Earth Science and Astronomy for the Grammar Stage

The authors of *The Well Trained Mind* say in their book that the goal of grammar stage science instruction is to "foster enthusiasm for science and to expose the child to basic facts about each field"[1]. My goal in writing this curriculum was to provide a hands-on science curriculum that would challenge your student and instill a love of science at an early age. I also wanted to provide you with the tools to give your grammar stage student exposure to space and the Earth so that they will have a knowledge base for future studies. For this reason, I have included ongoing projects, experiments every week and narration pages.

I wrote this curriculum to be used in the grammar stage (2^{nd}-3^{rd} grade). It is designed to be done in 10-15 minute session 5 times a week or in 30 minute sessions twice a week. It's up to you to choose whether you will use the five day or two day a week schedule. Also, if you desire, you could set aside an hour a week to be your science day in which you do all the readings, narrations, and activities planned for the week. Please feel free to act as your student's scribe as you complete the narrations and experiments.

Student Workbook:

This teacher's guide was designed to be used in conjunction with the student workbook. It is sold separately and is critical to the success of this program. It contains all the pages you will need to complete the narrations, experiments and most of the projects. It also includes almost 50 pictures for you to use with the narration sheets. The student workbook gives you the tools to create a lasting memory of your studies along with your student.

Ongoing Projects:

The ongoing projects are designed to be done over several weeks. For earth science you will be making your own model of the planet Earth, recording the weather, making a volcano and so much more. For astronomy you will be making a map of the solar system, keeping a journal of what you see in the night sky, keeping a moon diary and other projects.

Experiments:

Experiments are easy to do, use common household items and they tie into what is being studied whenever possible. There may be more than one experiment scheduled in a week, but only one will be written up. This gives your child a beginning look at what the scientific method is and how a scientific test works. At this stage it is not necessary to ask your student to predict the outcome of the experiment as they have no knowledge

[1] Susan Wise Bauer & Jessie Wise, The Well Trained Mind: A Guide to Classical Education at Home, (W.W. Norton & Company, 1999) 375

base to determine what the answer should be. However, if your student enjoys predicting, you can feel free to let them do so. All the pages you need are included in the student workbook.

Generally, the experiment write-up page includes four sections, what we used, what we did, what happened and what I learned. The "what we used" section is for you to write the materials that you used when completing the experiment. The "what we did" section is for you to write a brief description of what you did for the experiment. The "what happened" section is for you to write down what your student observed during the experiment. Finally, the "what I learned" section is for you to write down what your student learned from the experiment. Any time you see a box for a picture of your experiment you can have your child draw what is there or you can take a picture and glue it in the box. At this point I recommend that you begin to have your student copy the information onto the experiment pages in their own writing.

Narrations:

The narration sheets are designed to be a record of what you have studied. They are to be completed after you have done the daily reading for a particular topic. I recommend that you have your student dictate their narration to you and then begin to have them copy it into their student workbook. If your student is having difficulty knowing what to say, you could ask; What was one thing you learned about ___? or What do you like the best about ___? Only expect one to two sentences. Then glue the picture of what you studied on the sheet and let your student color it (if your student is artistic you could let them draw this on their own). All the pages and pictures you need for the narrations are included in the student workbook. Review these pages monthly so that your student gets a review of what they have been learning.

Other Features:

- You will find vocabulary words scheduled throughout the curriculum. These are designed to be done orally and are completely optional. I have put together vocabulary cards that you can use to aid your student in recall. These can be found at the Elemental Science yahoo group.
- You will also find that before each unit I have included an overview of the study, a list of materials needed by week and a list of simple poems that you can use to help your child memorize. These poems are included as a resource for you to enhance your student's learning.
- You will also find the "Want More?" boxes on each of the plan sheets. These are designed to give you ideas for more activities and for additional reading within the planned books.
- You will also notice that Day 5 of the 5 day schedule is usually planned to be rather light. This is so you can easily fit in additional activities or use the time for nature study. For nature study, I recommend using the *Handbook of Nature Study*. Another option is to use day 5 to study the scientists of the Middle Ages. I have

put together a book that you could use called *Great Scientists of the Middle Ages*, which is available for free download at www.greatscientsseries.blogspot.com.

