



acadience® reading 7–8

Oral Reading

Student Materials

Grade 8 | Progress Monitoring 4

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Fighting Fires

► The September weather was unforgivingly hot, and the state was caught in an extreme drought. Things were difficult, but no one realized how serious they would become until that afternoon. Have you ever departed for a familiar location, a place that's as finely etched in your mind as the faces of people you love, and arrived to discover someplace you don't recognize? That happened on September 12th when a wildfire raged down the south slope of Castle Mountain and blazed across our favorite Winding River swimming hole, scorching everything in its path. A wildfire packs more power than anyone could ever imagine.

When we started for Winding River swimming hole, the sky was gloriously clear and blue. When we topped Castle Mountain, we saw that a rolling, white smoke obscured the valley below. Even though our windows were closed and the cold air was blasting us, the smell of smoke seeped inside the car's interior, clogging everyone's throats.

Using binoculars, my grandfather searched the horizon for the smoke's source. Thin lines of fire stitched their way through the dry pines and blazed across brown grasses underneath the trees. The trees directly in the fire's path looked like people paralyzed with fear and unable to protect themselves. Grandfather scooted everyone back into the car and drove as fast as he safely could in an attempt to outrace the fire.

Wildfire is unpredictable; it's terrible, but it's also beautiful. We were surprised when we heard a sharp crack overhead, and a flaming pine branch dropped right in front of Grandpa's car. Grandfather slammed on the brakes and then into reverse as the limb ignited the brittle grasses along the unpaved road. The grasses shriveled in the air made wavy by the heat and sizzled as they burned.

Grandfather quickly jumped from the car trying to stamp out the flames that were beginning to spread. But wind gusts sent red-hot embers swirling through the air, and they settled on the grasses like fireflies. Fortunately, a siren's wail announced the arrival of a sheriff's car that then rolled into sight, and we followed her to safety.

The Castle Mountain wildfire burned for 8 long days, destroying 30,000 acres. You can fight a fire as hard as you know how, but that doesn't mean you're going to defeat it. Fire does what it's supposed to do: given enough fuel and air, it burns.

The Future Unplugged

► Today's communication devices such as cell phones and laptops are powered by batteries, which make them small and easy to carry around. However, batteries can be a problem since heavy use can quickly drain the stored energy. Scientists are working on a new power source for mobile devices called a solid oxide fuel cell. A solid oxide fuel cell is able to create electricity from a variety of fuels and does not need to be plugged in to recharge.

The first of these fuel cells cost a lot and did not work very well. However, new developments in materials have scientists excited about this new technology. The first fuel cells used hydrogen as the fuel source. Unfortunately, this kind of gas was expensive to produce, which contributed to the high cost of the solid fuel cells. Using hydrogen as a fuel also resulted in operating temperatures over 1400 degrees Fahrenheit (F). The high heat made the fuel cells work less efficiently than the batteries already being used today. Some researchers are experimenting with methane as a new fuel source. Methane is an odorless gas and fuel source that is cheap, abundant, and plentiful. It must be processed to make it safe, but this procedure is inexpensive, which helps reduce the price of the fuel cells. Using methane also lowers the operating temperature to 930° F. While the ideal temperature for a mobile device to function is about 570° F, scientists are excited about their progress.

Platinum was another material tested for use in the first solid fuel cells, but it was expensive and sometimes caused the fuel cells to fail. With extensive use, the platinum changed shape, which opened the circuit and stopped the flow of electricity. Scientists have now replaced the platinum with layers of nanostructured ceramic film. The film is very thin, less than one hundred thousand times thinner than a piece of hair. Even with continuous use, the ceramic film does not change shape and the electrical current is able to flow without interruption.

Scientists continue to experiment with new materials to reduce the cost and improve the function of solid oxide fuel cells and they are optimistic that cell phones and laptops will someday be plug-free.

How Free Enterprise Helped Create an Industrial Giant

► In the United States, one of the freedoms enjoyed by its citizens is the free enterprise system. In this type of system, private businesses can produce and sell products and services mostly free from government interference. When government does step in to regulate businesses, it does so mainly to protect the health and welfare of consumers. In large part, this system helps make the United States a leading industrial nation. How does this occur?

In a free enterprise system, business owners are essentially free to decide what and how much to produce, which is why this system is sometimes called “laissez-faire,” a French phrase that means, “let people do as they choose.” In this system, consumers are also free to choose which products and services to buy. Supply and demand, instead of rules and regulations, govern wages and the prices of goods and services. If you want to start a business in your town, you are free to take on the risks and rewards of your business. If enough people want your product or service, your business might succeed. If you do not have enough customers, your business will most likely fail.

The free enterprise system is based on principles developed more than 200 years ago by Scottish economist and philosopher Adam Smith. During the 18th and 19th centuries, these principles helped nurture the explosive growth of American industry. In the late 1700s, new inventions such as the cotton gin made the manufacture of goods easier and faster. Machines took the place of hand tools, and factories replaced craft shops. By the end of the 1800s, an industrial revolution was underway in the United States. Many people left farms and moved to towns and cities to work in factories, steel mills, and other businesses. With a wealth of natural resources such as timber and coal, the United States did not have to depend on other nations. People began moving west, and new railroads and highways helped transport people and goods across the country.

The money for most of these new businesses came from individuals who saw a chance to make money without much regulation by the government. Taxes were low, and competition was encouraged. By the end of the 1800s, the principles of the free enterprise system had helped shape the United States into a leader of the industrialized world.
