

6th Grade Science



Hey everyone! We're all thinking about you and hoping you are doing well. Enjoy sleeping late!

We will be available for you if you need help Monday-Friday from 2-4pm via Remind, Google Classroom, and e-mail.

Below is a list of expectations as we travel through the uncharted waters of distance learning:

- Week 1 March 23-27:
 - Marbles task/Questions (#'s 16-19)
 - Optional videos posted on Google Classroom throughout the week.
 - Week 2 March 30-April 3:
 - Cells Task/Questions (#'s 5-8)
 - Optional videos posted on Google Classroom throughout the week.
 - Week 3 April 6-10:
 - The Great Drought Task/Questions (#'s 28-31)
 - Optional videos posted on Google Classroom throughout the week.
- We will have Science Friday every week on Google Classroom! There will be fun at-home experiments for you to do OR you can watch your wacky teachers attempt the experiments as well!!!!!!!

All of us here at LOM love and miss all of you very much! Please don't hesitate to contact us for anything. Hope to see y'all soon!

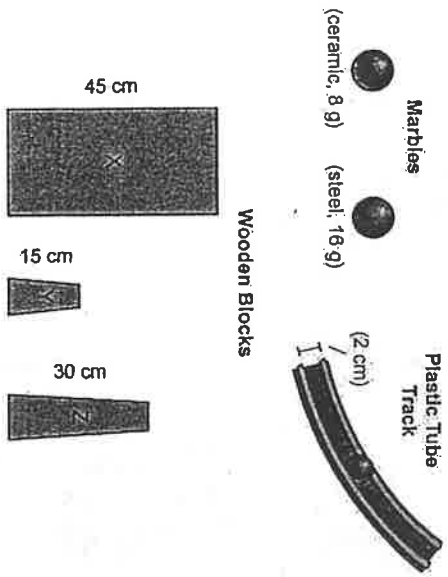
Marbles Task

Use the information about marbles and your knowledge of science to answer the questions.

Marbles

A group of students is building a marble track. They plan to investigate how the potential and kinetic energies of different types of marbles change as the marbles move through the track. Figure 1 shows the two types of marbles and the different materials the students will use in the investigation.

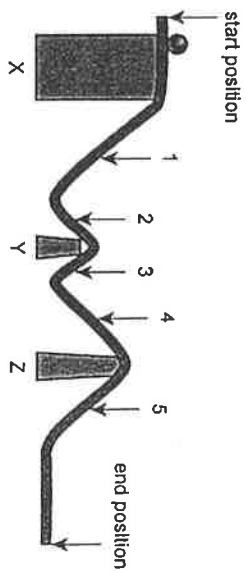
Figure 1. Marbles and Track Materials



The two types of marbles are identical in size, but are made of different materials and have different masses. The students run several trials using each marble. The students begin each trial by placing a marble at the starting position and then observing the marble until it reaches the end position on the track.

The marble track is shown in Figure 2.

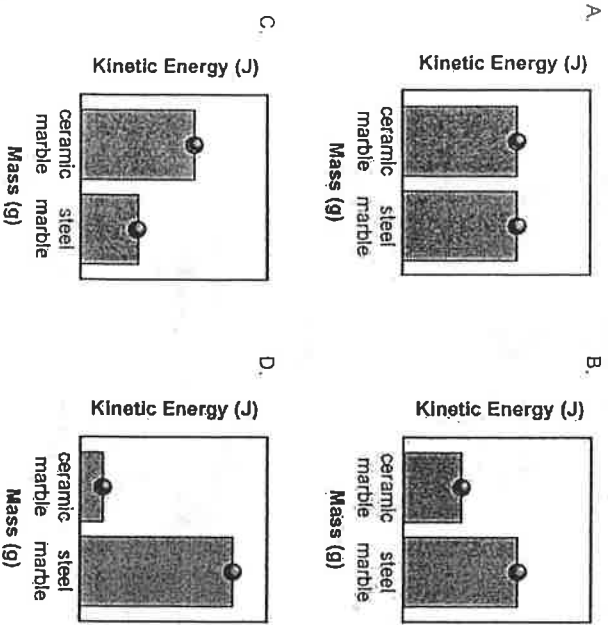
Figure 2. Marble Track Design



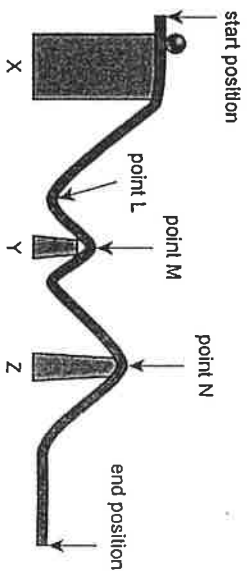
The students measure how each marble's potential and kinetic energies change at five different points as each marble moves along the track.

