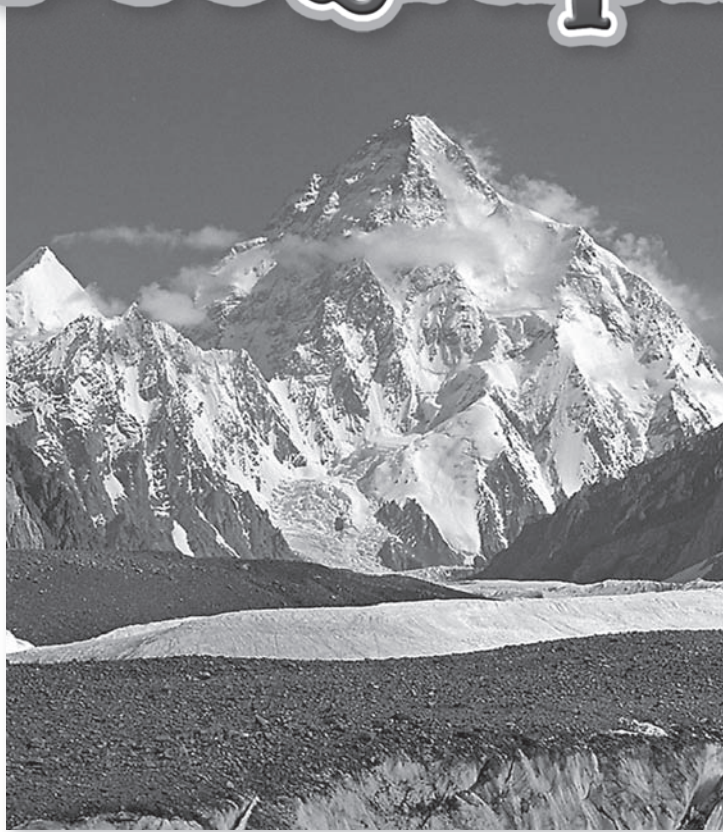


# Amazing World Records of Geography



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## To the Teacher

*Amazing World Records of Geography* welcomes students to the superlatives of our planet. In these pages they—and you—will find some of the biggest, greatest, highest, and longest geographical features on earth.

### Topic Coverage

This is an eclectic collection. Topics range from the familiar—the world’s greatest mountain range—to the extraordinary—the world’s most remote island. There are dozens of “world records” of geography. This collection is an attempt to gather those that are particularly interesting to students, prompt discussion of standard geographical concepts, and teach subjects of high pedagogical value.

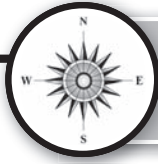
### Learning Standards

The creation of each student activity sheet was guided by two sets of learning standards. First, the five themes of geography advanced by the National Council for Geographic Education and Association of American Geographers. Second, the 18 National Geography Standards established in *Geography for Life*, which was developed on behalf of the American Geographical Society, the Association of American Geographers, the National Council for Geographic Education, and the National Geographic Society.

The specific themes and standards that are addressed in each chapter are listed on that chapter’s Teacher Guide Page.

### The Five Themes of Geography

- Location (absolute and relative)
- Place (characteristics that make a place unique)
- Human/Environment Interaction
- Movement (of people, ideas, and things)
- Regions



# 1. The World's Greatest Mountain Range

## The Himalaya-Karakoram Range

### Objectives

- **Geographic Themes** location, place, and regions
- **National Geographic Standards** 1, 3, 4, 5, 6, and 7

### Time and Special Materials

- About two class periods
- Modeling clay; blocks or bricks

### Teaching Tips

The three activity sheets can be completed by students working independently, with partners, or in small groups. You may wish to assign the activities to the same groups of students consecutively, or to different groups concurrently. Group representatives could then share each group's findings with the rest of the class.

#### *Activity Sheet 1A*

- Focus students' attention on the map.
- Superimpose a map of the Himalaya-Karakoram Range onto a map of the United States, or have students do it, to appreciate its relative size. Visit [OverlapMaps.com](http://OverlapMaps.com) to perform the superimposition.