- In the Appendix of this guide I have included the following…
  - Teacher Helps: This includes directions for projects, the constellation study and a scientist biography sheet.
  - Blank pages: These are blank versions of the narration pages and the experiment page in case your student wants to do more!

Be sure to visit the Elemental Science yahoo group for additional supplemental materials, such as vocabulary cards and additional templates that you can use for the various projects in this guide.

Quizzes:

After the appendix in this guide I have included quizzes that you can use every week. Although they are not essential, they are helpful in assessing how much your student is retaining or to use as a review of what you have studied during the past week. You can choose to give these orally or copy them for your student to fill out.

Coordinating Resources:

The following programs are sold separately from Elemental Science. They coordinate with Earth Science & Astronomy for the Grammar Stage and are designed to enhance your studies.

- ✓ *Lapbooking through Earth Science & Astronomy:*
  This is a unique and versatile program that leads your student through a survey of the Earth, rocks, the planets and stars. It includes plans for several lapbooks along with reading assignments for your younger and older students. Lapbooking through Earth Science & Astronomy also includes all the templates and pictures that you need to complete the lapbooks.

What if I have an older student? How do I include them?

If you want your older student to work along with your other students and you feel the resources are to "easy" for them, simply use the following books instead…

- Usborne's Internet-linked Science Encyclopedia—not all of the topics are covered in this resource, but the articles are written at a higher level and contain more information
- Usborne's Book of Astronomy and Space
- Usborne's Encyclopedia of Planet Earth

Have your older child look up the corresponding section in their book and read it, then look up the websites if applicable. (I have included a topical index in this guide to aid you in this.) Next have them write about the topic. If you want more than just a simple narration, have them write a mini-report (one to two paragraphs) on a separate sheet and

paste the picture to that. I would suggest that you let your older student do all their own writing for this program.

Special Considerations:

In writing this curriculum I ran into two problems with the books available for study. The first is Creation vs. Big Bang theory. I believe that God created the Earth, the Heavens and everything in it in seven days, but many books teach the Big Bang theory. I have endeavored to write each of my curriculums to be religiously neutral, but I find that when it come to earth science and astronomy it is nearly impossible, since your religious beliefs play into your belief of the origins of the Earth. So beware, depending on your beliefs, you may need to explain what you believe and why.

The second problem is Pluto as a planet. You may remember that in August of 2006 Pluto was removed as a planet. The books that are currently in print don't reflect this change. I have added links to articles concerning the decision in this guide. I trust that you, as parent and teacher, will choose how to explain these differences to your student.

Final Thoughts:

As the author and publisher of this curriculum I encourage you to contact me with any questions or problems that you might have concerning Earth Science and Astronomy for the Grammar Stage. I will be more than happy to answer them as soon as I am able. You can email me at info@elementalscience.com. You may also get additional help at our yahoo group (http://groups.yahoo.com/group/elemental_science/). I hope that you will enjoy Earth Science and Astronomy for the Grammar Stage!

Copyright Policy

Book List

I used the following books when planning this curriculum. The Usborne encyclopedias and the Kingfisher Young Knowledge books are essential and I recommend purchasing these. If you intend on performing the experiments listed you will need the Janice VanCleave books since all the experiments are from there. You could check these books out from the library, but you will need them for the 18 weeks, so keep that in mind.

