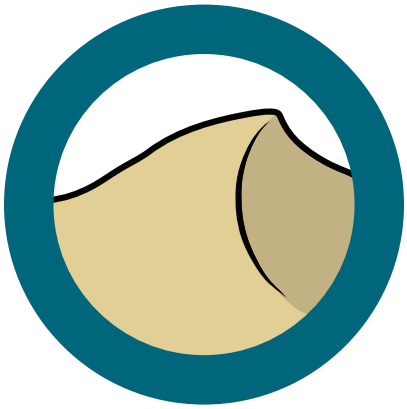
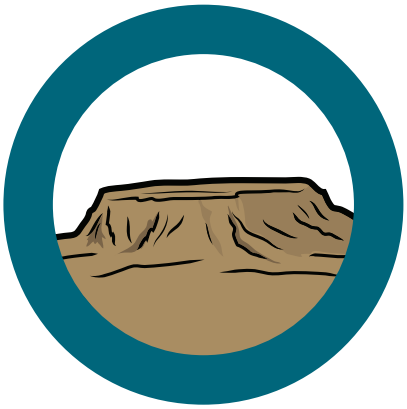
LANDFORMS

For Kids

3RD Grade





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Landforms For Kids

** Has an Answer Sheet*

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What is a landform?

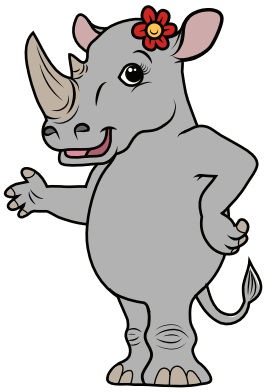
A **landform** is any natural feature of Earth's surface that is made up of rock, dirt or minerals. Landforms can be created in many different ways, including through weathering and erosion, by volcanic eruptions, by the movement of Earth's crust and can even be affected by the growth of living things!

Landforms Wordsearch

K C A N Y O N L B P M E S A
M P N B P C T A E U U H E U
R O D P L A T E A U T T T Y
H R U D L V P K A R S T K A
I U V N E E A T J R H O E R
V I A K T T K C L I F F A D
A S L E H A E I K I E D T A
L H C T I M I H A C T U X N
L A A U F A G N U R R N L G
E I P O A D E J R B I E W O
Y P E N I N S U L A S O Y F
S J A F A R A S E U H I L L

Find the following landform terms in the wordsearch above.

Karst	Mountain	Plateau	Peninsula
Cave	Yardang	Canyon	Cape
Valley	Butte	Cliff	
Hill	Mesa	Dune	



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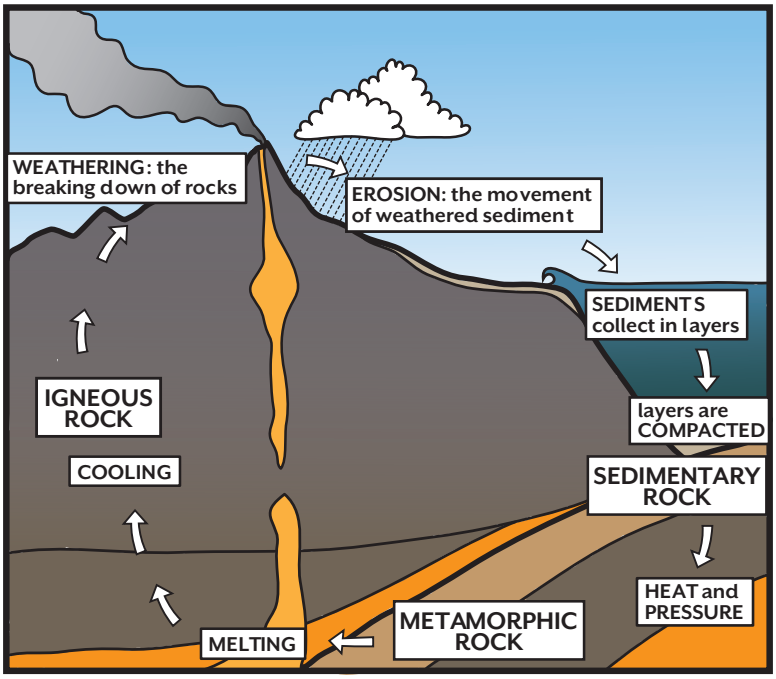
What is the rock cycle?

The **rock cycle** is a gradual process of movement and change that constantly reshapes our landscape. Processes on and within Earth—including weather, pressure and temperature—cause rocks to break down, melt and solidify over and over. Rocks change from one form to another, but are never destroyed.



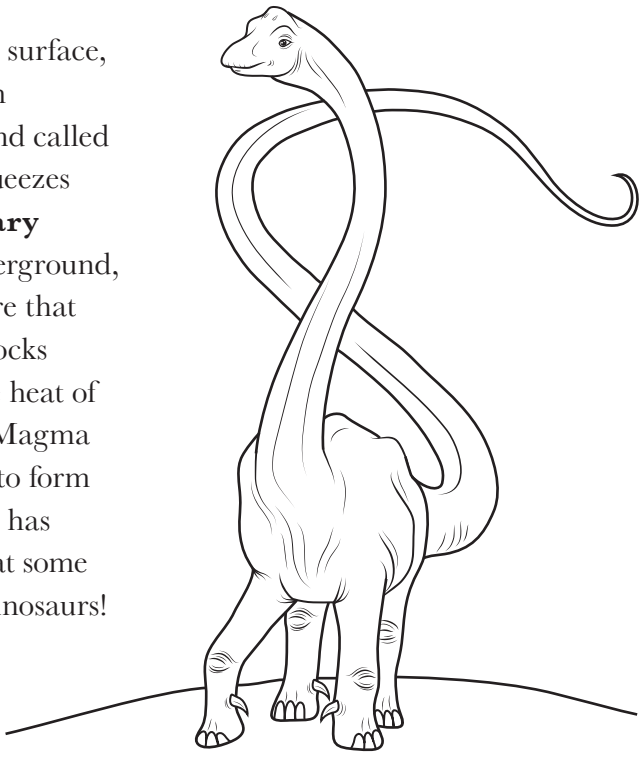
The Three Types of Rock:

Sedimentary rocks are made from layers of sediment.

Metamorphic rocks are formed under extreme heat and pressure.

Igneous rocks are melted rock that has cooled and hardened.

Processes within the earth push rocks up to the surface, where they're broken down and moved through **weathering** and **erosion**. Bits of rock and sand called **sediment** are deposited in layers. Pressure squeezes the layers and they solidify to form **sedimentary rock**. These rocks gradually move deeper underground, where they encounter extreme heat and pressure that transforms them into **metamorphic rock**. Rocks that are pushed even deeper toward the intense heat of Earth's mantle will melt and become magma. Magma that reaches Earth's surface cools and hardens to form **igneous rock**. This constant recycling of rock has occurred for millions of years, which means that some rocks have been around since the time of the dinosaurs!



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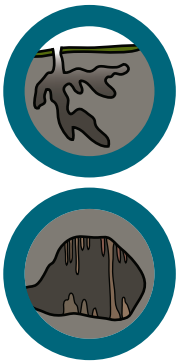
What is weathering?

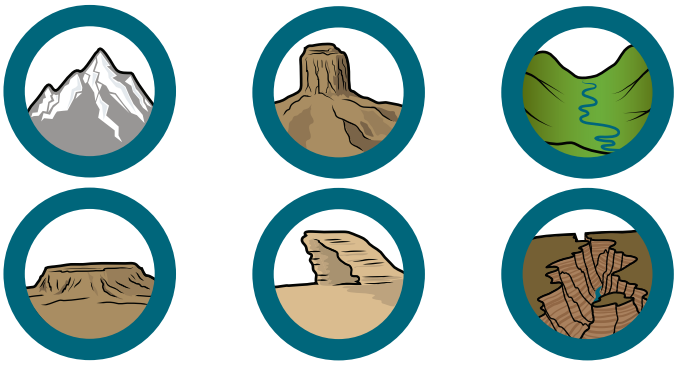
Weathering is the gradual breaking down of rocks and minerals on Earth's surface. There are two main types of weathering: physical and chemical. Physical weathering includes pressure, water and temperature changes. Chemical weathering includes oxidation, biological action and dissolution (the dissolving of certain kinds of rocks).

Chemical Weathering



Dissolution contributes to the formation of many caves.

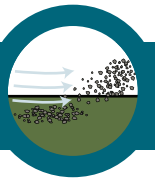
Physical Weathering



Temperature changes can cause weathering on mountains and rock formations.

