

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).

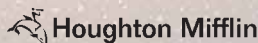
Activity #2: 1. Answers may include: Without gravity, Earth would stop orbiting the Sun and travel on its own into the Milky Way Galaxy. The Milky Way itself would come apart, because the stars would not hold the galaxy together. The moon would stop orbiting Earth and move away in a straight line. 2. 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

Visit the official
movie website at
www.Zathura.com



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The children's book *Zathura*, by Chris Van Allsburg, is published by



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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.

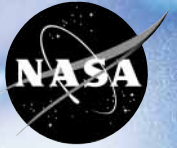
Some people get comets and meteors mixed up. A comet is very different from a meteor. A comet is larger and travels slowly across the sky. It takes many days for a comet to leave our sky. A comet looks like a bright ball with a long shiny tail. A comet is a ball of frozen gas, dust, and water.

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!



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

DIRECTIONS:

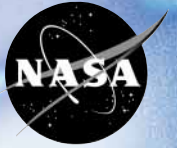
Some of the following words and phrases describe comets. Some words and phrases describe meteors. Some words and phrases describe meteoroids. Write "comets," "meteors," or "meteoroids" by the appropriate words and phrases.

- 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:

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

Black Holes

Visit 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?

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

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 and learn all about them. Then locate the answers to the last two questions.

- 5 Name four ways in which scientists use robots:

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

Dear Parents and Families: Share an Exciting Talk About Space

Since time eternal, humans have looked to the heavens in wonder. Today, adults and children alike gaze at the night skies with amazement, asking all kinds of questions.

Talk to your child and discuss these questions:

- *How many stars are there in the sky?*
- *How far away is the farthest star?*
- *What's a falling star? Where does it land?*
- *Are there humans on other planets?*
- *What's it like to travel on a rocket into space?*

In school, your child has been studying the science of space in **Space Science: Adventure Is Waiting**.

We encourage you to view the skies with your child, to start a dialogue about what he or she observes, and to ask questions based on those observations!

THEN GO TO THE NEXT PAGE TO ENTER THE ZATHURA SWEEPSTAKES!

Coming to theaters this November

ZATHURA

www.Zathura.com

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**Kennedy
Space
Center** 

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ENTER THE ZATHURA SWEEPSTAKES FOR A CHANCE TO WIN:

- Family Trip for four to Kennedy Space Center Visitor Complex in Florida, including round-trip airfare, hotel & transportation, and spending money
- Plasma TV, DVD Player, Classroom Space/Science Books, and T-shirts!

It's easy to enter for a chance to win!

1. Complete the entry form below, including your answer to this qualifying question: *What is one question you would like to ask an astronaut about space?*
2. Have your parent or guardian sign the entry, and submit it to your teacher or mail it to:
**ZATHURA SWEEPSTAKES
 SCHOLASTIC INC.
 P.O. BOX 713
 NEW YORK, NY 10013-0711**
3. Make sure your entry form has been completely filled out and that it is signed by your parent/guardian before you mail it. All entries must be postmarked by the sweepstakes deadline: **November 23, 2005.**
4. Enter today and good luck!

Zathura Sweepstakes Entry Form Answer the following qualifying question:

What is one question you would like to ask an astronaut about space?

Student name: _____ Grade: _____

Student address: _____

Student city: _____ State: _____ ZIP: _____

Student phone number (for prize notification purposes only): _____

School name: _____ Teacher name: _____

School city: _____ State: _____

Parent/Guardian signature: _____

NO PURCHASE NECESSARY. Students who are legal U.S. residents currently enrolled in grades 3 through 8 are eligible to enter, except employees (and their immediate families) of Scholastic Inc., Columbia Tristar Marketing Group, and DNC Parks & Resorts at KSC, Inc. and their respective affiliates, subsidiaries, officers, directors, agency employees, and all others associated with the development and execution of this sweepstakes. Sweepstakes subject to all federal, state, and local laws.

TO ENTER: Complete the sweepstakes entry form, including answering the qualifying question: *What is one question you would like to ask an astronaut about space?* Completed entry forms must be signed by a parent or legal guardian, or entry will be rejected. Mail entries to Zathura Sweepstakes, Scholastic Inc., P.O. Box 713, New York, NY 10013-0711. Entries must be postmarked by 11/23/05 and received by 12/6/05. Limit one (1) entry per student.

PRIZES: One (1) Grand Prize winner will receive a five-day, four-night family trip for four to Kennedy Space Center Visitor Complex, including four two-day passes to Kennedy Space Center Visitor Complex, airfare and hotel, ground transport to and from airport, transportation around Kennedy Space Center Visitor Complex, two lunches for four at Kennedy Space Center Visitor Complex, and \$1,000 spending money. Grand Prize winner's teacher and classroom will receive a plasma TV, a classroom set of space/science books, and thirty (30) T-shirts from Kennedy Space Center Visitor Complex (total estimated retail value of Grand Prize: \$12,470). One (1) Runner-up winner will receive a portable DVD player (estimated retail value: \$450). The school teacher and classroom of the Runner-up winner will receive a classroom set of space/science books and thirty (30) T-shirts from Kennedy Space Center Visitor Complex (total estimated retail value: \$750).

Winners will be selected through a random drawing held on or about 12/7/05. Each winner will be notified by mail or phone. All winners and their respective parent/legal guardian will be required to sign and have notarized an affidavit of eligibility/release of liability within 10 days of winner notification or an alternative winner may be selected. For complete rules and/or the names of prize winners (names of prize winners available after 1/9/06), send a self-addressed stamped envelope to: Zathura Sweepstakes, Scholastic Inc., P.O. Box 713, New York, NY 10013-0711. Complete rules also available at www.scholastic.com/spacescience. Sweepstakes void where prohibited by law.

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Kennedy Space Center
VISITOR COMPLEX