Books for Earth Science:

- *Usborne First Encyclopedia of Our World*
- *Kingfisher's Young Knowledge Rocks and Fossils*
- *Janice VanCleave's Earth Science for Every Kid*
- a library book on tornadoes and hurricanes

Books for Astronomy:

- *Usborne First Encyclopedia of Space*
- *Kingfisher's Young Knowledge Solar System*
- *Janice VanCleave's Astronomy for Every Kid*
- *Usborne Spotter's Guide: The Night Sky*
- *Who Was Neil Armstrong* (only need for 1 week)

Abbreviations used:

- JVC Earth Science—Janice VanCleave's Earth Science for Every Kid
- JVC Astronomy—Janice VanCleave's Astronomy for Every Kid
- SG—Student Workbook

Earth Science Scope and Sequence

Ongoing activities:

- Making a model Planet Earth
- Weather and Rain Gauge: For 4 weeks you will measure rain and record the weather.
- Rock Collection: Your student will make their own rock collection.
- Volcano Exploding: You and your student will make a model of a volcano and explode it.
- Narration Pages: Picture if possible and child's summary of what learned.
- Experiment Pages: Fill out an experiment page once a week for the experiment performed.
- Vocabulary

Books used:

- *Usborne First Encyclopedia of Our World*
- *Kingfisher's Young Knowledge Rocks and Fossils*
- *Janice VanCleave's Earth Science for Every Kid*
- a library book on tornadoes and hurricanes

Sequence for Study:

- Week 1&2—Earth & Moon
- Week 3—Seasons & Weather
- Week 4&5—Natural Disasters
- Week 6—Mountains & Rivers
- Week 7—Oceans
- Week 8—Biomes
- Week 9—Underground
- Week 10-13—Rocks
- Week 14-16—Fossils
- Week 17 & 18—Caring for Earth

Earth Science Materials at a Glance

Week 1	2 thermometers, 2 plastic bags, one large, one small both with twist ties, flour and water, newspaper, balloon, globe
Week 2	2 eggs (1 raw, 1 hard-boiled), marking pen, paint(blue, green & brown), table, flashlight, dark shirt, hand-mirror
Week 3	Plastic Water Bottle, Duck Tape, Sharpie marking pen, Small marbles or rocks, Ruler
Week 4	Aluminum pan, Play sand or dirt, Small play houses and people
Week 5	2-2 liter soda bottles, Duct tape, Scissors, Pencil, Paper towels, ruler, Old aluminum pan (at least 9x13), Small bottle (about 20 cm tall), Homemade salt dough or modeling clay
Week 6	Paints-brown and red, Optional—small sticks and lichens to decorate, Baking soda, Liquid dish soap, Red and yellow food coloring, Vinegar, Freezer with a wire rack, Square cake pan, A brick
Week 7	Blue food coloring, 2 clear drinking glasses, 2 coffee cups, 1 liter jar, Eyedropper, Ice
Week 8	**No experiment this week **
Week 9	Epsom salts, 2 small baby food jars, Cotton string, Scissors, 2 washers, Spoon, ruler, paper
Week 10	Pencil, Half empty toothpaste tube
Week 11	3 seashells, vinegar, glass
Week 12	20 flat toothpicks, Book
Week 13	Sponge, bar of soap
Week 14	Cake pan, Rock about the size of your fist
Week 15	Paper plate, Paper cup, Modeling clay, Seashell, Petroleum jelly, Plaster of Paris, Plastic spoon
Week 16	Measuring cup, Epsom salts, Measuring spoon, Scissors, Black construction paper, Lid from a large jar
Week 17	Chalk, Vinegar, Glass
Week 18	*No Experiment this week*

Earth Science Memory Work

Types of rocks poem

Igneous rocks are made from fire
They come from volcanoes that are sure to inspire

Sedimentary rock forms layer by layer
They are made of sand, mud and pebbles, not John Mayer

Metamorphic rock is formed by pressure and heat
They turn the rock into something really neat

Characteristics of biomes poem

The actual book contains another poem on the characteristics of biomes here.

