branch in a jar containing exactly **20 mL** of water. An hour later, she observed that there was less water in the jar. Which tool would be the **BEST** tool for Sydney to use to measure the new volume of water?

- A. metric ruler
- B. thermometer
- C. balance scale
- D. graduated cylinder

16. On a sunny morning, Sara places a stick in the ground. She measures the length of the shadow. Three hours later she again measures the length of the shadow. Which instrument should she use to study how the length of the shadow changes during the day?

- A. barometer
- B. compass
- C. meter stick
- D. stopwatch

17. Isaiah was studying plants. He wanted to study very small structures found on the underside of leaves. Which of these would it be **BEST** for him to use?

- A. a bright light
- B. a magnifying tool
- C. a pair of binoculars
- D. a graduated cylinder

18. Patrick wants to know how many blades of grass are in the lawn in front of his school. Which of these would be the **BEST** way for Patrick to find the number of blades of grass in the lawn?

- A. ask a teacher how many blades of grass are in the lawn
- B. count the number of blades of grass in the lawn to learn the exact number
- C. walk around the edge of the lawn, and then guess the number of blades of grass
- D. use a meter stick and math to calculate the number of blades of grass in the lawn

19. For a science activity, Joshua observed the growth of a small tree. He recorded its height once a week for five weeks. Which of these can he **BEST** use to clearly describe the growth of the tree?

- A. a pie chart
- B. a bar graph
- C. a line graph
- D. a photograph

20. Deana conducted an experiment to study how quickly bacteria can multiply. The data from her experiment are shown below.

**Bacteria Growth**

Time (hours)	Number of Bacteria (in thousands)
2.5	10.05
2.8	13.05
5.4	15.0
6.5	20.8
9.2	28.0

Which of these would **BEST** represent her data?

- A. a table
- B. a pie chart
- C. a line graph
- D. a picture graph

**Stop! You have finished this exam.**