مدرسة شيخة بنت سرور

المجلس: 6 نطاق: 3

Sheikha Bint Suroor School

Council: 6 cluster:3

EOT – Science

Term 1 (2024-25)

وزارة التربية والتعليم

MINISTRY OF EDUCATION

Academic Year العام الدراسي	2024/2025
Term الفصل	1
Subject المادة	Science/Inspire علوم/انسبير
Grade الصف	4
Stream المسار	General العام

Type of All Questions نوع كافة الأسئلة	MCQ/ الأسئلة الموضوعية FRQ/ الأسئلة المقالية
Maximum Overall Grade الدرجة القصوى الممكنة	100
Exam Duration - مدة الامتحان	150 minutes
Mode of Implementation - طريقة التطبيق	Paper-Based
Calculator الآلة الحاسبة	Not Allowed غير مسموحة

Number of MCQ عدد الأسئلة الموضوعية	15
Marks of MCQ درجة الأسئلة الموضوعية	60
Number of FRQ عدد الأسئلة المقالية	5
Marks per FRQ الدرجات للأسئلة المقالية	40

Ms. Praveen Bhatt
SBS- Science Teacher

Unit 3 - L1- Map Earth's Features

Q1. Page no.12 (Figure based)

MCQ

VOCABULARY

Look for these words as you read:

latitude

longitude

plate

topographic map

volcano

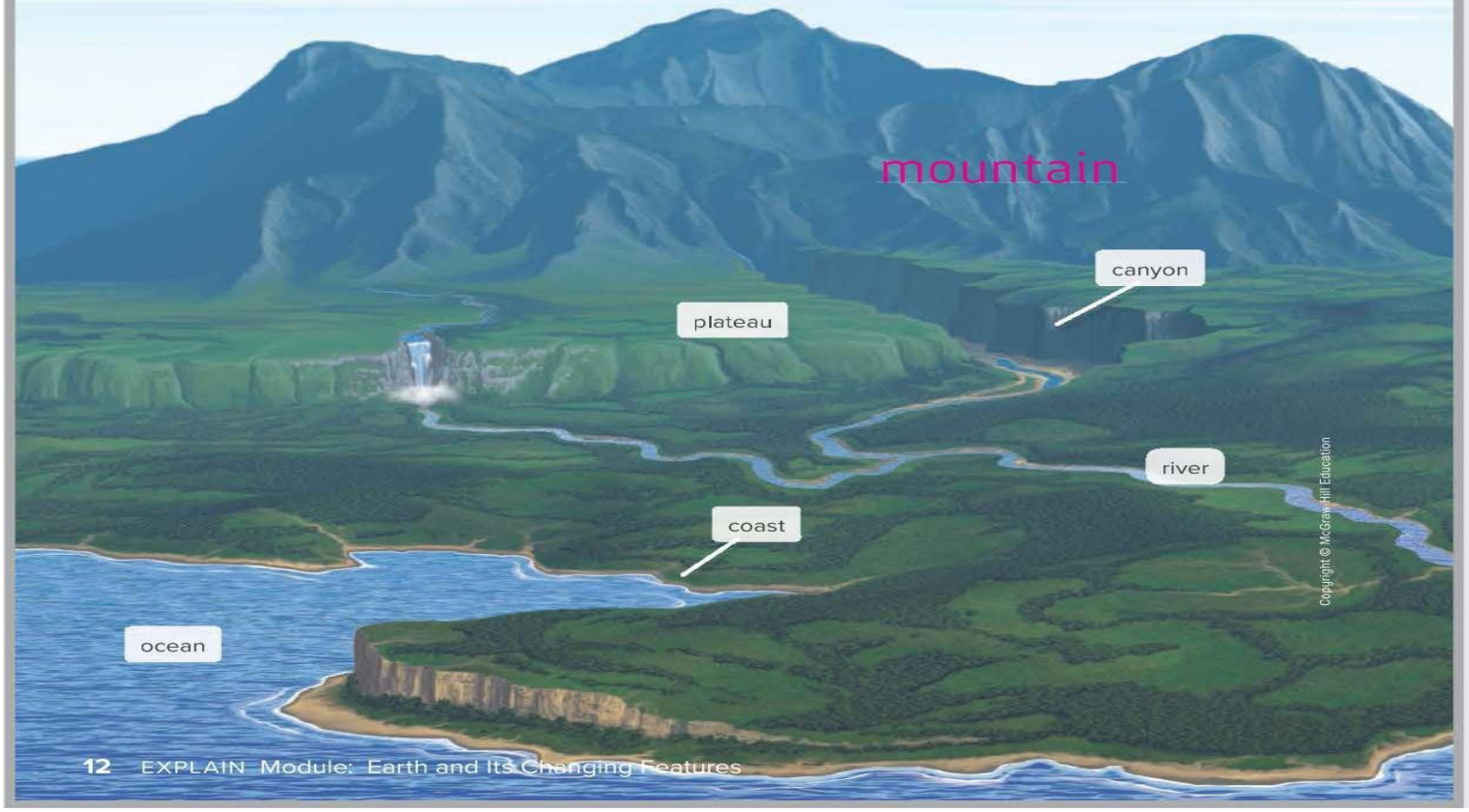
Landforms

In the Inquiry Activity, *Map California's Features*, you represented different landforms on a three-dimensional map. A **landform** is a physical feature on Earth's surface. Landforms vary greatly in shape and size. They include features such as level plains, rounded hills, and jagged mountains. Each landform has specific characteristics and is formed in a specific way.

Label a Diagram: Earth's Land and Water Features

Use the labels on the image below and descriptions on the next page to learn more about common landforms. Fill in the missing labels using the descriptions.

GO ONLINE Watch the video *Landforms* to see various landforms around the world.