Weathering by water contributes to the formation of canyons and valleys.

What is erosion?



Erosion occurs when sediment and materials that are created by weathering are transported from one place to another. There are several ways that erosion can happen, such as through wind, water, ice and gravity.

Erosion

Wind and water both erode material from canyons.

Wind both builds and moves sand dunes in the desert.

Water moves sediment downstream through valleys to the ocean.

Both gravity and glaciers transport materials from mountains.

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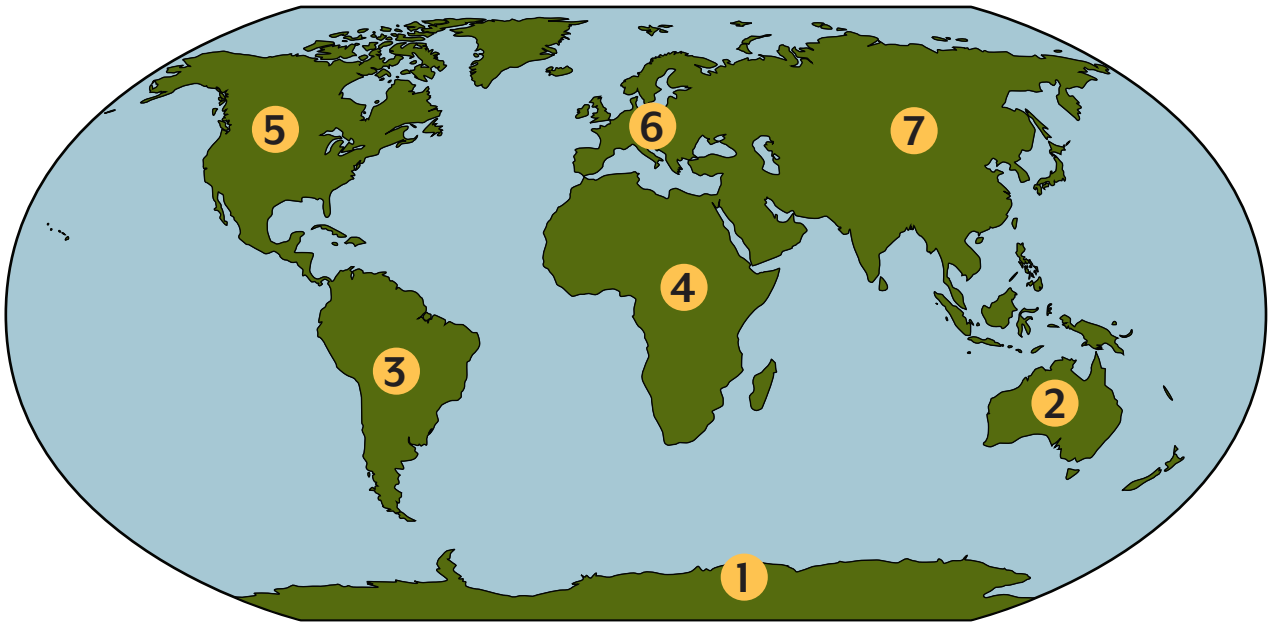
Continents

A **continent** is a large land mass, larger than an island, that is partly or completely separated from other land masses by water. There are 7 continents on Earth.

Continental Match-up!

Unscramble the continents' names below. Then the number from the map in the box next to the name.



- ☐ AASI _ _ _ _
- ☐ RIAFAC _ _ _ _ _ _
- ☐ ICARTACTAN _ _ _ _ _ _ _ _ _ _ _
- ☐ TRONH REICAMA _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
- ☐ REOPEU _ _ _ _ _ _
- ☐ SHOUT CERIAAM _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
- ☐ STAIURALA _ _ _ _ _ _ _ _ _

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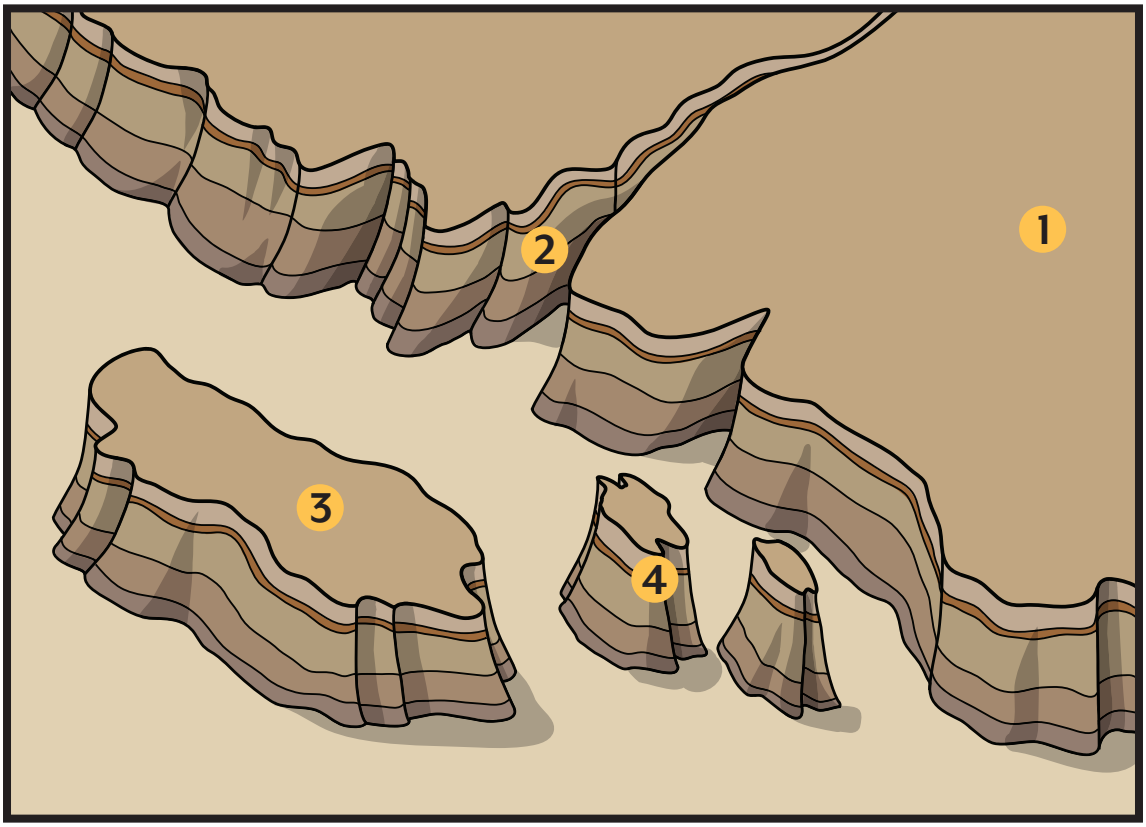
Plateaus

A **plateau** is a large, flat area of land that is raised higher than the surrounding land. They are usually caused by uplift through tectonic action, and then are worn down by wind and water, forming canyons, mesas, buttes and other formations.

Landscape Labeling!

Read the following two pages about buttes, mesas and canyons. Use what you learned to label this landscape.



1) _____

2) _____

3) _____

4) _____

Did you know? *The layers of rock seen in the walls of the Grand Canyon, located on the Colorado Plateau, were deposited over millions of years. Erosion and weathering from the Colorado River have exposed these ancient rock layers. The bottom of the canyon contains the oldest layers: the Vishnu, Brahma, and Rama Schists. These layers were formed between 1.73 and 1.75 billion years ago, during the Precambrian period!*

