

Name _____

Telling Time Without a Clock

Telling time without a clock may seem like an impossible task, but with a little bit of practice, you can use the sun, moon, and stars to gauge the approximate time of day (or night).

During the day, the sun appears to travel across the sky. If you are in the northern hemisphere, face the south. As you look south, the sun rises in the east (from your left) and sets in the west (to your right). If the sun is halfway between your left and right, it is noon. If it is before noon, you can approximate how far the sun is between the east and the center. If it is after noon, look for the position of the sun between the center and the right. Knowing the time of sunrise and sunset will help you to be more accurate.

At night, you can also tell time by using the stars. To do this, we use the North Star. Locate the two stars that

are at the edge of the Big Dipper, farthest away from the end of the handle. Those two stars line up with the North Star. That line also acts as the hour hand on a 24-hour clock, where midnight (0) is straight up and noon (12) is straight down. Just to the left of 0 is sunset to midnight, and to the right is midnight to sunrise. If it is winter, deduct one hour for each month before March 7 to adjust. If it is after March 7, add one hour per month. The reason for this is that March 7 is the date on which the star clock points to exactly midnight.

It gets a little more complex during certain times of the year, especially if daylight saving time must be considered. Although using constellations and planets to tell time is an interesting and potentially useful skill, next time you need to know the time, it may be easier to just look at your watch!

Text Questions

- What background knowledge would be helpful to better understand this passage?
 - living in a place where the skies are clear
 - understanding what causes day and night and how it is affected by the time of year
 - knowing the names of the constellations
 - having a precise watch
- Based on what you read, how could you find east and west if you didn't have a compass?
 - observe the position of the sun
 - look at the Big Dipper
 - wait until lunchtime, and look directly overhead
 - look at a map of the constellations
- What does the word *gauge* mean as it is used in the text?
 - a standard scale of measurement
 - the thickness or capacity of something
 - a device for measuring something
 - a way of estimating something
- Which of the following affects our ability to tell time by looking at the sky?
 - where we live
 - the time of year
 - the time of day
 - the position of the north star
- Why do you suppose we adjust the time when looking at the stars at different times of the year?

Name _____

How Are Mountains Formed?

Many people enjoy the mountains for the recreational opportunities they offer, but have you ever wondered how all those mountains were formed? Not all mountains were made by the same process; each way produces different types of rock and other characteristics.

Some mountains are considered volcanic. This type of mountain occurs mostly around the Pacific Ocean. A tectonic plate along the rim of the ocean is forced under another plate. As it sinks down, it melts and is then pushed up through the crust and erupts as a volcano. A good example of this is the Cascade Range along the western coast of the United States. Another type of volcanic mountain is called a hotspot. As a plate of Earth's crust moves over molten material, the magma pushes to the surface through weak spots in the crust and forms into a mountain. One good example of this is the Hawaiian Islands.

Another type of mountain is a folded mountain. This occurs when two plates collide, and one rides on top of

the other. The plate that goes over the other will fold and buckle and create mountains. The Rocky Mountains in the western United States are one example of this type of mountain range.

Mountains can also be formed when a plate of Earth's crust breaks. One side rises to create mountains, and the other drops and creates a valley. This process is called fault block and can be seen in the Sierra Nevada Range in the western United States.

Mountains are also formed by erosion. When a volcano erupts, large areas of volcanic magma can be created. Water and winds wear down the material to form mountains. Sometimes, these mountains are called plateau mountains. The Catskills in New York fall into this category.

Left in their natural state, mountains provide us with valuable natural resources as well as recreation.

Text Questions

- Which of the following is not a term to describe a process by which mountains are formed?
 - volcanic
 - folded
 - fault block
 - glaciation
- What do all types of mountains have in common?
 - They are the result of shifting tectonic plates.
 - They are formed by changes in Earth's crust.
 - They are covered by forests.
 - They are formed from magma beneath the surface of Earth.
- What does the word *collide* mean as it is used in the third paragraph?
 - attack one another
 - come into contact with each other
 - come into conflict
 - have opposing views
- Which of the following is an example of mountains formed by erosion?
 - the Rocky Mountains
 - the Hawaiian Islands
 - the Catskills
 - the Sierra Nevada Range
- Why do people study the formation of mountains?

Name _____

Audiology

Just as technology for audio devices (such as headphones) has advanced, medical tests and treatments for hearing impairments have also improved. Recent developments now make it easier to test a person's ability to hear. Audiology is the study of hearing.

When someone has his or her hearing evaluated, one or more tests may be done. Some tests check the physical health of the auditory system. The ability of the eardrum to withstand pressure is also measured. Other exams assess a person's ability to hear sounds at different frequencies. Finally, there are tests that measure the ability to hear and understand normal speech.

Sounds are measured in decibels, or loudness. They are also measured in frequency, which is the number of vibrations per second. The sounds of everyday life can be mapped on a grid based on these two levels. For example, a dog barking might register at 70 decibels but at a low frequency. Birds chirping are a higher-pitched tone, or higher frequency, but often low on the decibel scale.

People with normal hearing can hear whispers and other sounds at low decibel levels across all frequencies. Those with mild to moderate hearing loss may have trouble hearing high or low pitched sounds, or sounds quieter than 60 or 70 decibels. Hearing loss may be conductive, which relates to how the ear functions. Sensory loss has to do with the ear's ability to transmit sound waves through the inner ear. Neural loss happens when there is damage to the nerve that transmits sound messages from the ear to the brain.

The sounds of human speech are dispersed across the decibel and frequency grid in a shape referred to as the "speech banana." People may be able to hear sounds in this range but may have trouble understanding speech when there is a lot of background noise.

Medical advances in testing and treatment options make it possible for people to be less hindered in everyday life due to hearing loss.

Text Questions

- What does the word *impairments* mean as it is used in the text?
 - damages
 - solutions
 - spoils
 - frequencies
- What is the main idea of the fourth paragraph?
 - It explains how hearing loss is measured.
 - It describes different types of hearing tests.
 - It describes the types of hearing loss.
 - It summarizes how people hear speech.
- What is one factor that can make it difficult for people to hear the sounds of speech?
 - People normally speak too quietly for the human ear to hear.
 - Some people wear earphones to listen to music.
 - There is no medical treatment for hearing loss.
 - Background noise can interfere with hearing.
- Which of the following describes how sounds are measured?
 - loudness, or decibels
 - frequency, or pitch
 - transmission of sound waves
 - both a and b
- How will advances in audiology benefit people?