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Unit 3 - L1- Map Earth's Features

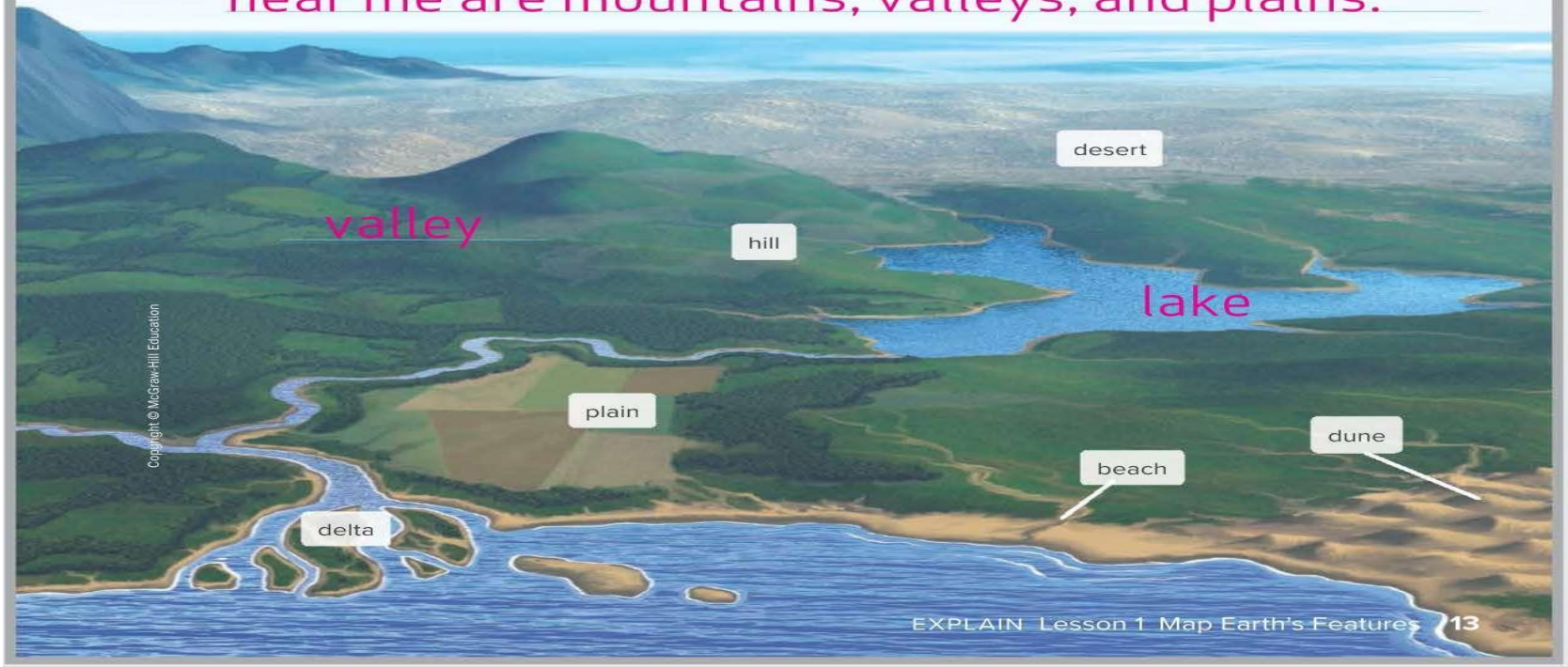
Q2. Page no.13 (Figure based)

FRQ

Mountain A landform that rises high above the Earth's surface.
Hill A natural elevation of the Earth's surface, smaller than a mountain.
Valley A valley is the low land between hills or mountains.
Canyon A canyon is a deep valley with high, steep sides.
Plain A plain is a wide, flat area.
nd that is higher than the land around it.
with very little precipitation.
along the edge of a body of water.
Dune A dune is a mound of sand.
Ocean An ocean is a large body of salt water.
Coast A coast is where a body of water meets land.
River A river is a natural body of moving water.
Lake A lake is a body of water surrounded by land.
Delta A delta is the mass of land that forms at the mouth of a river.
Inlet An inlet is a narrow body of water off a larger body of water.

1. What landforms are near you?

Sample answer: Some landforms that are near me are mountains, valleys, and plains.



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Unit 3 - L1- Map Earth's Features

Q3. Page no.15

MCQ

Most of the ocean floor is flat and without features. Abyssal plains, very flat areas of the deep ocean floor, these plains cover about 60 percent of the Earth's surface.

GO ONLINE Watch the video *Ocean Floor* to learn more about these features.

Long mountain ranges stretch through the middle of some oceans. These mountain ranges are called *mid-ocean ridges*. The valley down the center of a mid-ocean ridge is called a *rift valley*.

Other ocean floor features include trenches and seamounts. *Trenches* are the deepest parts of the ocean floor. They are usually long and narrow. A *seamount* is an underwater mountain that rises from the ocean floor but stops before it reaches the surface of the ocean.

Scientists can tell the depth of the ocean floor by sending sounds and waiting for the echo to come back. They also use underwater vehicles to study the ocean floor.

2. Which ocean floor features are underwater mountains?

Sample answer: Mid-ocean ridges and seamounts are both examples of ocean floor features.



Unit 3 - L1- Map Earth's Features

Q4. Page no.17

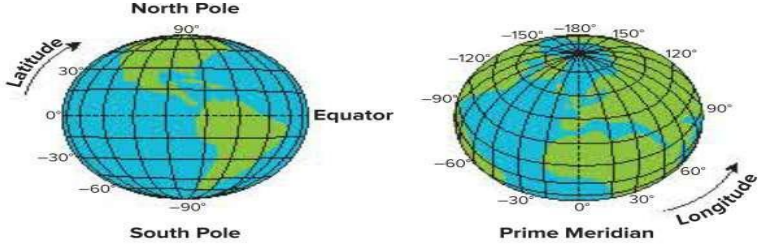
MCQ

A **topographic map** shows the elevation of an area using lines. Each line is labeled with a number. Contour lines that are close together represent a rapid change in elevation. Contour lines that are far apart represent a gradual change in elevation.