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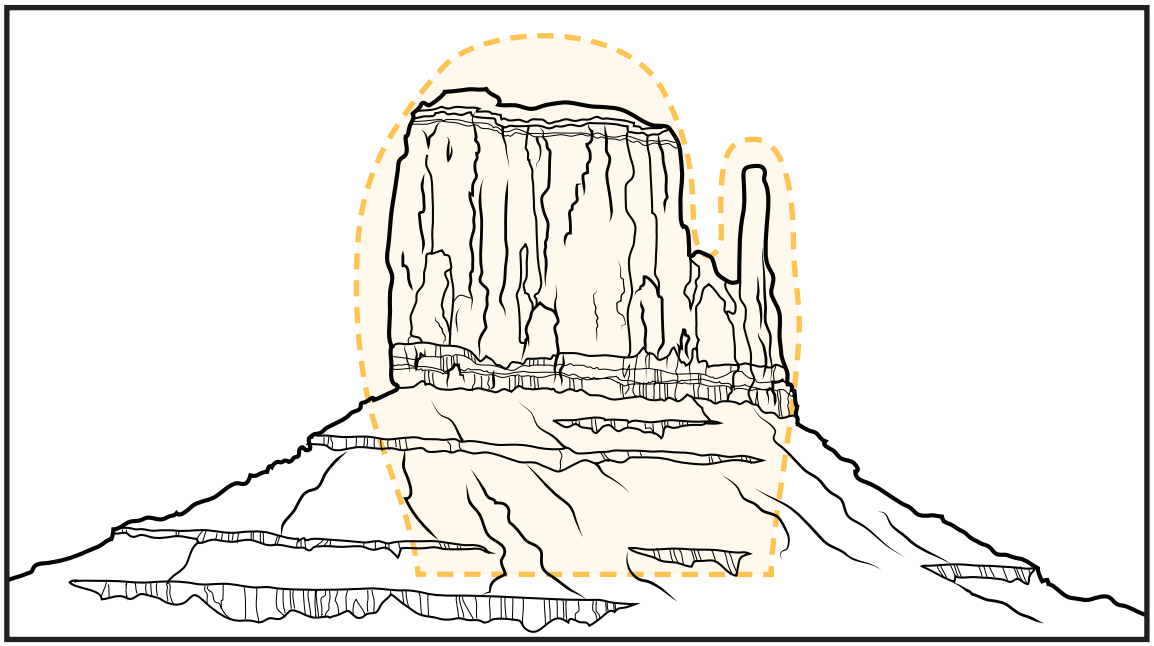
Buttes

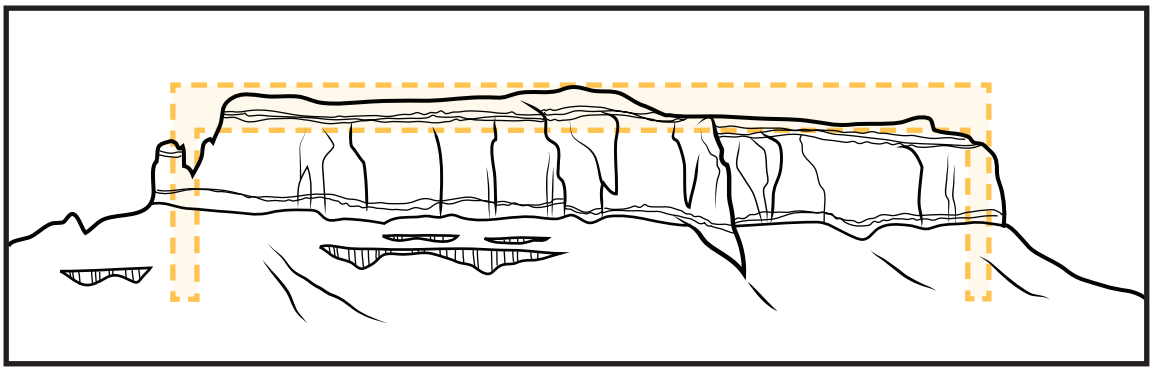
A **butte** is a tall, steep-sided hill, with a top that is narrower than its height. Buttes look like rock towers.



West Mitten Butte in Monument Valley, located on the border of Arizona and Utah, got its name from its unique shape, which looks just like a mitten. In fact, there is a matching East Mitten Butte nearby, making a pair!

Mesas

A **mesa** is a steep sided hill with a flat top that is wider than it is tall. *Mesa* is Spanish for table, so these features are sometimes nicknamed "table tops."



Sentinel Mesa in Monument Valley is a good example of a mesa, because you can clearly see the table shape.

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Canyons

A **canyon** is similar to a narrow valley with very steep sides that is carved by a river. **Cliffs**, which are steep rock faces, are common in canyons.

WORD BANK:

COLCA	TAROKO	FISH RIVER
SAMARIA	KINGS	WAIMEA
COPPER	GRAND	ANTELOPE
TIGER LEAPING	TODRA	VERDON

ACROSS:

1) This immense canyon is located in Namibia, Africa.

3) This canyon in Peru is twice as deep as the Grand Canyon.

5) This colorful canyon is on the beautiful island of Kauai.

7) This canyon, located in Arizona, has the same name as an animal.

9) This canyon is located in the Atlas Mountains of Morocco.

11) This canyon in Australia has a very royal sounding name.

13) The Colorado River runs through this amazing canyon in Arizona.

DOWN:

2) This canyon, located on the island of Crete, contains forests of cypress and pine trees.

4) This canyon is located in China, and is a contender for the deepest canyon in the world.

6) This canyon in Mexico shares a name with a common metal.

8) This canyon in France is named after the river that flows through it, and its turquoise-green waters.

9) The name of this canyon in Taiwan means "magnificent and beautiful" in a local language.

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Yardangs

Yardangs are rock formations that are mostly found in very dry deserts. They are formed by steady wind erosion, and they often resemble the bows of overturned ships sticking out of the ground.

What would you carve out of a yardang?

Yardangs are sometimes called "mud lions," and some geologists speculate that the Great Sphinx in Egypt was made from a large yardang. What do you think?

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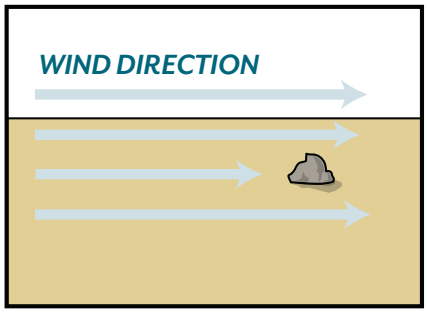
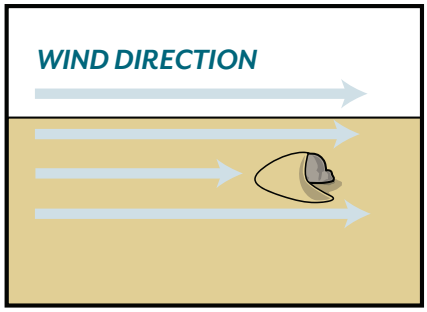
Dunes

A **dune** is a hill of sand that has been built up by the wind or by water. Dunes can come in many different shapes and sizes, and are found mostly in arid deserts or near sandy beaches.

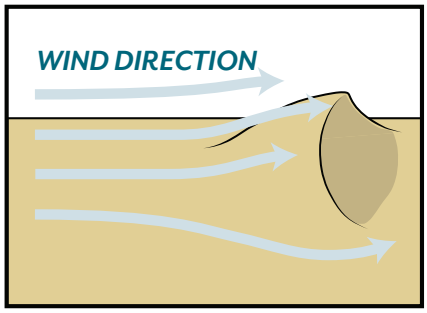
Dune Formation



A dune begins with a "seed," an object on the ground that the sand grains can collect around. Sand is lifted by the wind, and carried a short distance before falling back to the ground. The "seed" makes it more likely that sand will be deposited in that spot, because it disrupts the wind, causing it to drop sand grains.



As more sand grains are deposited, the budding dune becomes more of an obstacle for the wind to overcome, causing it to deposit even more sand. Eventually, the "seed" becomes engulfed in sand.



A dune can continue to grow and even migrate! Sand dunes are known for their ability to move and engulf roads, trees and even entire forests. A dune's migration is caused by sand being lifted and blown up the **windward** side of the dune and back down the **leeward** side, also called the **slip face**, landing at the edge of the dune.

Many unlikely objects can act as a seed for a sand dune to form around, including fence posts, plants, rocks and sticks. There have even been reports of dunes beginning to form around ant hills!

Windward: the side that faces into the wind.
Leeward: the side that faces into the wind.
Slipface: also called the leeward side, the slipface may have got its name because of its steep angle, which can cause sand (and anything trying to walk on the dune) to slip down the slope!