Earth Science Lesson Plans Week 1

<table>
<tr><th>Day 1</th><th>Day 2</th><th>Day 3</th><th>Day 4</th><th>Day 5</th></tr>
<tr><td>Usborne Our World
Pg. 4-5
Our planet</td><td rowspan="2">Experiment for Write-Up:
Cold ‘n Hot
(SG pg. 55)</td><td>Usborne Our World
Pg. 6-7
What’s in Space</td><td>Usborne Our World
Pg. 8-9
Moon</td><td rowspan="3">• Begin your model of planet Earth
• Finish other activities
• Do the Internet Quick-links from Usborne for the week
• Give Earth Science Week 1 Quiz</td></tr>
<tr><td>Narration Sheet
(SG pg. 21)
Picture
(SG pg. 89)</td><td>Narration Sheet
(SG pg. 21)</td><td>Narration Sheet
(SG pg. 21)
Picture
(SG pg. 89)</td></tr>
<tr><td>Introduce Vocabulary</td><td colspan="3">Review Vocabulary daily and look for it in your readings</td></tr>
</table>

Narration Sheet: As you go through the week your student will be doing narrations after you read a section. If they have trouble getting their thoughts out, ask questions like… What was your favorite part about _____? What is one thing you learned today about ____ ? Expect 1-2 sentences a day. When they are finished have them color the picture.

Vocabulary:

- Space—the region beyond the atmosphere of Earth

Materials needed this week:

- 2 thermometers
- 2 plastic bags, one large, one small, both with twist ties
- Flour and water
- Newspaper
- Balloon
- globe

Want More?

- Make a model moon to go with your earth.

Experiment for Write-up (Day 2): Cold ‘n Hot

See *JVC Earth Science* pg. 126-127 for directions. This experiment will help your child to understand how the Earth’s temperature remains constant.

Model of Planet Earth (Day 5): This week you will make your model of planet Earth. See the following page for instructions.

Earth Science Lesson Plans Week 1 (2-day)

	Day 1	Day 2
Readings	*Usborne Our World* *Pg. 4-5 Our planet*	*Usborne Our World* *Pg. 6-7 What's in Space &* *Pg. 8-9 Moon*
Activity	Narration Sheet (SG pg. 21) Picture (SG pg. 89) & Experiment for Write-Up: *Cold 'n Hot* (SG pg. 55)	Narration Sheet (SG pg. 21) Picture (SG pg. 89)
Additional Activities	Begin your model of planet Earth & Do the Internet Quick-links from Usborne for the week	
Additional Assignments	Introduce Vocabulary & Look for the Vocabulary in your Reading	Oral Vocabulary Test & Give Earth Science Week 1 Quiz

Narration Sheet: As you go through the week your student will be doing narrations after you read a section. If they have trouble getting their thoughts out, ask questions like… What was your favorite part about _____? What is one thing you learned today about ____ ? Expect 1-2 sentences a day. When they are finished have them color the picture.

Vocabulary:

- Space—the region beyond the atmosphere of Earth

Materials needed this week:

- 2 thermometers
- 2 plastic bags, one large, one small, both with twist ties
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- Newspaper
- Balloon
- globe

Want More?

- Make a model moon to go with your earth.

Experiment for Write-up (Day 1): Cold 'n Hot

See *JVC Earth Science* pg. 126-127 for directions. This experiment will help your child to understand how the Earth's temperature remains constant.

Model of Planet Earth: This week you will make your model of planet Earth. See the following page for instructions.

Directions for Model Planet Earth

Materials Needed:

- Balloon
- Newspaper
- Flour
- Water
- Salt
- Globe
- Paint (blue, green, brown)

Directions:

1. Blow up the balloon.
2. Tear Newspaper into strips.
3. Make the paste from flour and water.
4. Dip strips into paste and put one layer on the balloon.
5. Add a second layer, as you do this be sure to look at the globe and add any topographical features (ie. mountains).
6. Let dry.
7. Once dry, pop the balloon.
8. Paint your planet using the globe as a guide.