Scientists can use maps to identify patterns in the locations of landforms and other features. The locations of certain features can be described using a coordinate system such as latitude and longitude. **Latitude** is used to describe how far north or south a place is from the equator. **Longitude** is used to describe how far east or west a place is from the Prime Meridian. Latitude and longitude lines form a grid across the globe.

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Unit 3 - L1- Map Earth's Features

Q5. Page no.19

MCQ

Tension, or forces that pull things apart, moves Earth's plates. Plates can also be moved by pushing forces. Mountains form when plates push together or past each other along plate boundaries. Many earthquakes and volcanoes also happen at plate boundaries.

A **volcano** is an opening on Earth's surface where melted rock or gases are forced out. Volcanoes can form on land or on the ocean floor, but they are located only in certain places on Earth's surface. Most volcanoes form at plate boundaries. For example, a ring of volcanoes called the *Ring of Fire* surrounds the Pacific Ocean. The Ring of Fire follows the boundaries of the plates that meet around the Pacific Ocean.

An **earthquake** is a sudden movement of Earth's crust. Like volcanoes, most earthquakes occur because of moving plates. Also, like volcanoes, earthquakes are most likely to occur near plate boundaries. You will learn more about earthquakes in the next module.

2. Describe the global patterns of volcanoes and earthquakes that are shown on the world map.

Both are likely to occur near plate boundaries.

Think about the ocean floor features from page 14. Some of these features, like ocean trenches, occur where two plates push together. Mid-ocean ridges occur where two plates spread apart. As the two plates move apart, new crust forms. The mid-ocean ridges are all connected and form the most extensive underwater mountain sytem on Earth.

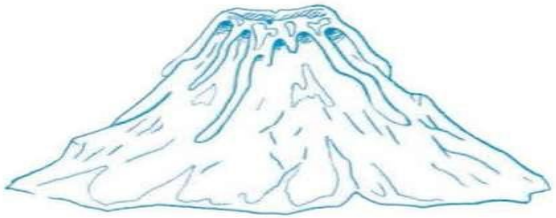
3. Use the graphic organizer to classify the location of the following features: abyssal plains, earthquakes, mountains, volcanoes.

Near Plate Boundaries	Not Near Plate Boundaries
earthquakes, mountains, volcanoes	abyssal plains

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Talk About It

Explain to a classmate where you would most likely find mountain ranges on the ocean floor.



Unit 3 – L2- Evidence from rocks and fossils

Q6. Page no.32 (Figure based)

MCQ

VOCABULARY

Look for these words as you read:

fossil

What Fossils Tell Us

Sedimentary rock forms from sediments that are pressed together in layers. **Sediments** are tiny bits of soil or rock that have been broken down and deposited. Wind and water deposit most of the sediments. Over time, layers of sediment are formed new sediments, which are deposited on top of older layers. mentary rocks are formed by the weight of the top layers, or ater covering the sediment, pressing the sediment together. take millions of years for sediment to become rock.

Fossils, remains or imprints of living things from the past, are preserved in sedimentary rocks. Fossils give scientists information about environments of the past. Ammonites once lived in Earth's oceans. Ammonite fossils are found in rock that is now on dry land. This indicates that the land was once covered by water.



Ammonites lived in water. These fossil ammonites were found on land.

Scientists can also determine the relative age of fossils based on the layer of rock in which they are found. Some fossils also provide clues to a rock layer's relative age. How deep an organism is buried also gives clues as to when the organism lived. Fossils found in layers closest to the surface are usually younger than fossils that are found in deeper layers of rock.

GO ONLINE Watch the video *Fossils* to learn more about how they form.

Talk About It

What are the differences and similarities between sediment and sedimentary rock? Discuss with a partner.

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Unit 3 – L2- Evidence from rocks and fossils

Q7. Page no.34

MCQ

CLOSE READING

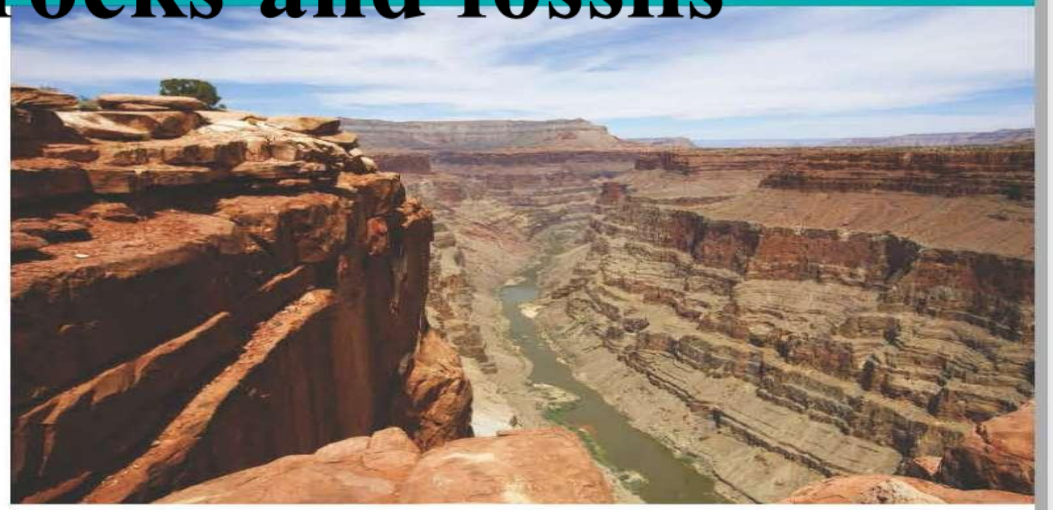
Inspect

Read the passage *Earth's Forces*. Underline the text that tells the forces that can change Earth.

Find Evidence

Reread the text. Are all Earth's forces the same? Highlight text that helps you understand.

Notes



Earth's Forces

Earth forces can affect the formation and patterns found in rock layers. Some of these forces include volcano eruptions, earthquakes, and the flow of rivers.

When a volcano erupts, it releases rocks, gases, and hot liquid rock called lava. Lava flows onto the surface, it cools, and hardens into new rock. A new layer of rock forms on top of the old layer each time a volcano erupts, like a stack of pancakes. This happens on continents and under oceans. An island can slowly form when enough underwater rock builds up to reach above the ocean surface. The Island of Hawaii formed this way.