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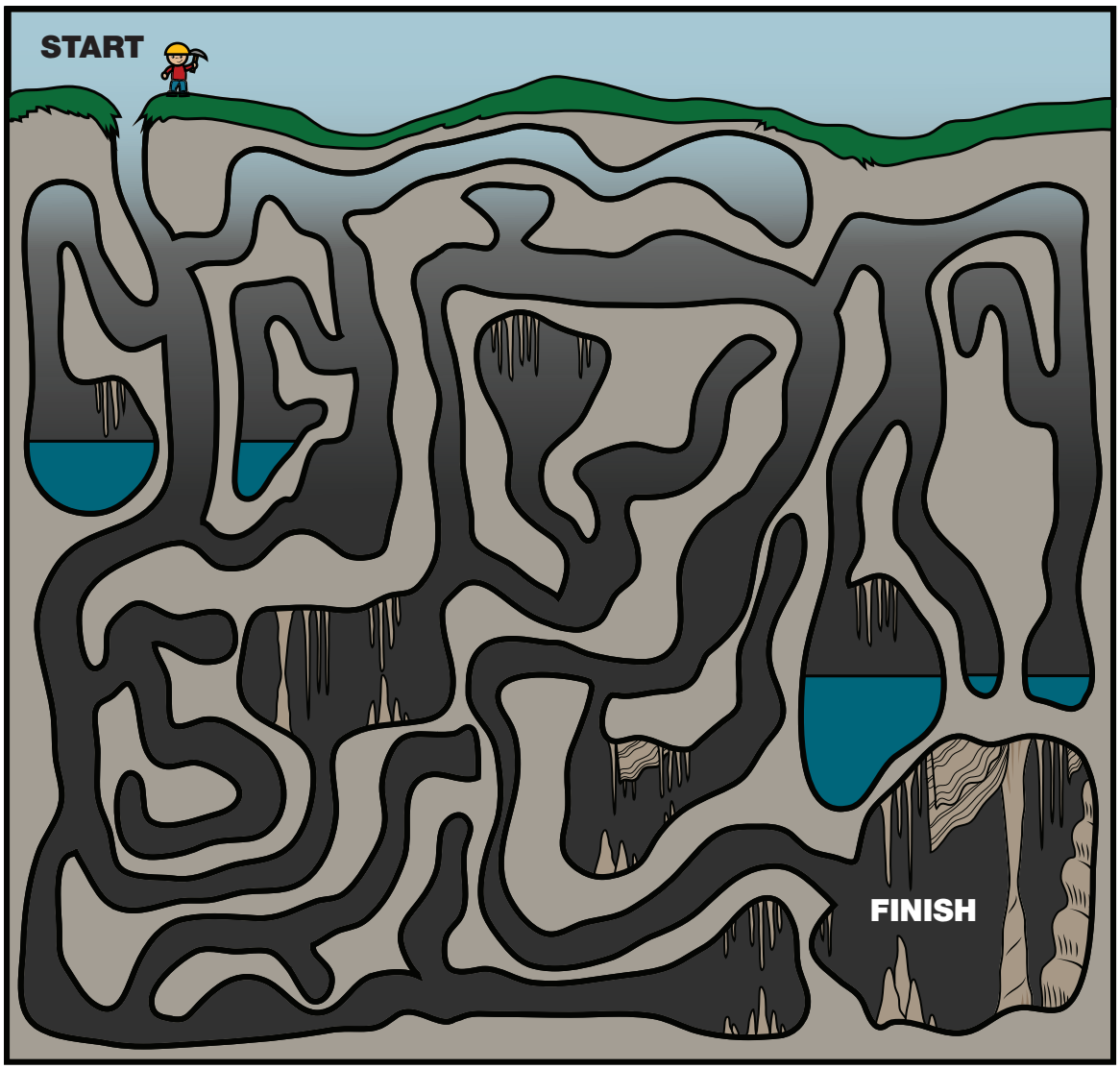
Karst

Karst is a type of landscape made when acidic water seeps through cracks in the ground and slowly dissolves **limestone rock** over thousands or millions of years, leaving underground passages and spaces. Karst landscapes attract visitors and explorers, because caves, sinkholes and other interesting features can be found there.

It's a Cave Expedition!

Help the spelunker (or cave explorer) get through the cave maze to the main chamber!



Limestone is a rock that is made of tiny shells, corals, and skeletons of tiny ocean creatures. The limestone that is found on land was formed at the bottom of an ancient ocean!

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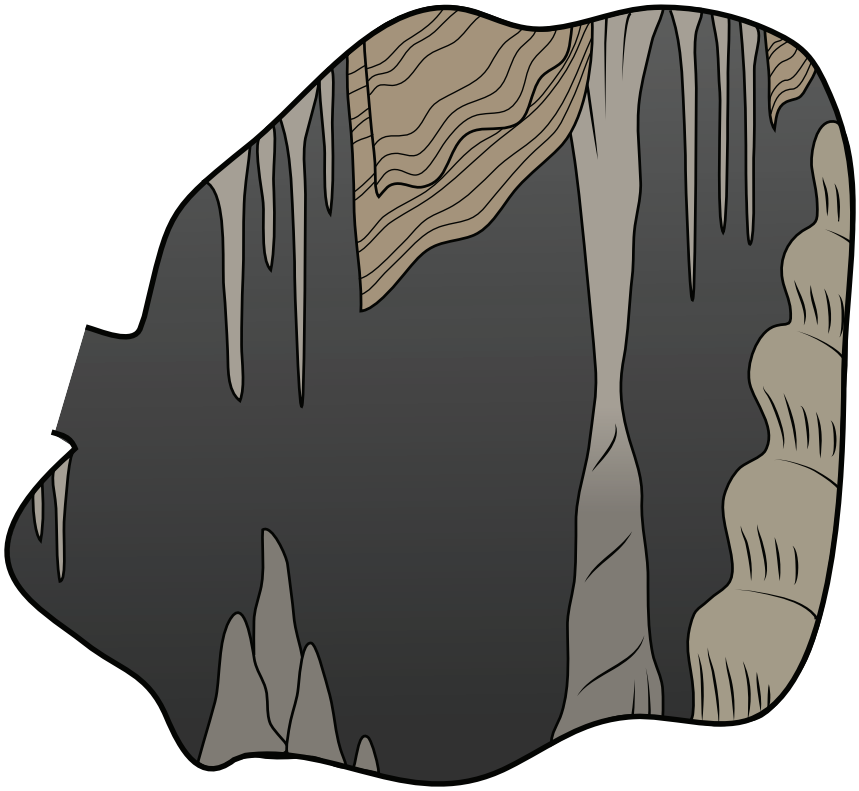
Caves

A **cave** is a natural underground space that is large enough for people to fit inside. Caves are created through a variety of processes, including the weathering of rock, volcanic activity or landslides.

Label the Formations

There are many different formations in caves, including stalagmites, draperies and flowstone. Most are caused by the slow dripping of water, which over time deposits minerals. Draw a line from the cave formation terms to the correct drawing in the cave to the left.



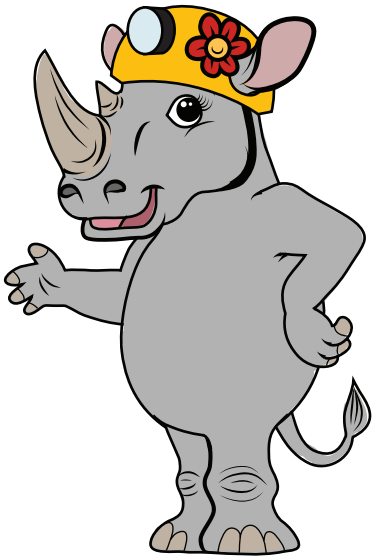
DRAPERY: looks like stone curtains hanging from the ceiling.

STALACTITE: looks like an icicle made of stone.

COLUMN: these form when a stalactite and stalagmite meet.

STALAGMITE: these are usually thicker than stalactites.

FLOWSTONE: looks like a frozen waterfall.



Memory Booster: *stalag**mite**s grow up from the ground and "**mite**" reach the ceiling, and stalac**tite**s hold "**tite**" to the ceiling!*

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Erosion, Weathering & Water

Water causes a lot of erosion and weathering, but we know that not all water does the same thing: streams and rivers move steadily down to the ocean, where waves lap gently or pound roughly against the shore. Compared to that, water in ponds and lakes barely move. So how does the movement of water affect weathering and erosion?

You Will Need:

- Three clear plastic cups
- Three candy-coated chocolates (three different colors is best)
- Water

The ocean waves have worn a hole through this rock outcropping on this beach in California.

Instructions:

1. Start by filling two of the cups with water, leaving one cup empty.

2. Place one piece of candy in each cup.

3. Take just one of the cups with water in it, and gently swirl the water inside for about 15 seconds. Do not swirl the other two cups.

4. Repeat the 15 second swirling every 4 or 5 minutes for an hour, and record your observations, and note any changes you notice in all three cups. You can label which cup to swirl if you like, to make sure you swirl the same cup.

5. Based on your observations, which has more of an effect: moving water, or still water? Why do you think this is? How do you think this translates to landforms?

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Explore Erosion & Deposition

As you've read, water can be a powerful force in reshaping the earth and moving materials. In this activity, think about the following questions: How does water erosion happen, and how can it change what a landscape looks like? How can deposition reshape landscapes?