#### *Activity Sheet 1B*

- Challenge students to identify examples and locate photographs online of each of the types of mountains.
- Encourage students to memorize their mnemonic sentences.

#### *Activity Sheet 1C*

- You might perform this as a whole-class demonstration.
- This activity also works well with students paired as partners.

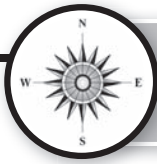
### Answers

- **Activity Sheet 1A** 1. a chain or group of mountains that form a single system; 2. the Himalaya-Karakoram Range; 3. Pakistan, India, and China; 4. The world's highest mountain range is likely covered with snow.
- **Activity Sheet 1B** 1. landforms that soar at least 2,000 feet higher than the surrounding land; 2. Answers will vary. Possible responses may include mountains are larger than most other things people encounter in their lives; mountains can be daunting obstacles to pass through; for people who live around them, mountains are a constant reminder of how small we are. Reward thoughtful responses; 3. Answers will vary. Reward memorable sentences.
- **Activity Sheet 1C** Students should observe the formation of fold mountains. Reward thoughtful observations. Encourage students to speculate about the type of mountains that constitute the nearest mountain range.

### Extension and Enrichment

- Consider having interested students research and report on the submarine Mid-Ocean Ridge.
- Have an interested student report on attempts to scale the peaks of the world's greatest mountain range.

Visit [WorldRecordsBooks.com](http://WorldRecordsBooks.com) for more images and activities!



# Exploring the Himalaya-Karakoram Range

## Activity Sheet 1A

Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

### FOCUS

*As you read the article below, try to picture what it describes. Then answer the questions that follow.*

You've probably heard of Mount Everest: the tallest mountain in the world. Everest is a stunning sight that soars 29,028 feet—that's nearly six miles—into the sky.

But Mount Everest does not stand alone. It is part of a great range of mountains—the Himalayan mountain range, or the Himalayas. A **range** is a chain or group of mountains that form a single system. This range is the tallest on earth. Of the 109 mountains in the world that reach over 24,000 feet into the sky, 96 of them are in the Himalayan range.

This mountain range is as big as it is tall. It stretches in a 1,500 mile-long curve across Southern Asia. In many places the range is 200 miles wide. At the extreme northwest, the Himalayan mountain range joins the Karakoram range. K2, the world's second-highest mountain, is in the Karakoram. Sometimes, people refer to the world's greatest mountain range as the Himalaya-Karakoram range.

1. What is a "range" of mountains?

\_\_\_\_\_

2. What is the world's greatest mountain range?

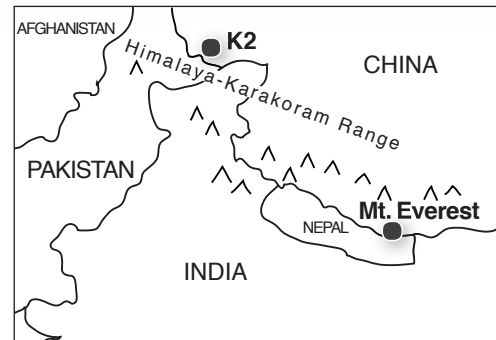
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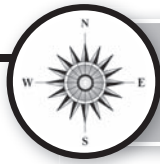
3. In what countries is this range located?

\_\_\_\_\_  
\_\_\_\_\_

4. In the Sanskrit language, "Himalaya" means "House of Snow." Why do you think this is an appropriate name for the world's greatest mountain range?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_





# Understanding Mountains

## Activity Sheet 1B

Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

Mountains loom large in the human mind. If we really want to accomplish something, we'll "move mountains" to get it done. You'd "climb the highest mountain" for someone you love. And sometimes, you're faced with "mountains" of homework!

For most people, the biggest thing about mountains is that they are so big. But geologists—scientists who study the earth—know a lot about mountains. They know, for example, that mountains are not all alike.

### FOCUS

*The article below explains some of the most important facts geologists have learned about mountains. As you read it, think about how important mountains are to people. Then answer the questions that follow.*

What's a mountain? It depends on where you are. What people call mountains in some places are smaller than what people call hills somewhere else. All mountains are landforms that soar higher than the surrounding land. Generally, a landform needs to be about 2,000 feet higher than its surroundings to be called a **mountain**.