Like volcanoes, earthquakes can change Earth's surface. During an earthquake, the sudden slip of two plates can cause cracks or can cause huge rocks to slide up over another layer. These changes can sometimes look like s-shaped folds in the rock layer.

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Unit 3 – L2- Evidence from rocks and fossils

Q8. Page no.35 (Figure based)

MCQ



Slow movements of Earth's plates can be very powerful too. When plates push together, they push up land. Over millions of years, these forces can form mountains. The Rocky Mountains, in Colorado, formed this way.

Water can interrupt rock layers by slowly removing rock particles. It slowly carves a gap in the layers, like when you cut and remove a piece of cake. Eventually a canyon forms. It took millions of years for the Colorado River to form the Grand Canyon.

Use evidence from each photo to support an explanation about how landscapes change over time.

Sample answer: A river would interrupt the rock layers, while an earthquake would most likely bend or shift the layers.

REVISIT PAGE KEELEY SCIENCE PROBES Revisit the Page Keeley Science Probe on page 27.

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Make Connections

Talk About It

Explain a cause and effect relationship from the text. Discuss with a partner.

Notes

Unit 3 – L3- Changes in landscapes over time

Q9. Page no.48

MCQ

VOCABULARY

Look for these words as you read:

deposition

erosion

vegetation

weathering

Weathering

Recall the changes that you observed in the Inquiry Activity, *Shake, Rattle, and Roll*. You modeled weathering when you shook the jars. **Weathering** is the slow process that breaks down materials into smaller pieces. This process explains how rocks can change size and shape without changing their chemical properties.

Physical Weathering

Water can seep into cracks in a rock during warm weather. When the water freezes during cold weather, the water expands and makes the crack bigger. This process can also cause potholes and cracks in a road or sidewalk.

Abrasion is the action of rocks and sediments grinding against each other and wearing away surfaces. Abrasion can happen in many ways, such as when rocks and pebbles roll along the bottom of a river. Abrasion also occurs when rocks fall and tumble against one another. The force of the rocks hitting each other knocks off pieces of the rock. Wind causes abrasion. Sand blown by wind against exposed rock wears away the surface of the rock.



Rocks crashing together in a rockslide causes abrasion, a type of physical weathering.

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Unit 3 – L3- Changes in landscapes over time

Q10. Page no.49 (Figure based)

MCQ

Many animals, like gophers, worms, and ants, can loosen and move soil and rock as they burrow in the ground. Plant roots can grow inside cracks in a rock and, over time, split the rock into pieces.

GO ONLINE Watch the video *Landscapes Change Over Time* to learn more about these processes.



The actions of living things, such as burrowing animals or growing plant roots, can cause weathering.

What type of force can cause abrasion?

Sample answer: The force of gravity can cause rocks to fall and cause abrasion.

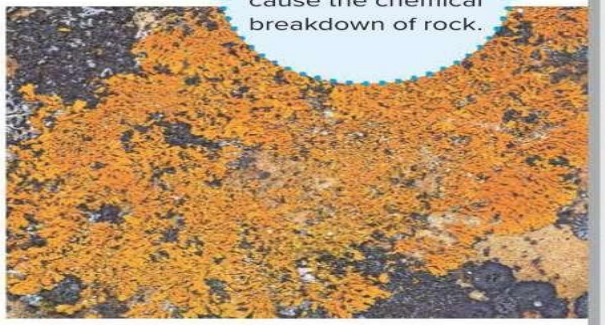
Chemical Weathering

Chemical weathering changes the minerals that make up rocks. Water, living things, and oxygen can cause chemical weathering.

Acids from natural sources, such as volcanoes, can make water more acidic. These acids can speed the breakdown and weathering of rocks.

Iron combines with oxygen in the presence of water to form rust. Rocks that contain iron can rust. Rust makes rock soft and crumbly.

Plant roots give off a weak acid as they grow. Lichens, plant-like organisms that grow on rocks, also produce weak acids. Lichens are important to soil formation in cold climates.



Lichens produce acids that help cause the chemical breakdown of rock.

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Unit 3 – L3- Changes in landscapes over time

Q11. Page no.50

FRQ

Erosion and Deposition

Erosion is the movement of weathered material from one place to another. The process of eroded soil and bits of rock being dropped off in another place is **deposition**. Erosion and deposition are two processes that change the shape of land.

Erosion and Deposition by Gravity

Gravity causes material to move. The sudden movement of large amounts of material down a slope can take the form of mudslides, landslides, and rockslides. Strategies such as building away from steep slopes, redirecting surface water away from landslide-prone areas, and planting ground cover to reduce water filtering into the ground can reduce hazardous events such as landslides.

Erosion and Deposition by Running Water

As water runs downhill, it can wash away soil and erode rock. The steeper the land, the faster the water moves. Fast-moving water has more energy. It can wash away larger amounts of heavier sediment. Rivers eventually flow into a larger body of water, such as a lake or an ocean. The sediment carried by the river is deposited on the bottom of the larger body of water. Over time, this sediment builds up into a landform called a delta.

Erosion and Deposition by Wind

Wind can move sand from one place to another. The stronger the wind blows, the larger the particles it can pick up. Deposition occurs when a clump of grass or rock traps the sediment. A sand dune is a deposit of wind-blown sand. Dunes move over time.



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Unit 3 – L3- Changes in landscapes over time

Q12. Page no.51

FRQ

Erosion and Deposition in Shorelines

Waves release a lot of energy when they hit the beach. A large wave can break solid rock or throw rocks back against the shore. The rushing water in breaking waves can easily wash into cracks in the rocks, helping to break large boulders. The loose sand picked up by the waves polishes and wears down coastal rocks. Waves can also move sand and rocks and deposit them in other locations, forming beaches. A beach is any area of shoreline made of material deposited by waves. Some beach material is deposited by rivers.

GO ONLINE Watch the video *Weathering* to learn more about what shapes the land.