You Will Need:

- Dirt
- Small gravel
- Sand
- Deep baking dish or pan
- Book
- Pencil
- Paper cups

The Grand Canyon in Arizona.

Instructions:

1. Begin by layering the dirt, gravel and sand at one end of the the baking dish, and use your hand to smooth out the surface to make your land, making sure to keep one side of the dish empty.

2. Dip your fingers into the water, and slowly drip the water over your land. Keep dripping water until your land is wet. What do you see happening when water falls on the dry land?

3. Gently lift up the end of your dish that contains your land. Place a book under that side to hold it up at an angle.

4. Use the tip of a pencil to poke a very small hole in your cup, and holding it above your land, slowly pour water into the cup. What do you see happening to the land as the water soaks in and drains? What happens to both ends of your dish, and what happens to the water? Record your observations, and include a drawing of your landscape.

5. Add another book to make a steeper angle, and repeat. Again, record your observations, and include a drawing.

6. How did your landscape change? What new landforms were created at either end of the dish?

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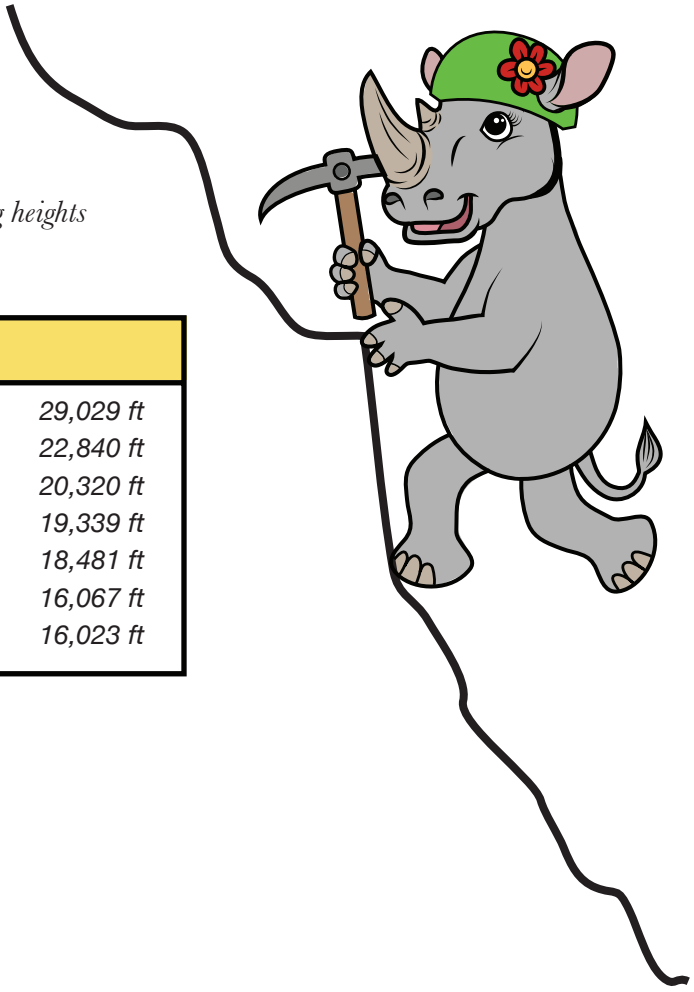
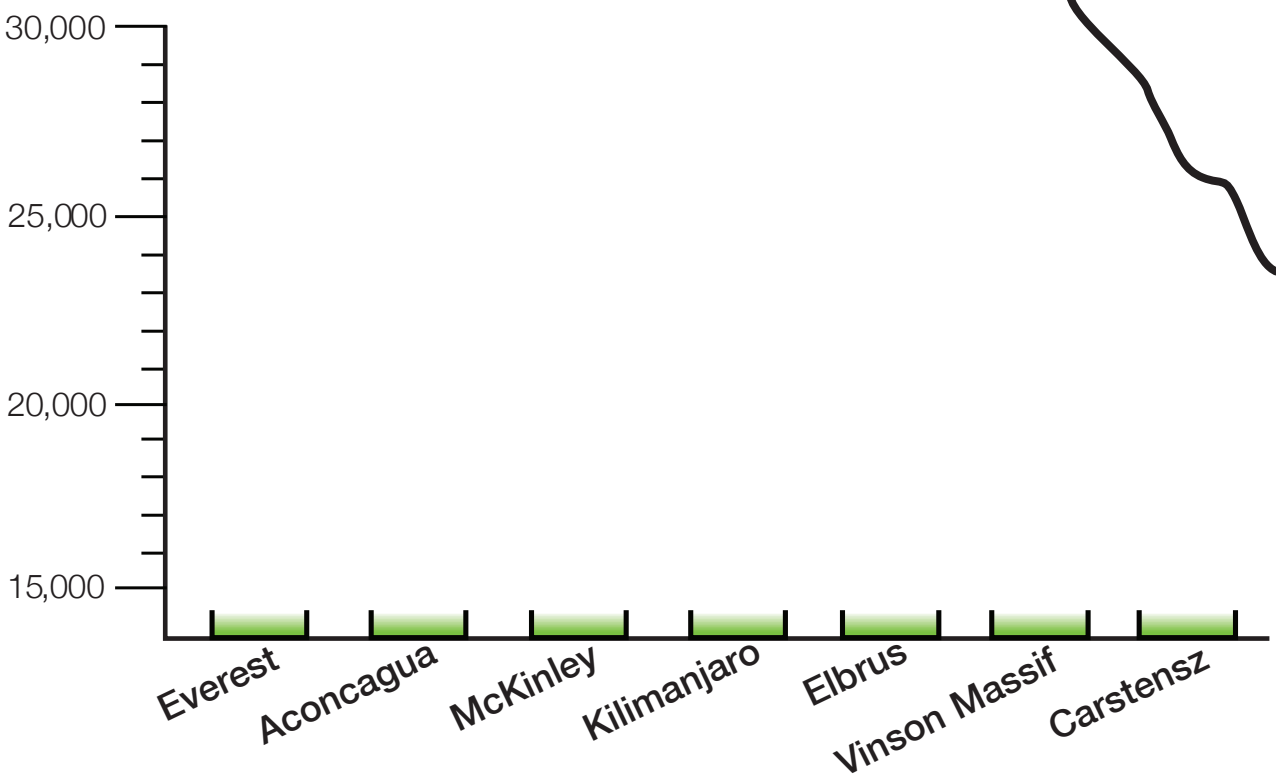
Mountains

While there is no set definition of a **mountain**, most share certain characteristics: they are created by tectonic movement, they rise relatively quickly in elevation, have steeper sides than hills and have a defined peak, called a **summit**.

The Seven Summits are the highest peaks from each of the seven continents. Daring climbers challenge themselves to climb all seven mountains. Your challenge? Graph the towering heights of the Seven Summits!



The Seven Summits		
Everest	*Nepal/Tibet*	*29,029 ft*
Aconcagua	*Argentina*	*22,840 ft*
McKinley	*Alaska*	*20,320 ft*
Kilimanjaro	*Tanzania*	*19,339 ft*
Elbrus	*Russia*	*18,481 ft*
Vinson Massif	*Antarctica*	*16,067 ft*
Carstensz Pyramid	*Indonesia*	*16,023 ft*



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Valleys

A **valley** is the land between hills or mountains. They are formed by either water erosion from a river, or from ice erosion from a glacier. Throughout the ages, valleys have been popular areas for people to live because they usually have access to fresh water, are more protected from the elements, and have fertile soil.

Draw your own ancient valley city! Think about what ancient cities may have contained: is there a temple, or a palace? Is there a lake or a river, and where do the city inhabitants live?

Hills

A **hill** is an area of land that rises above the surrounding area. Generally hills are shorter and less steep than mountains, with a more rounded top.

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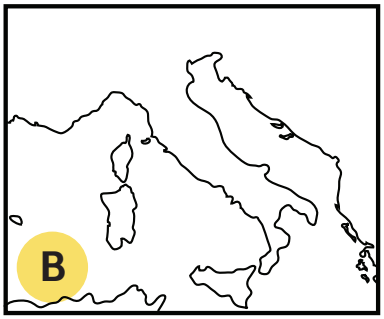
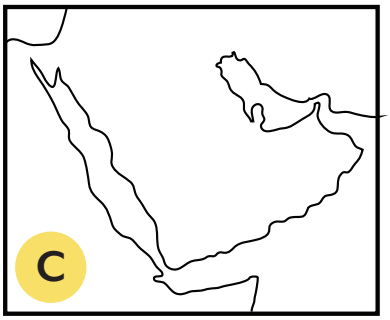
Peninsulas

A **peninsula** is a body of land that extends from a mainland into an ocean, sea, or lake. Peninsulas are usually surrounded on three sides by water.