The tallest mountain in the world is Mount Everest. The peak of Mount Everest has an elevation of 29,028 feet. That's how high it is above sea level, not the surrounding land. Mountains are measured this way because sea level is about the same around the world.

All mountains are not the same. Geologists often classify mountains into five types, based on how they were formed:

- **Fold mountains** are so-called because they are created when huge sections of the earth's crust collide. The edges of the sections fold and crumple, like when you push the edges of two pieces of cloth together. The highest mountain ranges were formed in this way.
- **Volcanic mountains** form when molten rock from deep beneath the earth's crust pushes to the surface, piles up, and cools.
- **Fault-block mountains** form when gigantic blocks of the earth's surface are pushed up at an angle.
- **Dome mountains** result when the earth pushes up a big bulge in the surface in the rough shape of a dome.
- **Erosion mountains** are created when large amounts of rock are eroded over a long period of time.

1. According to geologists, what is a mountain?

---

---

2. Why do you think mountains are important to people?

---

---

3. The article describes the five main types of mountains. They begin with the letters F, V, F, D, and E. Think of other words that also begin with these letters. Make up a silly sentence with these words that will help you remember the five types of mountains.

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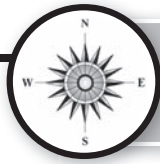
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*K2 in the Karakorum Mountain Range.*

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# Making Mountains

## Activity Sheet 1C

Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

The land beneath your feet is *moving*. The surface of the earth is not one solid piece, as you might think. It is made of huge pieces called **plates**. There are about 20 plates all together, but there are 7 that are much bigger than the others. In fact, they're as big as whole continents and oceans. These plates slide on top of layers of softer rock underneath—and you move with them.

The plates fit together like a huge jigsaw puzzle. Geologic forces of the earth are constantly moving these plates, pushing them against each other. This movement is usually too slow to be seen. A plate may move just a couple of inches in a year. But, because they are so big and move with such force, the results of these collisions are dramatic.

### FOCUS

*The highest mountain chains were created by the collision of plates. To see how this happens, complete the following steps. Check off each step as you complete it.*

\_\_\_\_ **Step 1 Gather Your Materials.** You'll need some modeling clay and two bricks or blocks of wood.

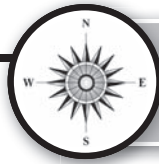
\_\_\_\_ **Step 2 Prepare the Clay.** Form the clay into several long, narrow strips of the same size. Lay these strips on top of each other. These layers represent the layers of rock in the earth.

\_\_\_\_ **Step 3 Place the Blocks.** Place one block or brick at each end of the clay.

\_\_\_\_ **Step 4 Make Some Mountains!** Now slowly push the blocks or bricks toward each other, and observe what happens.

\_\_\_\_ **Step 5 Think About What Happened.** When you pushed the blocks together, you simulated the force of two continental plates pushing against each other.

- Describe what happened. \_\_\_\_\_  
\_\_\_\_\_
- What happens when you repeat the experiment, but push harder? \_\_\_\_\_  
\_\_\_\_\_
- What happens when you repeat the experiment, but use longer strips of clay? \_\_\_\_\_  
\_\_\_\_\_
- What type of mountain did you make? \_\_\_\_\_  
\_\_\_\_\_



## 2. The World's Highest Sand Dunes

### Isaouane-N-Tifernine

#### Objectives

- **Geographic Themes** location, place, movement, and regions
- **National Geographic Standards** 1, 2, 3, 4, 6, and 7

#### Time and Special Materials

- About two class periods
- Sand, shallow box, hair dryer

#### Teaching Tips

The three activity sheets can be completed by students working independently, with partners, or in small groups. You may wish to assign the activities to the same groups of students consecutively, or to different groups concurrently. Group representatives could then share each group's findings with the rest of the class.

##### *Activity Sheet 2A*

- Focus students' attention on the map.
- Guide students in drawing their sketches to scale.