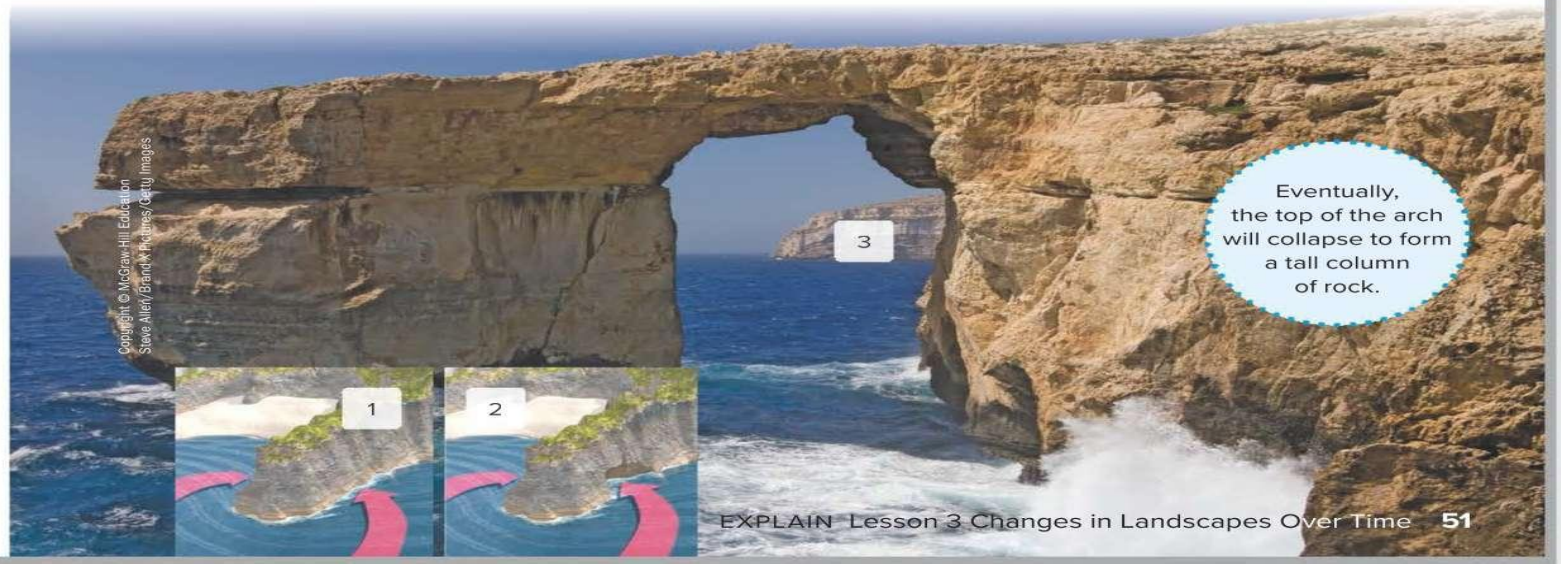
A headland is an area that has water on three sides. Waves curve around a headland and erode the sides. Eventually, the waves change the headland into an arch.

1. Why does fast-moving water have a greater effect on land?

Sample answer: Fast-moving water has more energy so it can carry larger amounts of heavier sediment.

2. What are the cause and effect of the changes observed in the photo below?

Sample answer: Waves cause the erosion of the rock and affect the formation of arches.



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Steve Allen/Brand X Pictures/Getty Images

Unit 3 – L3- Changes in landscapes over time

Q13. Page no.52

FRQ

Erosion and Deposition by Glaciers

Glaciers form where snow collects quickly and melts slowly. As the snow builds higher, the weight of the ice increases, and the glacier starts to move. As it moves, it tears rock from the ground. Glacial till ends up mostly at the end, or terminus, of the glacier.

Erosion and Living Things

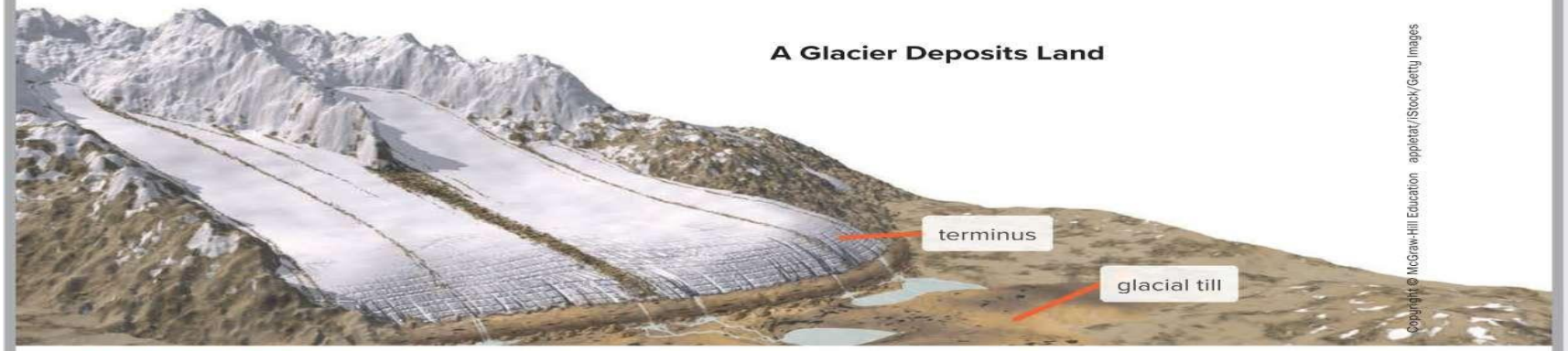
Factors such as heavy rainfalls, sparse vegetation, and steep inclines can cause land to erode at a faster rate. Heavy rainfalls can create new flooded habitats for migratory birds and other water dwellers. Fish lay eggs, and crayfish burrow in the fresh mud. Too much rain can also have negative effects on some wildlife. Heavy rains can destroy nests, burrows, and reduce food sources.