Peninsula Match Up!

Match each famous peninsula with the correct name below.

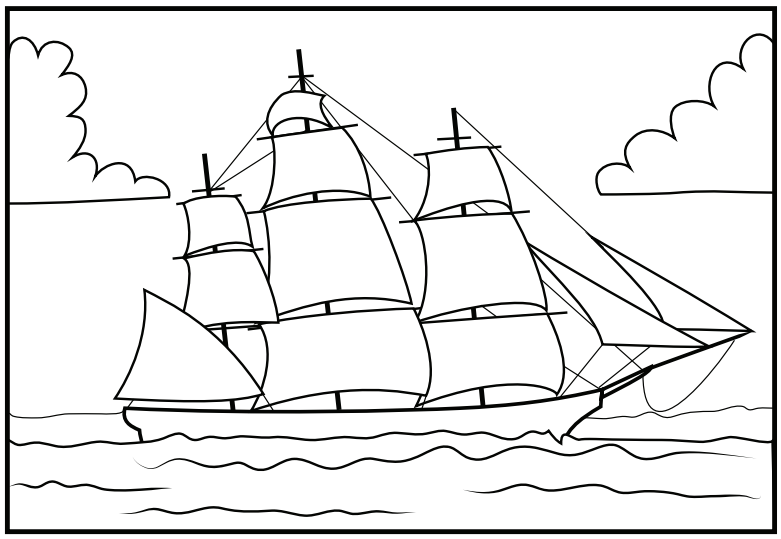




_____ Italian Peninsula _____ Arabian Peninsula _____ Florida Peninsula

Capes

A **cape** is a narrow point of land that juts into the ocean or other body of water. They are normally much smaller than peninsulas.



Before 1914, ships that needed to get from the Atlantic ocean to the Pacific ocean had to sail around Cape Horn, at the southern tip of South America. That meant people and cargo going from New York to San Francisco traveled 13,000 miles! In 1914, after almost 35 years, the Panama Canal was completed, and it crossed the Panama Isthmus. This shortcut took 8,000 miles off of the New York to San Francisco trip.

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Landform Recall!

You've read a lot about landforms so far! Use your new knowledge and test your memory by filling in the table below. For each icon found somewhere in this book, write the name of that landform and how it was created.







NAME	CAUSE

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Unscramble Terms

Unscramble the landform vocabulary below. Then, write the correct definition for each term.

SITMUM: _ _ _ _ _ _

Definition: _____

_____

SETILATACT: _ _ _ _ _ _ _ _ _ _

Definition: _____

_____

SOUGINE: _ _ _ _ _ _ _

Definition: _____

_____

NELOIMEST: _ _ _ _ _ _ _ _ _

Definition: _____

_____

MITESTAGLA: _ _ _ _ _ _ _ _ _ _

Definition: _____

_____

DIMERYSENTA: _ _ _ _ _ _ _ _ _ _ _

Definition: _____

_____

MANDFLOR: _ _ _ _ _ _ _ _

Definition: _____

_____

HORMEPTAMIC: _ _ _ _ _ _ _ _ _ _ _

Definition: _____

_____

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What do you think?

Erosion and weathering are usually caused by natural processes, but human activities also have a major impact on the amount of erosion that occurs. Can you think of ways that people move or alter land, and why people might want to do this?

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Great job!

_____

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Answer Sheets

Landforms For Kids

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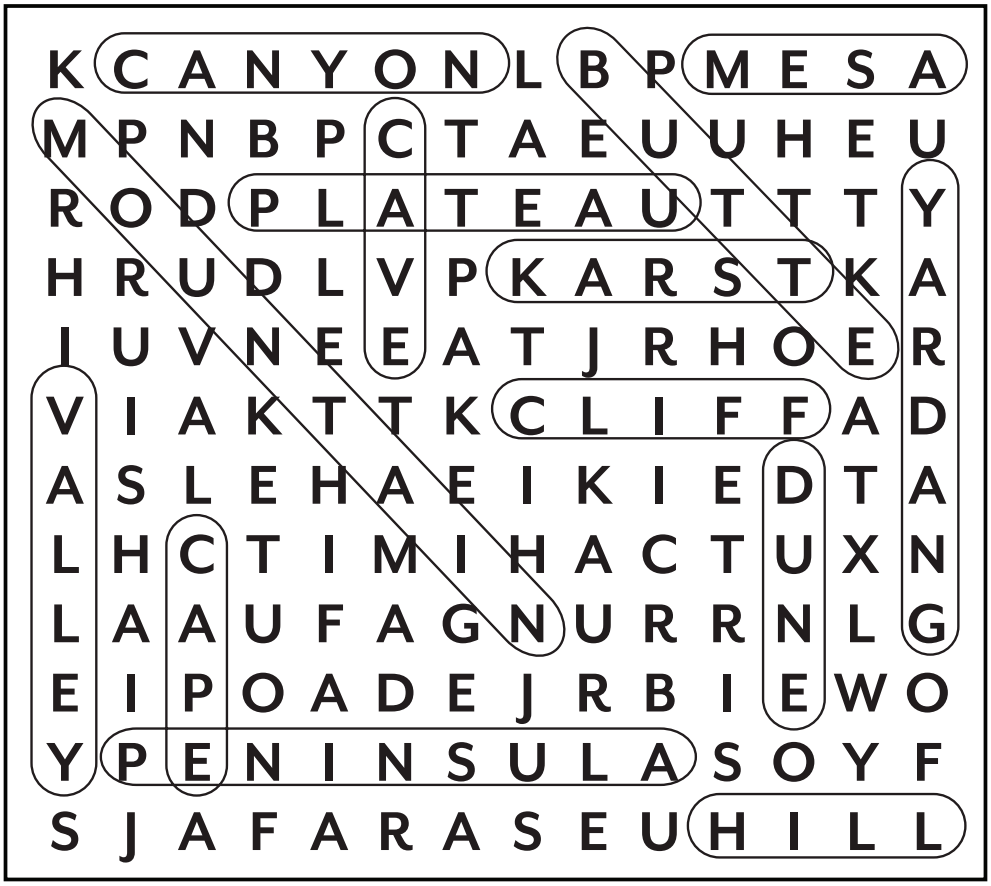
Answer Sheet

Answers and Solutions

Landforms Wordsearch



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Karst	Mountain	Plateau	Peninsula
Cave	Yardang	Canyon	Cape
Valley	Butte	Cliff	
Hill	Mesa	Dune	

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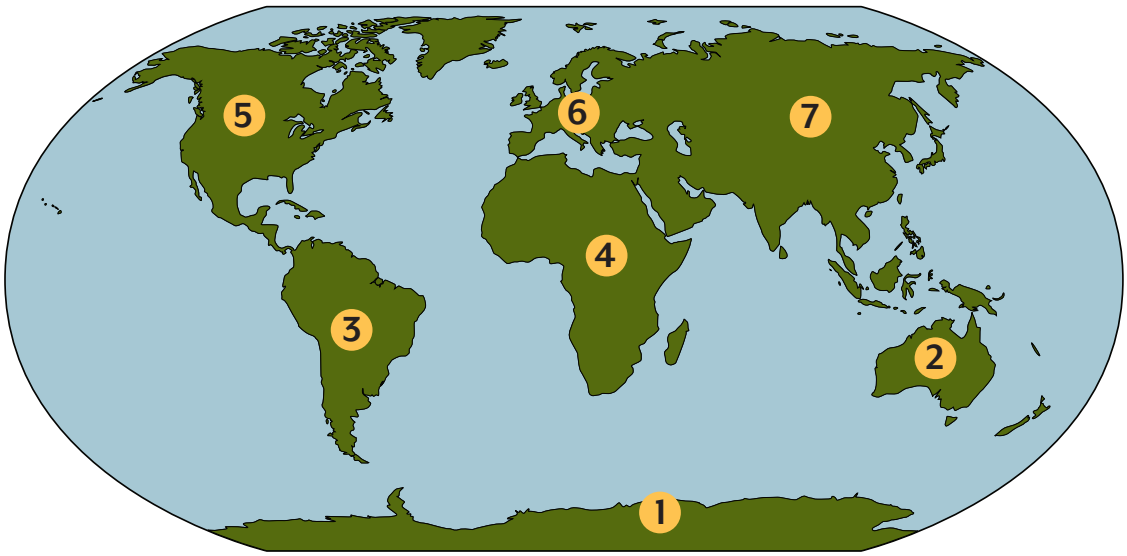
Answer Sheet

Answers and Solutions

Continental Match-up!