16. The students decide to investigate how the mass of each marble affects its kinetic energy. The students will roll each marble down the first hill on the track. They will then compare the results for the kinetic energy of both the ceramic marble and the steel marble.

Which figure best compares the kinetic energy of each marble when the marbles roll down the hill on the track?



17. The students measure the speed of one of the marbles at the three points shown in the figure.

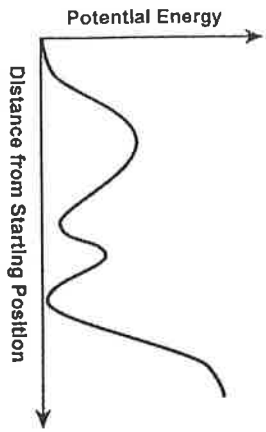


Circle the correct bolded answer in each bracket to complete the paragraph.

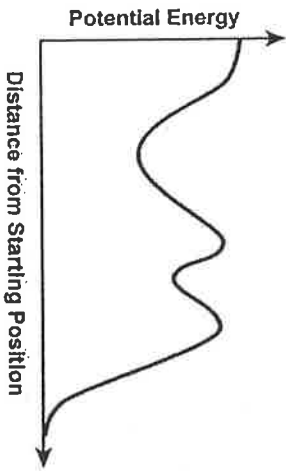
The speed of the marble at point L will be [faster than; slower than; the same as] the speed of the marble at point M. The speed of the marble at point N will be [faster than; slower than; the same as] the speed of the marble at point M. For the three points measured on the track, the marble will have the most kinetic energy at [point L; point M; point N] and the least kinetic energy at [point L; point M; point N].

18. Which figure best shows how the potential energy of a marble changes as the marble travels along the track?

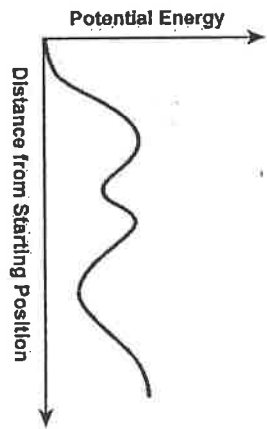
A.



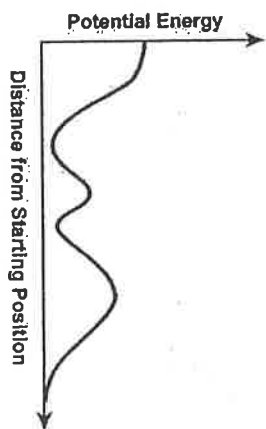
B.



C.



D.



19. Part A

Based on Figure 2, at which points along the marble track is the potential energy of the marble increasing?

Circle the two correct answers.

- A. point 1
- B. point 2
- C. point 3
- D. point 4
- E. point 5

Part B

The students determine that the total energy of the marble decreases slightly as the marble travels along the track. Which statement describes the most likely cause of this decrease in total energy?

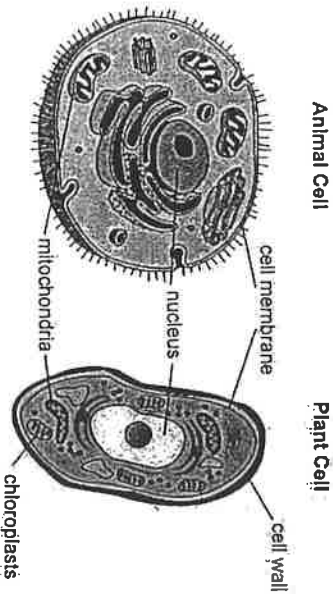
- A. Some of the marble's energy is destroyed by the wooden blocks as the marble rolls along the track.
- B. Some of the marble's energy is transferred to the surface of the track as the marble rolls along the track.
- C. Some of the marble's energy is transferred to the wooden blocks as the marble rolls along the track.
- D. Some of the marble's energy is destroyed by the surface of the track as the marble rolls along the track.

Cells Task

Use the information about organelles and your knowledge of science to answer the questions.

Organelles

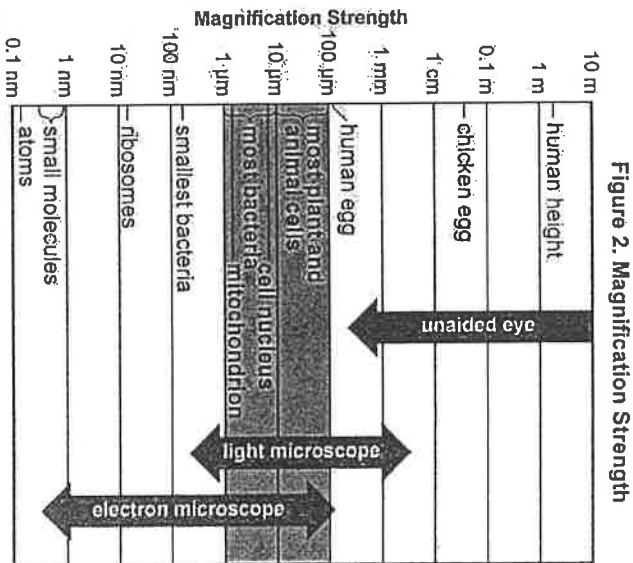
Scientists are designing an investigation to study how each part of a cell affects how the entire cell works. Cells often use specialized structures called organelles. These structures perform very specific functions. The scientists have decided to compare two different types of cells. They will look at different types of cells from different organisms, such as animals and plants. Figure 1 shows the basic structures of animal cells and plant cells.