Glaciers can erode solid rock! These grooves were formed as a glacier moved across the land.

3. **ENVIRONMENTAL Connection**
How would the rate of erosion of a plain compare to the erosion of the side of a mountain if slope was the only factor to consider?

Sample answer: The mountain would erode faster since it has a higher slope.



A Glacier Deposits Land

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REVISIT PAGE KEELEY SCIENCE PROBES Revisit the Page Keeley Science Probe on page 43.

Unit 3 – L5- Model earthquake movement

Q14. Page no.96 (Figure based)

FRQ

All waves transfer energy without permanently moving the material through which they travel. As a wave travels, particles end up in about the same position they started in.

2. Draw waves with the characteristics indicated below.

w same height
peaks and narrower waves.

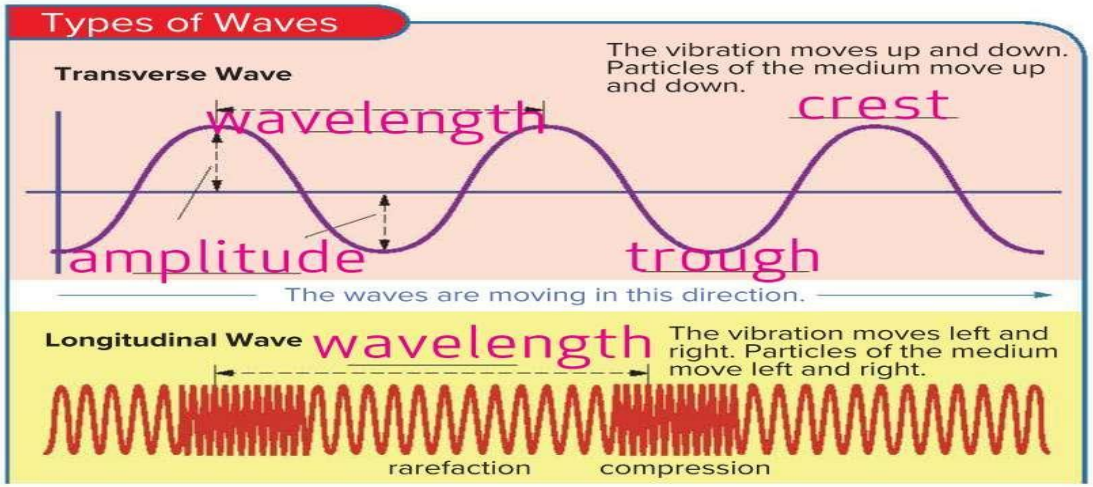
Short wavelength, high frequency:

Drawing should show same height peaks and wider waves.

Label a Diagram: Parts of Waves

Use what you learned to label the wavelength, amplitude, crest, and trough of each wave.

GO ONLINE Watch the video *Earthquake Movement* to see how earthquake waves move.

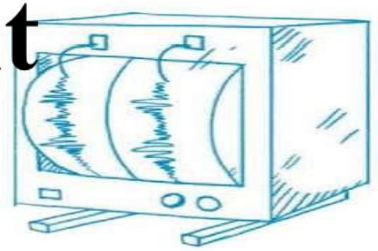


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Unit 3 – L5- Model earthquake movement

Q15. Page no.97 (Figure based)

FRQ

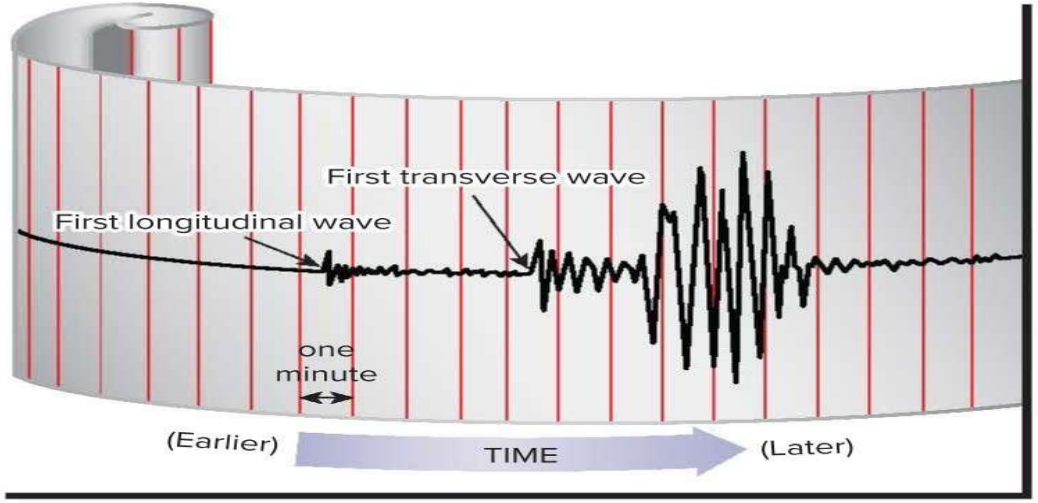


Earthquakes

Scientists measure seismic waves with a seismograph.
sed to detect and
ows the waves as
e, the steeper the lines.

an earthquake is its **magnitude**.
The Richter scale measures magnitude, the largest ground movement, when an earthquake occurs. It rates earthquakes from weakest to strongest starting at 1. Each larger whole number indicates that an earthquake has released 32 times more energy.

The Mercalli scale measures what people felt and what happened during an earthquake. It uses Roman numerals from I to XII.



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3. What do you think happens to the amplitude of an earthquake wave when its magnitude increases?

Sample answer: The amplitude of an earthquake wave increases as the magnitude increases.

Unit 3 – L6- Reduce earthquake damage

Q16. Page no.111 (Figure based)

FRQ

Earthquake Signs



A bulge or change in the angle of the ground is a sign that an earthquake is likely to occur. But even with these signs, it is difficult to predict how soon an earthquake will occur. months before enough shift.