7 AASI A S I A

4 RIAFAC A F R I C A

1 ICARTACTAN A N T A R C T I C A

5 TRONH REICAMA N O R T H A M E R I C A

6 REOPEU E U R O P E

3 SHOUT CERIAAM S O U T H A M E R I C A

2 STAIURALA A U S T R A L I A

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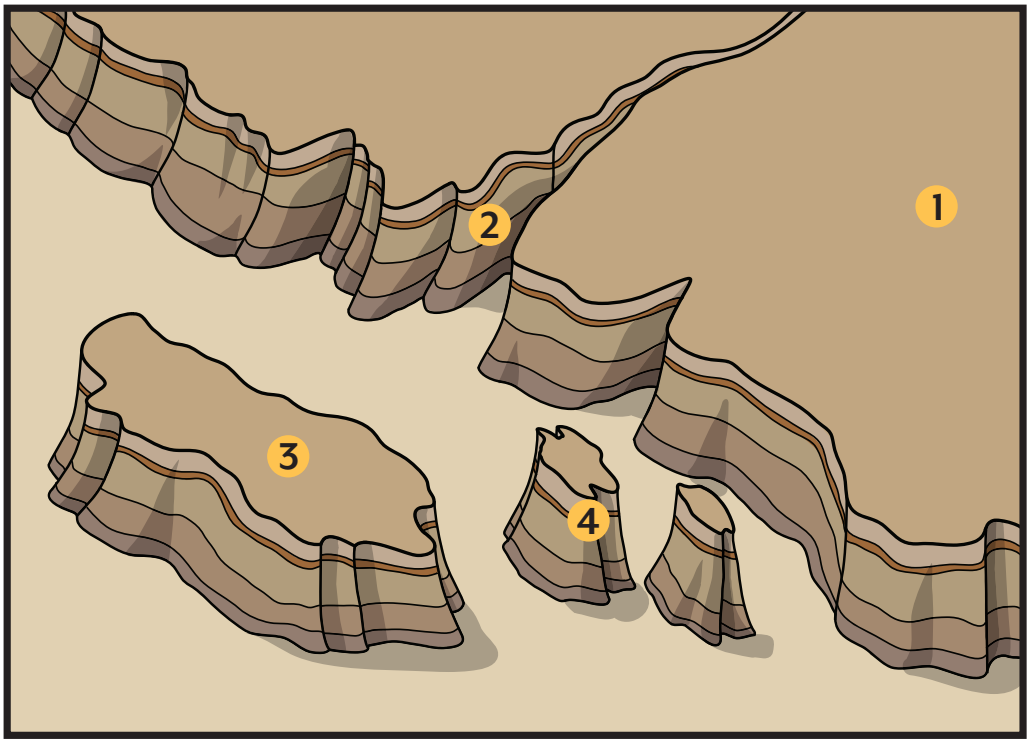
Answer Sheet

Answers and Solutions

Landscape Labeling!



1) Plateau

2) Canyon

3) Mesa

4) Butte

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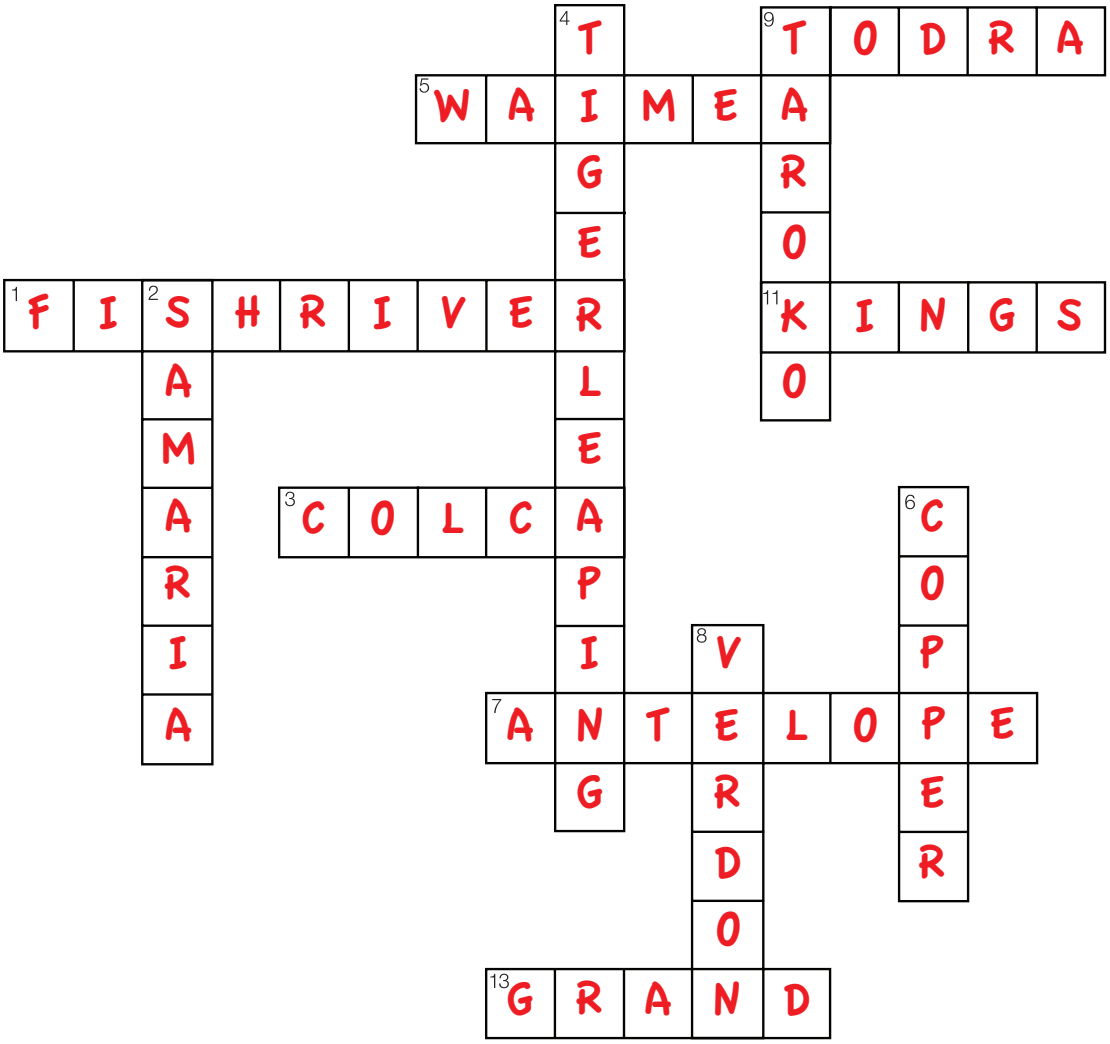
Answer Sheet

