Accidental Discoveries

Name: Date:

Stories of Accidental Discoveries

Directions: Read the handout for your team's letter. As a group, write a sentence that summarizes the information for your team. The sentence must begin with the letter assigned to you. Then, on a large piece of paper, draw a picture or a graphic that shows an important part of your team's information.

Letter/team	Sentence
S	
W	
I	
F	
T	

Student Handout

Name: Date:

Smallpox Vaccine (Team "S")

In 1976, Edward Jenner, a British scientist and surgeon, had an idea that led to the development of the first vaccine. A young milkmaid told him people who contracted cowpox never got smallpox. Cowpox is a harmless disease from contact with cows. Smallpox, however, is a deadly disease. With this in mind, Jenner took samples from the open cowpox sores on the hands of a young milkmaid named Sarah Nelmes. He made a shot from the pus taken from Sarah and gave the shot to eight-year-old James Phipps. (Keep in mind that this was the 18th century. We would not do this today.)

The boy developed a slight fever and a few sores but remained healthy. A few months later, Jenner gave the boy another injection containing smallpox. James failed to develop the disease, and the idea behind the modern vaccine was born. Giving shots to prevent smallpox soon became a common practice. It would be another 50 years before doctors understood why vaccines work.

Today we give vaccinations to prevent many diseases. Some of the sicknesses vaccines help to stop are the measles, the mumps, polio, and chicken pox.

Incidentally, Jenner's name for these injections was not an accident. He called the injections "vaccines" because in Latin the word "vaccinus" means "from cows".

Name: Date:

Water and the Golden Crown (Team "W")

In 3 BC, the king of Syracuse ordered that a new crown be made. The crown was to be pure gold, shaped like a crown of leaves. There was one problem. The king had given a craftsman the gold to make the crown, but when he received the crown, the king suspected that the man had cheated him. The king believed the man had another metal in the crown, keeping some of the gold for himself. The king went to his friend Archimedes and asked him to determine whether the man had used only gold or if the craftsman used another metal. There was one catch: the king told Archimedes he was not to damage the crown. Archimedes loved a challenge, so he went right to work to try to solve the problem.

Archimedes knew the density of gold, and he knew that if he divided the weight of the crown by its volume, he could solve the problem. However, the crown was very detailed and Archimedes could not use a regular method to determine its volume.

He tried many mathematical formulas, several of his own design. He even used his own new number system (he hated the Greek number system so he had made up his own). However, none of these helped with the crown problem. Archimedes decided to take a bath and relax. When he stepped into the tub, he realized that the amount of water he had displaced (the water that he sloshed out of the tub) was equal to the amount of his body that was in the tub. He yelled, "Eureka! Eureka!" He was so excited that he immediately ran to the king to tell him how he would test the crown.

Archimedes realized that if he measured how much water was displaced when the crown was in the water, he could find the volume of the crown. Archimedes performed his test and found that the king was right: the crown was in fact not pure gold.

Name: Date:

Isaac Newton and the Apple Tree (Team "I")

The history of science is strong indeed. Who would have thought that the falling of an apple would lead to a breakthrough in modern science? Following is the legend behind Isaac Newton's discovery of gravity.

The story says that Newton was going for a walk through his mother's orchard. As he was walking, he saw an apple fall from a tree to the ground. Being the scientist that he was, Isaac Newton wondered why the apple fell down to the ground rather than floated up to the sky? What was pulling the apple down?

Newton began to think about a specific kind of motion: gravity. He understood that gravity was a force of attraction between two objects. The Earth pulled the apple toward itself and the apple pulled the Earth toward itself. But the mass of the earth is much greater than the mass of the apple, so much greater that even though the two pull each other with exactly the same force, the apple clearly moves, and the earth does not—at least not enough to observe. Isaac Newton could now explain why the apple fell down instead of up. So remember: "Gravity: It's not just a good idea. It's the Law."

Name: Date:

The Frog and the Battery (Team "F")

If it hadn't been for Alessandro Volta, you might not be able to walk around with your iPods and Game Boys. Volta discovered the science behind batteries.

In 1771, Luigi Galvani, a biologist, noticed a strange reaction when a frog's leg met a spark from a machine. The leg twitched. Believing that the twitch started in the frog's leg itself, Galvani devised an "animal electricity" experiment. He set a frog's leg between two different metals. Sure enough, the muscles in the frog's leg twitched.

When Volta heard of his friend's experiment, he decided to put it to the test. He also saw the frog's leg twitch when set between two different metals. However, he did not share Galvani's idea that the twitch came from the muscles in the frog's leg. He believed that the twitch came from an electric current between the two different metals. After conducting more experiments, Volta developed the idea behind the modern battery that we use today.

Student Handout

Name: Date:

The Teflon Scientist (Team "T")

The story of Teflon began on April 6, 1938 in the DuPont company lab in New Jersey. DuPont chemist Dr. Roy J. Plunkett was working with gases to keep things cold. One day, Plunkett and his workers came across a frozen mystery material. Dr. Plunkett and his workers ran some tests on the material. They found that it was very slippery.

They found that the mystery material would stick to a metal surface, but not let other things stick to it. That characteristic made it good material for coating objects. Today the material is applied to many things, from baking pans to parts of a spacecraft.

The word Teflon is a shorter version of a very long chemical name (tetrafluoroethylene).

Student Handout