Student Name _____ Date _____

MARTIAN HISTORY QUIZ SHOW

DIRECTIONS. Read the following information, then create quiz show questions on the cards provided.

ANSWER:	**ANSWER:**
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The Earthlings are Coming!

Do aliens chew gum? Are there other beings out there in the dark sky? And, as Bullwinkle would ask, "Are they friendly?" Many movies and books tell stories of bad aliens from other worlds taking over our planet. These scary stories make you wonder: could it happen?

Mars is a hot spot when it comes to thinking about possible creatures from other planets. Since Mars is a neighbor to Earth, scientists have been able to see it through telescopes more clearly than other planets. It is also an interesting and mysterious planet. Stories about invaders form Mars (like H.G. Wells' "War of the Worlds") have been written and read by many. Always looking for the truth, scientists have been studying Mars since Galileo invented the telescope in 1609.

Why Mars? Well, it is close and you can see it through a telescope. There have also been more exciting rumors spread about Mars than about other planets. These rumors started over one hundred years ago. An Italian scientist, Giovanni Schiaparelli, thought that he saw lines on the surface of Mars. That was 1877 – and when the story was translated into English, someone translated a word wrong and said that the scientist had seen canals on Mars. At that time, we were building lots of big canals on our planet, too. Many people decided that creatures on Mars were designing and building their own canals.

What were Martians doing with these canals? Another scientist, Percival Lowell, was very interested in these Martian canals. In 1892, Lowell began a long series of observations of Mars. With his giant telescope in Arizona, he looked at Mars night after night. Watching for all these hours while most people sleep is not easy. Because we have so much water in our air, the view of Mars form Earth sometimes shimmers, just like looking at something on the bottom of the pool. He would look through his telescope for hours and sometimes be rewarded with a clear view. Lowell excitedly announced to the world that there were indeed canals on Mars. Martians were probably using the canals to send water form the polar caps to the warmer areas around the equator of Mars, he said. He believed that Mars was a little like the Arizona mountains – dry and cool, with thin but breathable air. Many people agreed with Lowell. In 1907, Alfred Wallace argued that Mars was too cold and dry for water. Wallace said that canals on Mars "would be the work of madmen rather than intelligent beings." Still, the idea that Martians were building canals was more popular.

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Actually, there are no creatures building canals on Mars. We know that Lowell was wrong because scientists have continued to look for the Martians! Since it is so hard to get a good look at Mars from our planet, we Earthlings have sent spaceships for a closer look. In the 1960's, the Soviet Union, also known as Russia, sent 8 missions to Mars. Each mission had a problem and failed, but curious and determined scientists kept trying to find out more about Mars by sending space ships. In 1964, the United States tried to send a ship past Mars to take pictures but the solar panels did not open; that little spacecraft is now in orbit around the Sun!

In 1965, a spaceship from the United States named Mariner 4 arrived at Mars! Mariner 4 was the first Earthling spaceship to reach Mars and send back pictures. Mariner 4 did not land on Mars, it flew close to the planet to get a good look. Mariner sent 22 close-up pictures of the cratered red surface. These pictures did not show any dirt moving machinery for Martian canal building! The Mariner 4 also told us that there was hardly any air pressure on Mars. (Air pressure is the weight of all gases in the air pressing down on you.) One really interesting part about the Mariner mission is that after the ship had left Earth, the scientists on Earth sent messages to the ship to change the program. Back then, changing the program directions in flight was big new idea.

Four years later, two other Mariner missions arrived at Mars. These ships also did not land, but took close pictures and measurements of Mars. Mariner 6 and Mariner 7 each took more than 200 pictures of Mars, measured the temperature of the surface, examined the atmosphere of Mars to see what was in it, and measured the air pressure. The Mariners found that there was carbon dioxide ice (like dry ice), water ice clouds, carbon monoxide, some hydrogen, and a little oxygen. There was no nitrogen or ozone. This was a lot of new information about the red planet, but scientists needed even more before they could send a ship to Mars.

In 1971, Mariner 9 made it to Mars (Mariner 8 unfortunately fell into the Atlantic Ocean), ready to orbit for 349 days. Mariner 9 sent more than 7,000 pictures back to Earth. This spacecraft took pictures of 80 percent of the planet. The pictures showed that Mars had many interesting places to explore: there were old river beds, craters, canyons, volcanoes and plains. The weather was also diverse, with dust storms, weather fronts, ice clouds, and even morning fogs.