Answers and Solutions

Canyon Crossword



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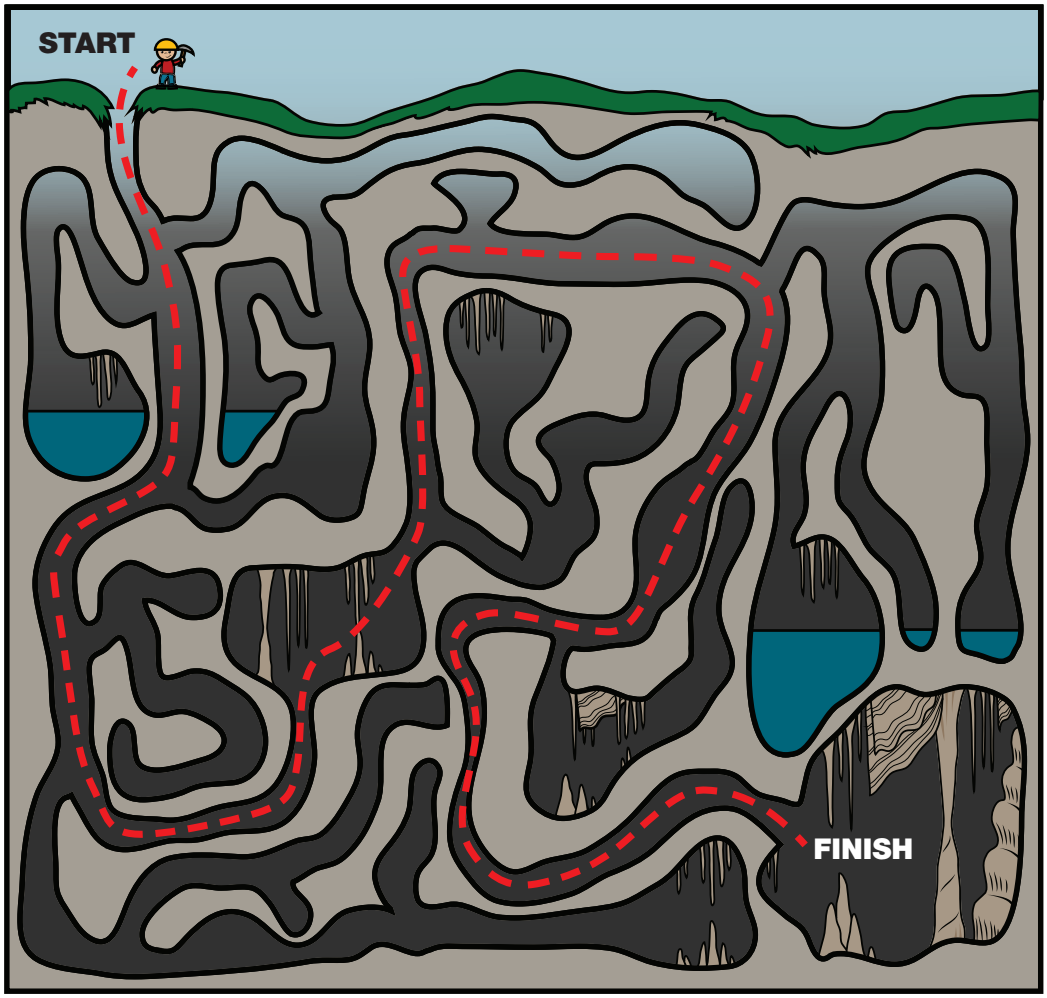
Answer Sheet

Answers and Solutions

It's a Cave Expedition!



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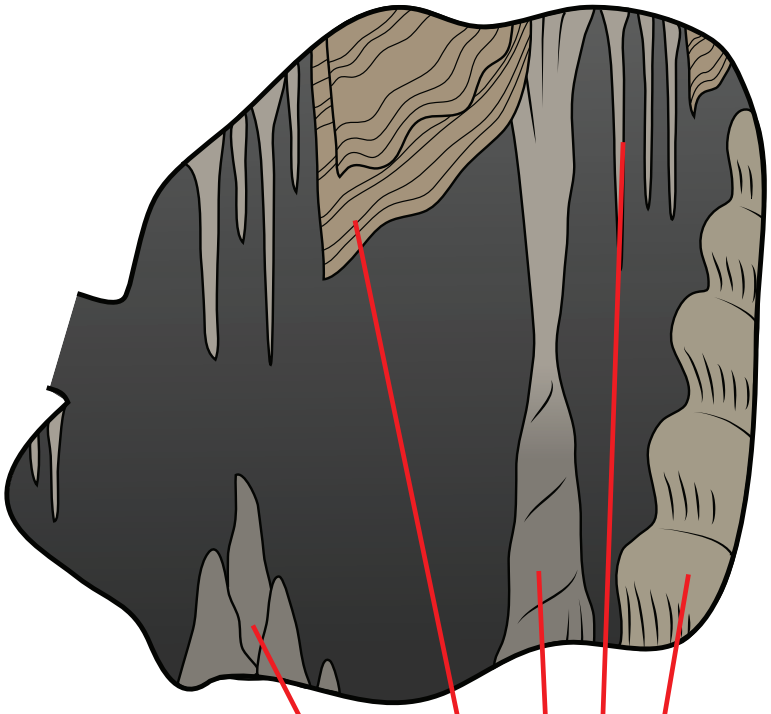
Answer Sheet

Answers and Solutions

Label the Formations



DRAPERY: looks like stone curtains hanging from the ceiling.

STALACTITE: looks like an icicle made of stone.

COLUMN: these form when a stalactite and stalagmite meet.

STALAGMITE: these are usually thicker than stalactites.

FLOWSTONE: looks like a frozen waterfall.

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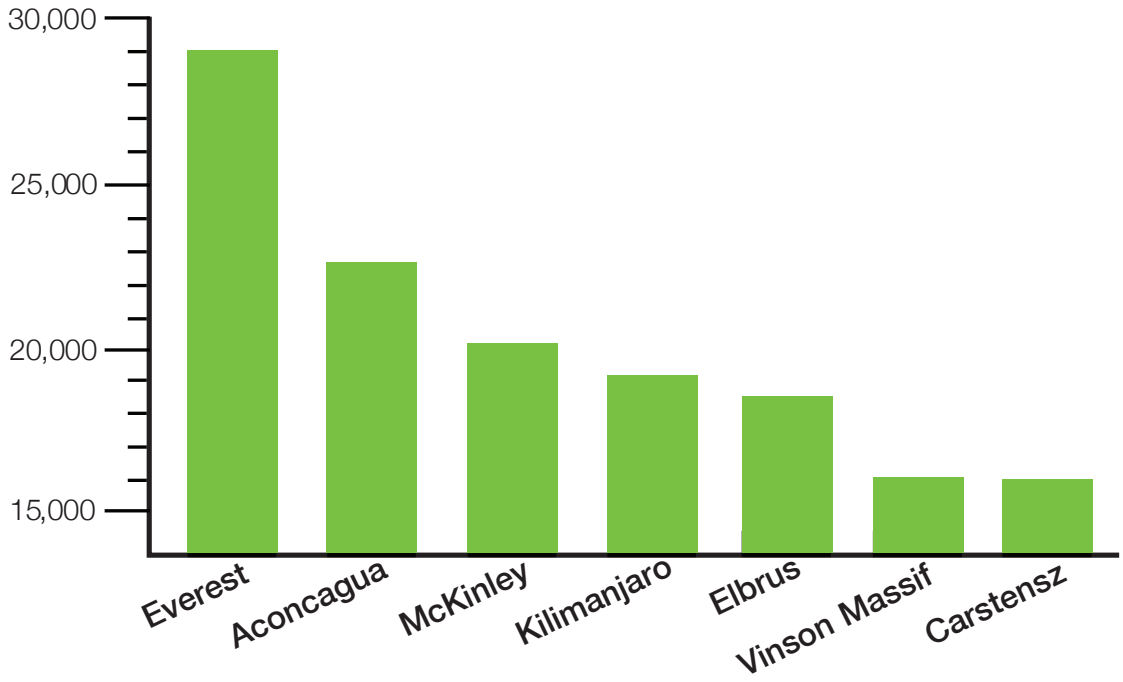
Answer Sheet

Answers and Solutions

Graph the Seven Summits

The Seven Summits		
Everest	*Nepal/Tibet*	*29,029 ft*
Aconcagua	*Argentina*	*22,840 ft*
McKinley	*Alaska*	*20,320 ft*
Kilimanjaro	*Tanzania*	*19,339 ft*
Elbrus	*Russia*	*18,481 ft*
Vinson Massif	*Antarctica*	*16,067 ft*
Carstensz Pyramid	*Indonesia*	*16,023 ft*



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Answer Sheet

Answers and Solutions

Landform Total Recall

	NAME	CAUSE
	Mesa	Mesas are worn down by weathering and erosion, caused by wind and water.
	Mountain	Mountains are usually formed by tectonic uplift.
	Cave	Caves are usually formed by the dissolving of limestone rock by water.
	Dune	Dunes are formed from windblown sand in an arid location.
	Valley	Valleys are usually formed by rivers or glaciers.
	Canyon	Canyons are usually formed by rivers.
	Karst	Karst landscapes are formed by the dissolving of limestone rock by water.

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Answer Sheet

Answers and Solutions

Landform Unscramble

SITMUM: S U M M I T

Definition: The peak of a mountain.

SETILATACT: S T A L A C T I T E

Definition: A rock formation that hangs from the ceiling of a cave, that is caused by dripping water.

SOUGINE: I G N E O U S

Definition: Rock that has been formed from cooled and hardened lava.

NELOIMEST: L I M E S T O N E

Definition: Rock that was formed at the bottom of an ancient ocean, out of tiny fossils.

MITESTAGLA: S T A L A G M I T E

Definition: A rock formation that grows from the bottom of a cave, that is caused by dripping water.

DIMERYSENTA: S E D I M E N T A R Y

Definition: Rock that has been formed by compressed layers of sediment.

MANDFLOR: L A N D F O R M

Definition: Any natural feature of Earth's surface that is made of rock, dirt or minerals.

HORMEPTAMIC: M E T A M O R P H I C

Definition: Rock that was formed from sedimentary rock that has undergone heat and extreme pressure.

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