##### *Activity Sheet 2B*

- Make sure students understand the natural processes discussed in the article.
- Emphasize wind as the primary cause of sand dunes.

##### *Activity Sheet 2C*

- You might perform this activity as a whole-class demonstration.
- This activity also works well with students paired as partners.

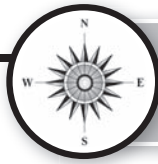
#### Answers

- **Activity Sheet 2A** 1. Africa, Sahara Desert, Algeria, Isaouane-N-Tifernine; 2. trough: the bottom of a wave; crest: the top of a wave; 3. Reward honest effort.
- **Activity Sheet 2B** 1. hills of sand formed of sand piled up by the wind; 2. saltation: the wind lifting pieces of sand in the air and blowing them along the surface; surface creeping: pieces of sand hitting the ground and pushing other pieces of sand along in front of them. These two processes move the billions of pieces of sand that form a sand dune, when they come to rest; 3. the wind strength and direction combined with the nature of the sand; 4. Answers will vary. Reward thoughtful responses.
- **Activity Sheet 2C** Observe students' involvement in the activity. Reward eager participation. Experiment with the blow dryer to make different types of waves.

#### Extension and Enrichment

- Invite students to describe their own experiences with sand dunes.
- Challenge a student to learn about "singing sand dunes" and report on what they learn.

Visit [WorldRecordsBooks.com](http://WorldRecordsBooks.com) for more images and activities!



# Exploring Sand Dunes of the Sahara

## Activity Sheet 2A

Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

Have you ever heard of the Sahara Desert? Covering most of North Africa, the Sahara sets a geographic world record as the largest desert on earth. The Sahara is about as big as the entire United States! In fact, the Sahara sets another world record—as the hottest and most desolate desert in the world. For centuries, the word Sahara has come to mind when most people hear the word desert. This is appropriate, since the word *Sahara* means “desert” in Arabic.

The sands of the Sahara themselves set still another world geographic record: they make the world’s largest sand dunes.

### FOCUS

*As you read about the world’s largest sand dunes, try to picture them. (Here’s something that will help: a football field, including end zones, is 360 feet long.) Then answer the questions that follow.*

The Sahara Desert is the home of the world’s largest sand dunes. You may think of sand dunes as pretty little hills of sand that form on the beach. But the sand dunes of the Sahara can be monsters.

The highest are the dunes of a sand sea, or **erg**, in central Algeria. The dunes in this erg, called Isaouane-N-Tifernine, are big. Really big.

To understand just how big, you have to understand something about waves. Why? Because sand dunes are like slow-moving waves of sand. The top of a wave is called the **crest**. The bottom is called the **trough**. The **wavelength** is the distance between the crest or trough of one wave and the crest or trough of the next.

Now you’re ready to understand just how big the world’s largest sand dunes really are. The largest ever measured had a wavelength that was a full three miles. How high were they? The tallest—measured from trough to crest—was measured at a mind-boggling 1,526 feet!

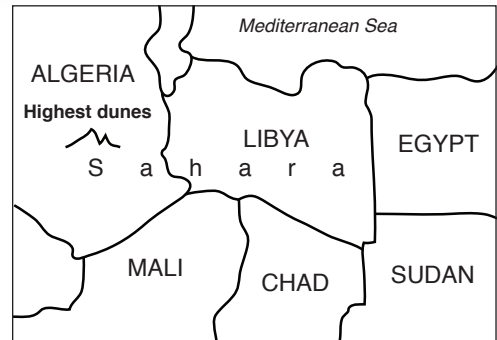
1. Where are the world’s largest sand dunes located?