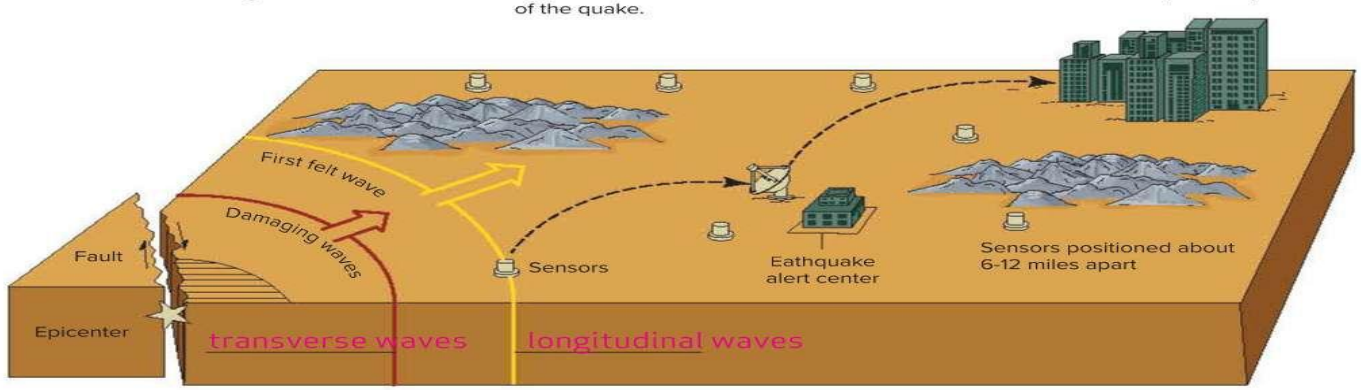
hat an earthquake is coming. , or minutes, notice of an earthquake's arrival. This technology works by first detecting longitudinal waves from a break at a fault. The sensors then analyze the data to determine the location and size of the earthquake. The system sends a message stating the intensity and arrival time of the earthquake.

Label a Diagram: Earthquake Warning

Recall the information from Lesson 2 about how seismographs record seismic waves. Label the longitudinal wave and transverse wave in the diagram.

Earthquake Early Warning Basics

1. In an earthquake, longitudinal waves move the fastest. Transverse waves arrive later but cause more damage.
2. Sensors detect the longitudinal wave and transmit data to the earthquake alert center to determine the location and size of the quake.
3. A message is sent to your electronic device, which calculates the expected intensity and arrival time of the earthquake at your location.



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Unit 1 – L1- Force and motion

Q17. Page no.10 (Figure based)

MCQ

VOCABULARY

Look for these words as you read:

- acceleration
- inertia
- motion
- speed
- velocity

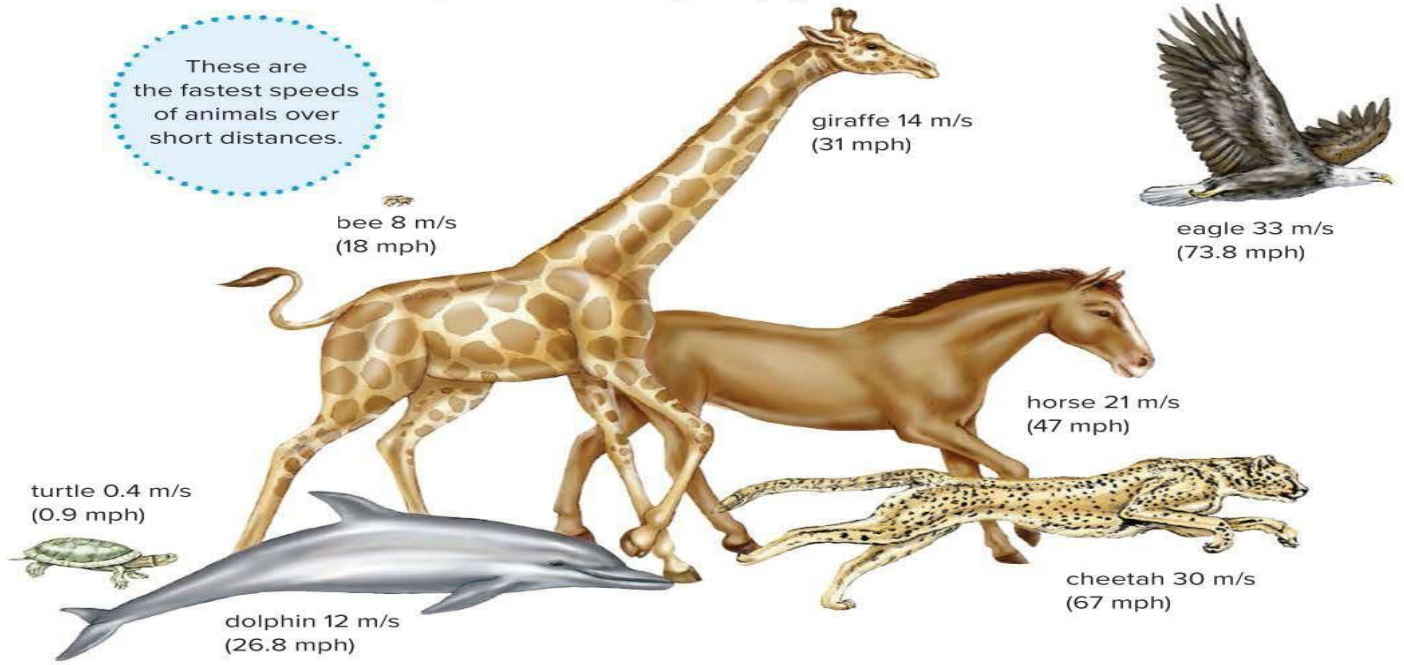
Position and Motion

The position of an object is its location. Certain words give us clues about location, like *left* and *right*, *above* and *below*, and *north*, *south*, *east*, and *west*. When we describe an object's position, we compare it to surrounding objects.

...ange in an object's position. To describe motion ...ely, you also need to find the amount of time it ...akes an object to move a certain distance. With measures of distance, direction, and time, you can describe motion and how it changes.