Recipe for Paste:

Mix one part flour with about 2 parts of water until you get a consistency like thick glue. Add more water or flour as necessary. Mix well to get out all the bumps. Add a few tablespoons of salt to help prevent mold!

My Planet Earth Model

A picture of my model

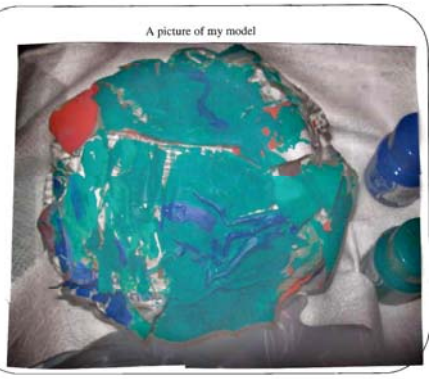
Sample from
Student Workbook

What I learned…

Completed Page

My Planet Earth Model

A picture of my model



What I learned...

Don't let your ballon shrink when making paper maché globes

Earth Science Narration Page

Our Planet:

Sample from Student Workbook

What's in Space:

Pictures are included, but they are on a separate sheet to be cut out and colored by child, then pasted in the squares.

Completed Page

Earth Science Narration Page

Our Planet:

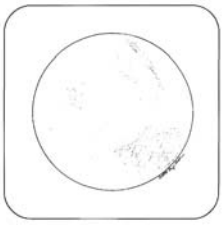
Our planet has atmosphere. Our planet is called Earth

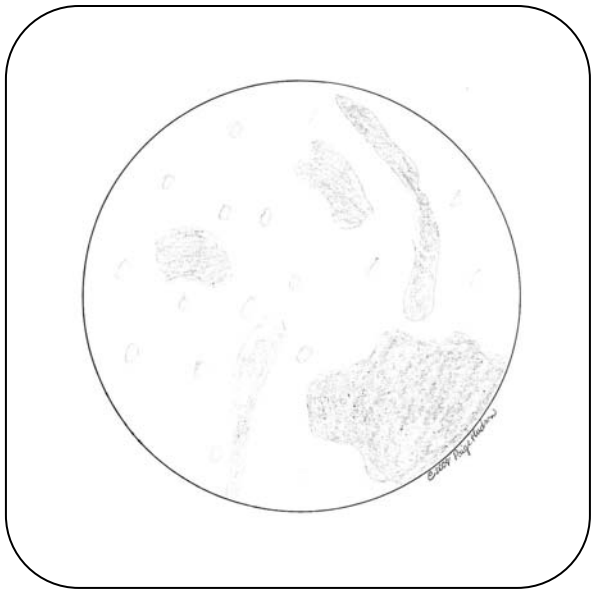
What's in Space:

Sun
stars
planets
moon
our orbit
space crafts
rockets

Moon:

The moon is far from Earth. The moon doesn't have air so foot prints are not swept away.





Name: _____

Date: _____

Cold 'n Hot: How does the Earth's heat level remain constant?

Sample from Student Workbook

What we used…

_____

_____

_____

What we did…

_____

_____

_____

_____

What happened…

_____

_____

_____

_____

_____

_____

_____

Results Chart

	Thermometer in a Bag	Free Thermometer
Initial Ter		
Ter after t		
Ter after a da		

What I learned…

_____

_____

_____

_____

Completed Page

Name: _____

Date: _____

Cold 'n Hot: How does the Earth's heat level remain constant?

What we used…

thermometer, towel, small bag
large bag

What we did…

We set the thermometer in the sun, then in my drawer. Next we put it in two plastic bags, then in the Sun and my drawer. We measured the temperature each time.

What happened…

The thermometer in the bag didn't get as hot.

Results Chart

	Thermometer in a Bag	Free Thermometer
Initial Temperature	29°C	29°C
Temperature after 30 min. in the sun	42°C	48°C
Temperature after 30 min. in a dark closet	38°C	39°C

What I learned…

The atmosphere traps the right amount of the Sun's heat.