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None of these pictures showed canals or Martians. Scientists interested in life on Mars began to study the chances of microbiotic life on the red planet. Microbiotic life means living creatures are so tiny you need a microscope to see them For example, there are many microbes living right now in your mouth! Scientists began to study Earth microbes that could live in places as cold and dry as Mars. Some scientists have gone to Antarctica to study the microbes there. Another scientist, Carl Sagan, imitated the conditions of Mars in "Mars Jars" and threw in some Earth microbes to see if they could live; some of them did! Even though there were no big Martians in the pictures from the Mariner spacecraft, scientists were very curious to see if there were any teeny tiny Martian creatures living there.

The tools on Mariner 9 taught us enough so that scientists were able to design missions to land on Mars. The first mission to land on Mars was sent by the United States in 1975. This was the Viking mission. This mission had two spacecraft: Viking 1 and Viking 2. Each of the spacecraft contained one ship to orbit the planet and another ship to land on the surface. The Viking 1 orbiter took more pictures to help find a good landing site. The Viking 1 lander separated and landed at Chryse Planitia in July 1976. Later in 1976, Viking 2 lander touched down at Utopia Planitia. The landers took color pictures of the planet and did experiments to look for microbiotic life. These experiments tried 'feeding' Martian soil with Earth stuff and then with Earth gases. The soil broke down and the gases combined happily with the Martian dirt. Was this a sign of life? Some scientists think so, but others aren't sure.

Scientists kept studying the pictures and facts sent back by the Viking landers. More information was needed, but what was the best way to get it? After many years, NASA developed the Pathfinder mission. The Pathfinder mission was designed to show that a low cost mission could land and explore the surface of Mars. Mars Pathfinder was launched on December 4, 1996. Seven months later, it reached Mars. The experimental landing was thrilling. As it entered the atmosphere, a parachute opened to slow the ship down to about 70 meters per second. The heat shield came out and then about 10 seconds before landing, four air bags inflated! Finally, three rockets fired to slow the fall. The lander dropped to the ground and bounced about 16 times before stopping. The lander then went to work. It opened up its solar panels and started to measure the atmosphere and take pictures. Inside the lander was a tiny remote control jeep designed to explore the surface of Mars. The scientists sent the signal for this little rover to roll out and nothing happened! The rover was stuck! How could they get it out? After working on the problem for two days, the rover finally rolled out and started to explore the

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surface. The rover sent information back to the lander, which relayed the data to Earth. The rover and the lander continued to send information back for 5 months, until November 7, 1991, when th emission was declared over.

Just as that mission ended, Mars Global Surveyor was launched to the red planet. The name 'Global Surveyor' describes the job of this spacecraft. It flies all around Mars taking many pictures and measurements. It has been taking pictures for about three and one half years. In 1999, Mars Global Surveyor took some pictures that really surprised scientists. The pictures did not show Martian-made canals, but they did show something almost as surprising. There are gullies on Mars! Gullies are ditches caused by flowing water. How could Mars have gullies if there is no water to be found on the surface of the Red Planet? This mystery is exciting! And if there is water, could there be tiny microbes living in it, as on Earth? Scientists are eager to find out.

In 1999, NASA sent two more spacecraft to Mars, but both of them crashed. Scientists figured out what happened, and then they tried again.

The next mission departed in April of 2001, when the Mars Surveyor 2001 blasted off for the Red Planet. Like Mars Global Surveyor, the 2001 Orbiter circled the Red Planet. It carried instruments to study what Mars is made of and what its radiation environment is like.

After that, NASA sent to small rovers to Mars in the year 2003. They are exploring the planet and looking for water. Water is important because all life as we know it depends on water. If people go to mars we will need water.

In 2005, another mission was proposed to collect rock and soil samples and return the samples to Earth for scientists to study. Maybe in following years, robots could be sent that will begin to build a base for human explorers.

If our missions go well, human astronauts are at last likely to visit Mars! Then, will we be able to look through telescopes and finally see canals on Mars? Will people who explore Mars be called Martians? Are there little microscopic bugs living on Mars? It will take years of hard work and good thinking to answer these questions. Until then, keep your eyes on the red planet!