Speed

The **speed** of an object is how fast an object's position changes over time. Units of speed are units of distance per unit of time, such as meters per second (m/s), kilometers per hour (km/h), or miles per hour (mph). Suppose that in one hour, you pedal your bike 12 km (7.5 mi). Your speed is 12 km/h (7.5 mph).



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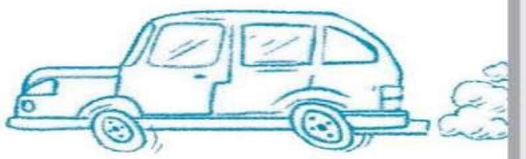
Unit 1 – L1- Force and motion

Q18. Page no.13

MCQ

Balanced and Unbalanced Forces

The forces that act upon an object combine in different ways. Forces that act in the same direction add up to produce a stronger force. Forces that act in opposite directions produce a weaker force. The total force on an object is the sum of all of the forces acting on the object.



When forces act on an object without changing its motion, they are called balanced forces. If an object is at rest, the forces on it are balanced. Forces on a moving object can be balanced too. When ice skating, your feet push against the ice, moving you forward. That force can be balanced with forces from air against your body. When you skate in a straight line at the same speed, the forces are balanced. If the total force acting on an object equals zero, the object will not accelerate.

Talk About It

What other sports or activities can you think of that involve balanced forces? Discuss in a small group.

Forces that do not add up to zero are unbalanced. Unbalanced forces change the motion of an object. Unbalanced forces can also affect an object's speed, direction, or both. For example, a skier will not start skiing until an unbalanced force acts on her. Unbalanced forces cause the skier's speed and direction to change.

All objects have a property called inertia. **Inertia** is the tendency of an object in motion to stay in motion or of an object at rest to stay at rest.



Eventually, the skier's motion will come to a stop because of opposite forces acting against the skis.

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Unit 1 – L1- Force and motion

Q19. Page no.21

MCQ

Three-Dimensional Thinking

1. **Math Connection** If a race car traveled a distance of 500 kilometers in 2 hours, what was the car's average speed?

500 km ÷ 2 h = 250 km/h

2. How can you best describe an object's motion?

Sample answer: You can best describe an object's motion by measuring the distance, time, and direction of its motion.

3. If the drag forces are increased, then an object will fall _____.

A. more slowly
B. faster
C. roughly at the same speed
D. rapidly and then slow down

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GO ONLINE Use the Personal Tutor *Writing Ratios in Simplest Form* to practice ratios.

Unit 1 – L2- Speed and energy

Q20. Page no.39

MCQ

Three-Dimensional Thinking

Use evidence from Inquiry Activity *The Moving Ball*, to explain the relationship between the speed and energy of an object.

Sample answer: The faster an object moves, the greater its energy. When the ramp was at its highest, the ball moved the fastest and had the most energy of motion.

2. An airplane in flight has

A. stored energy because it is above ground.

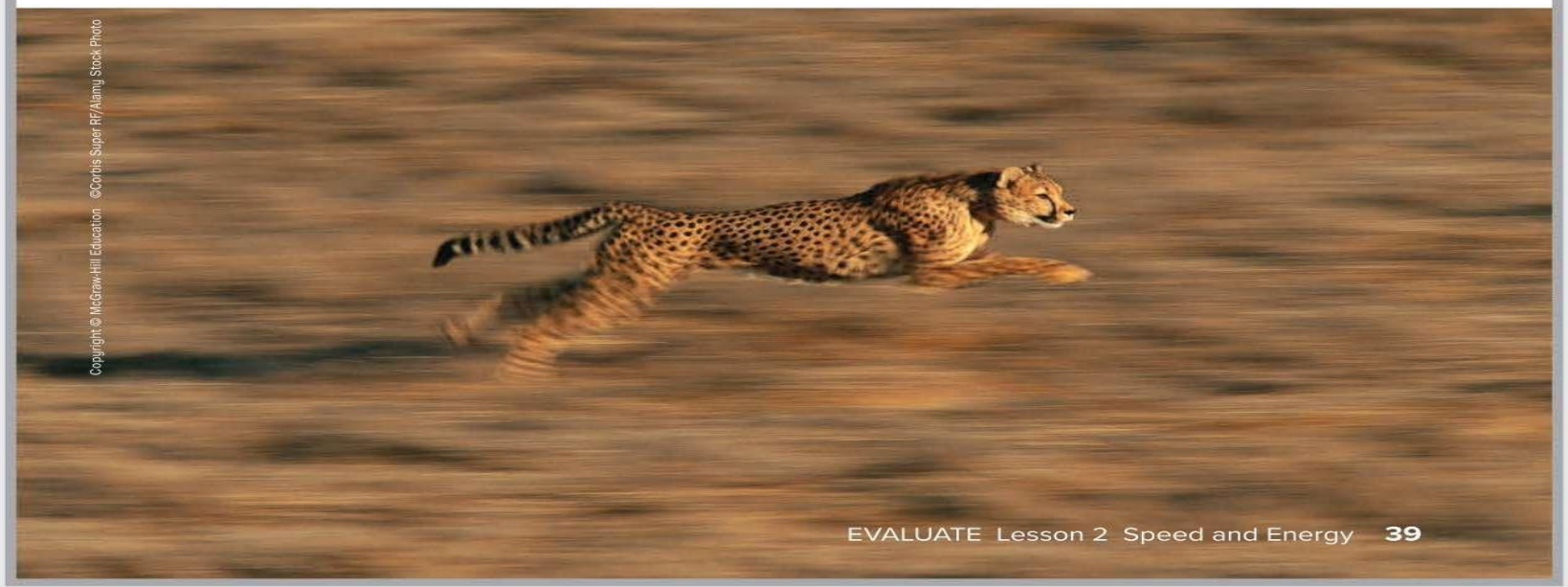
B. energy of motion because it is moving.

C. both stored energy and energy of motion.

D. None of the above

3. Explain what happens to the amount of energy a cheetah has when it runs faster.

Sample answer: The faster the cheetah runs, the greater its energy.



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