continent: \_\_\_\_\_

desert: \_\_\_\_\_

country: \_\_\_\_\_

erg: \_\_\_\_\_

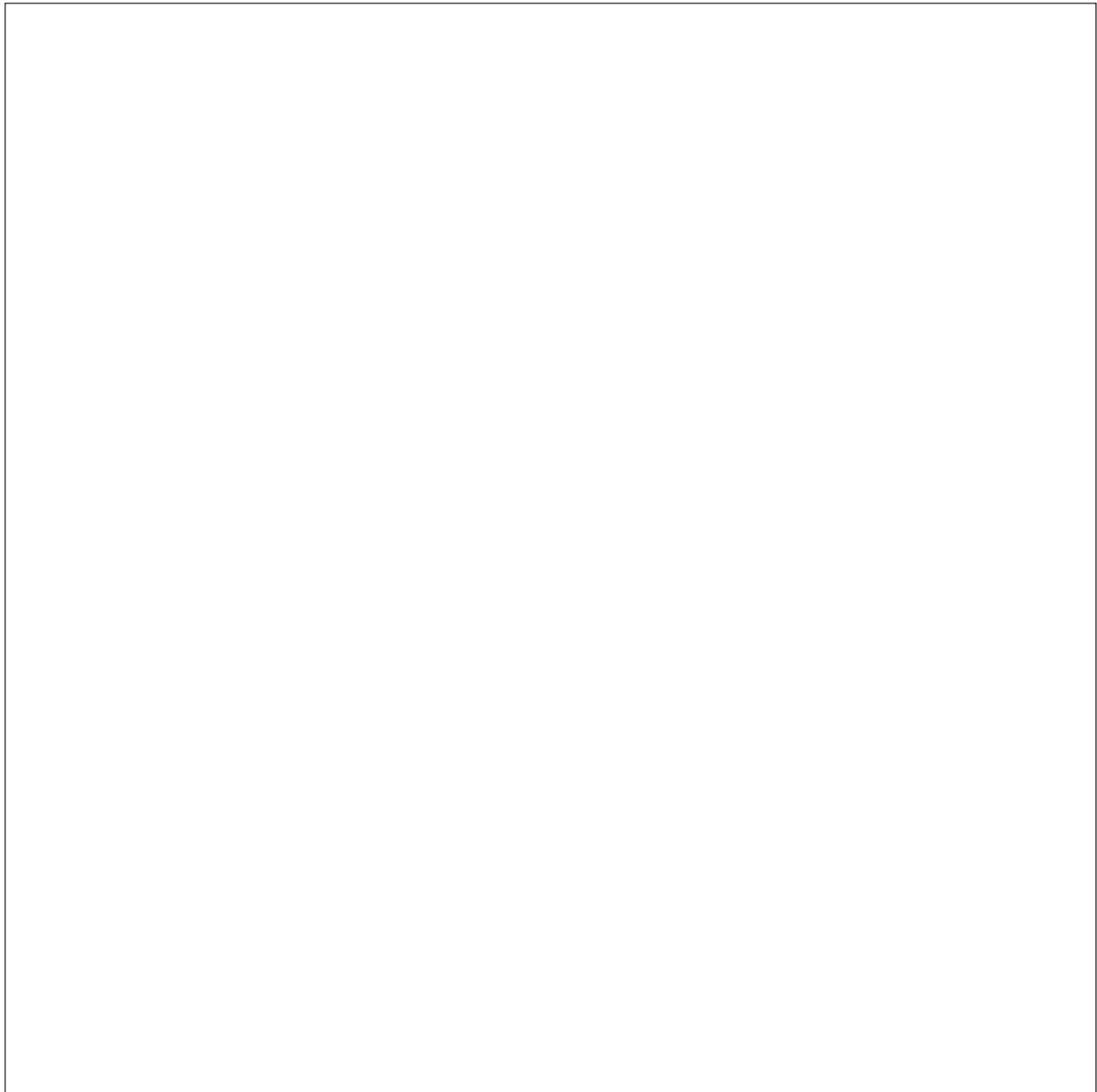


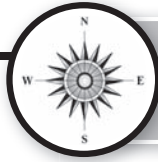
2. Define these two words as they relate to waves.

trough: \_\_\_\_\_

crest: \_\_\_\_\_

3. In the space below, sketch a side view of the world's largest sand dunes. Be sure to indicate their height and wavelength. Label troughs and crests. Draw a stick figure to show the approximate size of a person standing among these dunes.