Each organelle has a unique role within the cell. Some organelles are used to make energy for the cell. Other organelles can control the growth of the cell. Many organelles, such as the nucleus and mitochondria, also have membranes.

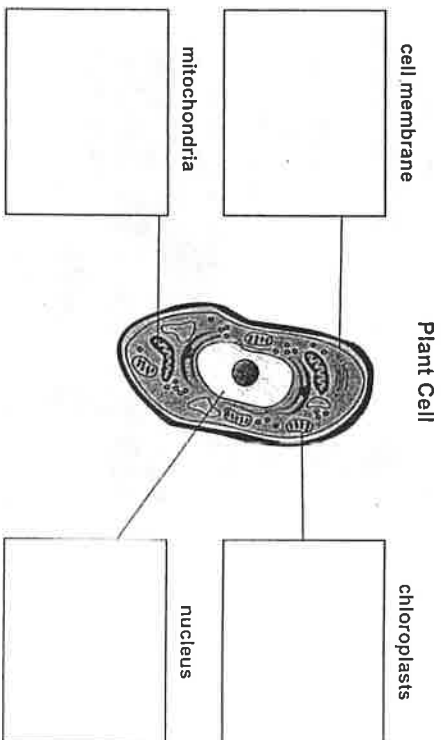
The scientists have identified two instruments that can help them collect data on different cells. They will use a light microscope and an electron microscope. Both instruments will help the scientists see cell details using magnification. Light microscopes use visible light and lenses to magnify images. Electron microscopes use a beam of small particles to help increase the magnification of the images.

The magnification strength of each instrument is shown in Figure 2. The figure also shows how the magnification range for both instruments compares to the human eye. Each magnification range includes the sizes of different objects that can be seen within that range.



5. The scientists are planning a n experiment using a light microscope to collect data. Which statement best describes how the scientists can identify nonliving samples?
- A. The scientists should look for samples that have objects that look bigger when viewed under the microscope.
 - B. The scientists should look for samples that do not have a nucleus or cell membrane when viewed under the microscope.
 - C. The scientists should look for samples that have carbon atoms when viewed under the microscope.
 - D. The scientists should look for samples that do not have a regular pattern of shapes when viewed under the microscope.

6. Write each label in the boxes to describe the function of each organelle and to complete the model of a plant cell.
- Each label will be used once.
- Labels:
- controls many cell functions
 - produces energy for the cell
 - controls what substances enter and leave cells and organelles
 - converts light energy to chemical energy



7. A scientist views different objects using a light microscope. Which features would the scientist most likely see for samples from multicellular organisms?

Circle the three correct answers.

- A. large cell size
- B. small organelle features
- C. different types of cells
- D. smaller number of cells
- E. cells organized into tissues

8. The scientists are designing an experiment to study the small, hairlike organelles on the outsides of some cells found in humans. They want to compare the structures of these organelles to cells from other multicellular organisms, such as plants. These organelles can have features with sizes as small as 50 to 100 nanometers (nm).

Use Figure 2 to describe which type of microscope the scientists should use to study the features of the hairlike organelles. Explain one possible function for these organelles based on where the organelles are located in the cell model in Figure 1.

The Great Drought Task

Use the information about the Anasazi and the Great Drought and your knowledge of science to answer the questions.

The Anasazi and the Great Drought

The Anasazi were a Native American people who settled areas that are now known as Arizona, New Mexico, Colorado, and Utah. Evidence suggests that the Anasazi suddenly moved from their settlements in about A.D. 1300. Scientists have recently looked at what may have caused the Anasazi to move and relocate much farther south in Arizona and New Mexico.

The Anasazi set up complex farming communities in the years A.D. 100 through 1300. They built irrigation structures such as reservoirs, stone dams, and low stone walls. These structures helped the Anasazi store and use water for their crops. The Anasazi primarily raised corn, beans, and domesticated turkeys. Figure 1 shows a typical food web for the ecosystem in which the Anasazi people lived.

