

# SPACE SCIENCE

## ADVENTURE IS WAITING

**In-Class Activities and Take-Home Pages**

**Activity #1:**  
**Comets, Meteors,**  
**and Meteoroids**

**Activity #2:**  
**Web Quest: Gravity,**  
**Black Holes, and Robots**

**GREAT SWEEPSTAKES!**

**GREAT PRIZES!**  
**Family Trip to**  
**Kennedy Space Center**  
**Visitor Complex**  
**in Florida!**

See take-home page.

**ANSWERS TO REPRODUCIBLES:**

**Activity #1:** shooting stars (meteors); made of dust and ice (comets); has a tail (comets); speedy streak of light (meteors); smaller than a grain of sand (meteoroids); falling stars (meteors); lasts a second or two (meteors); travels slowly across the night sky (comets); may come in showers or storms (meteors); remains in the sky for many days (comets).

**Activity #2:** 1. Answers may include: Without gravity, Earth would stop orbiting the Sun and travel on its own into the Milky Way Galaxy. The Milky Way itself would come apart, because the stars would not hold the galaxy together. The moon would stop orbiting Earth and move away in a straight line. 2. A large planet has more gravitational pull, because space curves more sharply around more massive bodies, and this curved space pulls objects more sharply toward it. 3. A black hole is a region of space whose gravitational force is so strong that nothing can escape from it. 4. Black holes are unseen because they are a region of space where gravity is very strong. 5. Answers may include: Robots do things that humans are unable to accomplish; they go on long trips; they don't need air or water; they go on space walks; they take pictures. 6. Voyager 1, Cassini, Stardust

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

## FALLING STARS

***“Catch a falling star and put it in your pocket...”***

### **Words to Know: Meteor, Meteoroid, Atmosphere, Leonids**

It is always exciting to see a falling star. It is gone almost as soon as you see it. You point to where it was and stare at the dark sky. You hope that you will see another falling star.

What is a falling star? A falling star is not a star at all. It is not even part of a star. Stars do not fall. Our Sun is a star.

A falling star is a meteor. Meteors are streaks of light in the sky. The light is caused by a small speck of dust burning when it enters the Earth's atmosphere.

The dust comes from comets. These pieces of comet dust are called meteoroids. Most meteoroids are smaller than a grain of sand. The flash of light is called a meteor. Meteors usually last just a second or two.

Sometimes, there are meteor showers. In a meteor shower, lots of shooting stars seem to fall from one area of the sky. These meteor showers happen when the Earth travels through a stream of dust following a comet.

Some people get comets and meteors mixed up. A comet is very different from a meteor. A comet is larger and travels slowly across the sky. It takes many days for a comet to leave our sky. A comet looks like a bright ball with a long shiny tail. A comet is a ball of frozen gas, dust, and water.

On November 19, 2002, we passed through a famous comet dust stream. When we flew through this space dust, the meteors seemed to shoot out of a group of stars called “Leo the Lion.” This meteor shower is called the Leonids.

In 1833, the Leonids caused a meteor storm. More than 1,000 meteors fell from the sky each hour. In 1833, falling stars covered almost the whole sky. It was wonderful.

Meteor storms do not happen often. They are exciting to watch. You may even see a big fireball!

To watch the shower, wake up so early that it is still dark. Around 1:00 in the morning would be good. Put on all your warm clothes. Take a sleeping bag and snacks. Lie down and look up. Keep your eyes open. Maybe you will be lucky and see a storm of shooting stars!

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



# FALLING STARS: CONTINUED DO YOU KNOW YOUR COMETS FROM YOUR METEORS? LET'S SEE!

## DIRECTIONS:

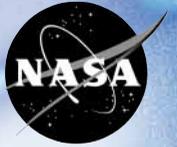
Some of the following words and phrases describe comets. Some words and phrases describe meteors. Some words and phrases describe meteoroids. Write "comets," "meteors," or "meteoroids" by the appropriate words and phrases.

- 1 shooting stars \_\_\_\_\_
- 2 made of dust and ice \_\_\_\_\_
- 3 has a tail \_\_\_\_\_
- 4 speedy streak of light \_\_\_\_\_
- 5 smaller than a grain of sand \_\_\_\_\_
- 6 falling stars \_\_\_\_\_
- 7 lasts a second or two \_\_\_\_\_
- 8 travels slowly across the night sky \_\_\_\_\_
- 9 may come in showers or storms \_\_\_\_\_
- 10 remains in the sky for many days \_\_\_\_\_





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



# WEB QUEST: FURTHER EXPLORING THE UNIVERSE

## INTRODUCTION:

During this Web quest you'll learn about some amazing things related to the science of space: **gravity, black holes, and robots.**

### Gravity

Explore the subject of gravity at <http://spaceplace.nasa.gov/en/kids/orbits2.shtml>, then answer the questions below based on what you find.

- 1 Name two things that would happen to the stars and planets if gravity did not exist:

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- 2 According to Albert Einstein, which has a more powerful gravity: a small planet or a large planet? Can you explain why?

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### Black Holes

Visit [www.nasa.gov/worldbook/blackhole\\_worldbook.html](http://www.nasa.gov/worldbook/blackhole_worldbook.html) to learn more about black holes, then find the answers to these questions.

- 3 What is a black hole?

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- 4 Why can't you see a black hole?

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### Robots

Robots have been helping humans on Earth and in outer space for a long time. Go to [www.nasa.gov/audience/forkids/home/F\\_NASA\\_Robot\\_Storybook.html](http://www.nasa.gov/audience/forkids/home/F_NASA_Robot_Storybook.html) and learn all about them. Then locate the answers to the last two questions.

- 5 Name four ways in which scientists use robots:

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- 6 Find the names of three robots that are spacecraft and list them here:

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