## Understanding Sand Dunes

### Activity Sheet 2B

Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

#### FOCUS

*The world's largest sand dunes are more than 1,500 feet tall. Most sand dunes, of course, are not nearly so big. But what they lack in size, they make up for in location. To see what this means, read the article below. As you read, think about sand dunes you may have seen. Then answer the questions that follow.*

To understand sand dunes, think about one word at a time.

#### Sand

**Sand** is a group of tiny pieces of rock that are smaller than pebbles. To qualify as a piece of sand, the rock must be between 1/400 and 1/12 of an inch in diameter. Sand is formed by the **weathering** of rocks, or the gradual wearing away caused by environmental forces like wind and water.

Sand is important to people. It is an important ingredient in concrete, from which many of the world's buildings, roads, and other structures are made. Sand is also used to make glass.

You can find sand all over the world. It covers the bottom of many lakes and much of the world's oceans. It is in the bed of rivers and on beaches. It covers large deserts. Of course, this is where many of the world's sand dunes are found.

#### + Dunes

**Dunes** are simply low hills, usually made of sand. Dunes are common on sandy beaches. But they're not as common in deserts as you might think. In fact, sand dunes cover only about 20 percent of the world's deserts.

#### = Sand Dunes!

Sand dunes are formed of sand piled up by the wind. The wind lifts pieces of sand in the air and blows them along the surface in long, bouncing movements. This process is called **saltation**. When the pieces of sand hit the ground, they push other pieces of sand along in front of them. This process is called **surface creeping**. (At the same time, very fine particles are lifted into the air and blown away in a process called **suspension**.) Saltation and surface creep work together to form sand dunes. When billions of pieces of sand come to rest, they usually take the shape of a sand dune.

The size and shape of the sand dune depends on the strength and direction of the wind and the nature of the sand. When wind blows continually from one direction, long **linear dunes** form parallel or close to parallel with the wind direction. **Transverse dunes** form at right angles to the wind. If there isn't much sand, crescent-shaped dunes call **barchans** are formed, in which the points of the crescent point downwind. These are three common patterns, but **star-shaped** and other strange patterns can appear when the wind shifts.

Whatever shape they take, sand dunes have captured the human imagination for thousands of years. They are some of nature's most beautiful creations.

1. What is a sand dune?

---

2. Define *saltation* and *surface creeping* and explain how they create sand dunes.

saltation: \_\_\_\_\_

surface creeping: \_\_\_\_\_

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3. What determines the shape of sand dunes?

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4. The writer calls sand dunes “some of nature’s most beautiful creations.” What qualities make them so appealing?

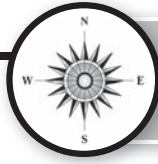
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*Sand dunes in the Sahara Desert.*



# Making Sand Dunes

## Activity Sheet 2C

Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

You can make your own sand dunes the same way that nature does. All you need is sand (of course!) and wind. As you experiment, answer the questions below.

### FOCUS

*Complete the following steps. Check off each one as you complete it.*

- \_\_\_\_\_ **Step 1 Gather Your Materials.** You'll need at least half a bucket of sand, a shallow box to contain it, and a blow dryer (guess what that's for).
- \_\_\_\_\_ **Step 2 Make a Miniature Desert.** Pour the sand in the box, so it's at least one inch deep. Make sure it's very dry. That's the desert.
- \_\_\_\_\_ **Step 3 Make Some Sand Dunes!** Here's the fun part. Turn the hair dryer on and direct the "wind" it makes across the surface of the desert. Play around—change the speed, direction, and angle of the wind. You'll probably make a mess at first, but then, with just a minute's practice, you'll be making sand dunes! Try to make linear dunes, transverse dunes, barchans, and star-shaped dunes.

- How does the direction of the wind affect the shape of the dunes? \_\_\_\_\_  
\_\_\_\_\_

- How does the speed of the wind affect the shape of the dunes? \_\_\_\_\_  
\_\_\_\_\_

- Explain what you did to make each of the following types of dunes:  
linear dunes: \_\_\_\_\_  
\_\_\_\_\_

transverse dunes: \_\_\_\_\_  
\_\_\_\_\_

barchans: \_\_\_\_\_  
\_\_\_\_\_

star-shaped dunes: \_\_\_\_\_  
\_\_\_\_\_