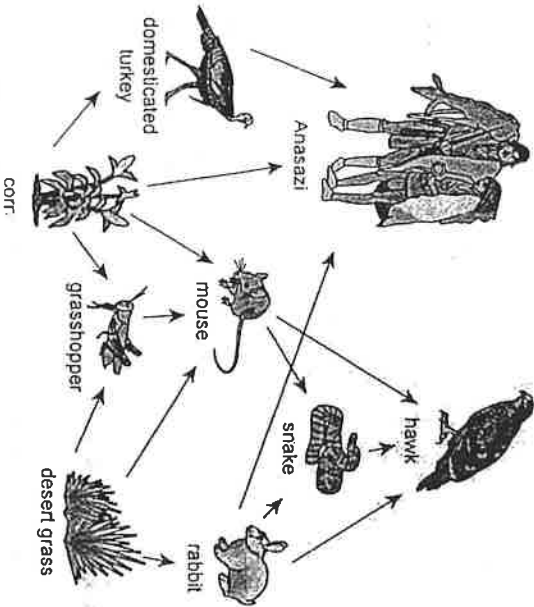


Figure 1. Food Web of Anasazi Ecosystem

A period known as the Great Drought occurred from A.D. 1276 through 1299. Scientists suggest that this drought may explain why the Anasazi suddenly left their communities. Scientists have collected evidence of the drought by studying tree rings. Trees produce growth rings during annual growing seasons. The widths of the annual rings depend on the available precipitation and average temperatures. Table 1 shows evidence collected from tree ring studies. These studies show how the West was affected by droughts from A.D. 850 through 1400. In years with normal precipitation levels, 38 percent of the West was affected by droughts. Drier years occurred when more than 38 percent of the West was affected by droughts.

Table 1. Percentage of the West Affected by Droughts over Time

Years (A.D.)	Percentage of the West Affected by Droughts
850–1050	more than 38%
1050–1100	less than 38%
1100–1300	more than 38%
1300–1350	less than 38%
1350–1400	more than 38%

Source: E. R. Cook et al., *Earth-Science Reviews*

Science

28. Scientists claim that tree growth slowed during the period from A.D. 1100 to 1300, resulting in thinner tree rings.

Based on the information in Table 1, which statement can best be used as evidence to support the claim?

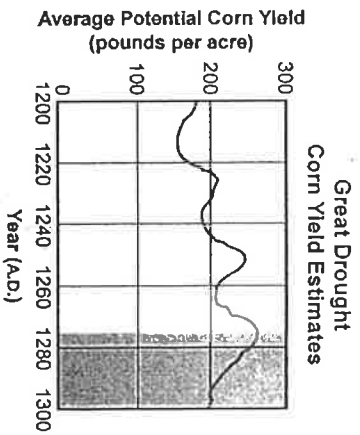
- A. More than 40 percent of the West is typically affected during dry periods.
- B. The average precipitation in the West significantly increased during this period.
- C. A large percentage of the West was affected by dry conditions during this period.
- D. The average precipitation in the West increased after A.D. 1300.

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GO ON ►

Science

29. Scientists have estimated how much corn could be grown in areas where the Anasazi lived, based on typical growing conditions. The graph shows the estimated amount of corn produced in each year between A.D. 1200 and 1300.



Source: Timothy A. Kohler.

What evidence from the graph best shows how the availability of corn likely affected the farming of domesticated turkeys in Figure 1?

- A. An increase in corn production during the Great Drought increased the domestic turkey population.
- B. An increase in corn production during the Great Drought decreased the domestic turkey population.
- C. A decrease in corn production during the Great Drought decreased the domestic turkey population.
- D. A decrease in corn production during the Great Drought increased the domestic turkey population.

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GO ON ►

30. Circle the correct bolded answer in each bracket to complete each sentence.

During the Great Drought, a **decrease** in the **[growth of corn; rabbit population; growth of grass]** had **the greatest impact** on the survival of the Anasazi people. As conditions changed, the Anasazi relied **[more; less]** on domesticated turkeys and **[snakes; mice; rabbits]** for food.

31. Part A

Which statement best describes how the organisms shown in Figure 1 compete for resources?

- A. Rabbits, grasshoppers, and mice all compete with snakes for food.
- B. The Anasazi, mice, and domesticated turkeys all compete for corn.
- C. Hawks, rabbits, and the Anasazi all compete for grass.
- D. Snakes, hawks, and domesticated turkeys all compete with the Anasazi for food.

Part B

Based on the information in Table 1, which statements best describe the competition in the answer to Part A during dry and wet periods?

Circle all that apply.

- A. Competition for corn increased during drier periods.
- B. Competition for grass increased during wetter periods.
- C. Competition between domesticated turkeys and grasshoppers stayed the same during wetter and drier periods.
- D. Competition for resources between rabbits and mice decreased during wetter periods.
- E. Competition for resources stayed the same during wetter and drier periods.