Earth Science Week 1

1. True or False: The Earth is made up of rock and metal.

2. The atmosphere helps protect us from the _____ heat and light.

   Moon's Sun's stars

3. The moon has _____ air.

   a lot of some no

4. What is the most interesting thing you learned this week?

_____

_____

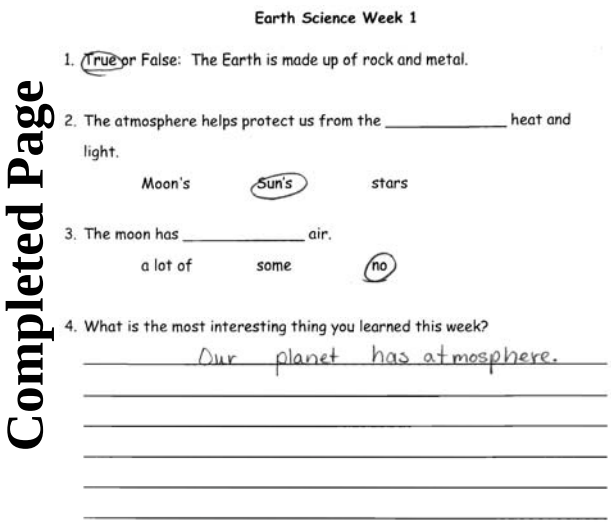
_____

_____

_____

_____

Completed Page



Earth Science Week 1

1. (True) or False: The Earth is made up of rock and metal.

2. The atmosphere helps protect us from the _____ heat and light.

   Moon's (Sun's) stars

3. The moon has _____ air.

   a lot of some (no)

4. What is the most interesting thing you learned this week?

Our planet has atmosphere.

Astronomy Scope and Sequence (18 weeks)

Ongoing activities:

- Map of the Solar System: As you study a part of the solar system you will put it on the map
- Night Sky Diary: When you observe the night sky use these sheets, at the end of the study put them together in a mini-book
- Moon Diary: For 29 days you will observe the changes in the moon every night, if possible
- Scientist Biography
- Narration Pages: Picture if possible and child's summary of what learned
- Vocabulary

Books used:

- *Usborne First Encyclopedia of Space*
- *Kingfisher's Young Knowledge Solar System*
- *Janice VanCleave's Astronomy for Every Kid*
- *Usborne Spotter's Guide: The Night Sky*
- *Who Was Neil Armstrong* (or another book about Neil Armstrong from the library)

Sequence for Study:

- Week 1-12 Solar System:
  - Sun
  - Mercury
  - Venus
  - Earth
  - Moon
  - Mars
  - Jupiter
  - Saturn
  - Uranus
  - Neptune
  - Pluto
  - Asteroids, Meteors, Comets
- Week 13-15 Stars
- Week 16-17 Seeing into space and space travel
- Week 18 Scientist biography

Links to Useful Articles

Pluto As a Planet

This article explains the August 2006 decision and the opposition..
http://www.msnbc.msn.com/id/14489259/

Pluto: The Planet that Used to Be…
http://www.wired.com/science/discoveries/news/2001/01/41328

Wikipedia's Description of Pluto
http://en.wikipedia.org/wiki/Pluto

Planet Demoted..
http://www.space.com/scienceastronomy/060824_planet_definition.html

Astronomy Materials at a Glance

Week 1	2 thermometers, Desk lamp, yardstick
Week 2	Clear, plastic ballpoint pen
Week 3	Desk lamp, Pencil
Week 4	2 thermometers, 1 jar with lid tall enough to hold one of the thermometers
Week 5	String and ruler, Metal washer, Scissors, Paper, Masking tape, Book
Week 6	2 thermometers
Week 7	Wide mouthed jar, Tea bag, Pencil
Week 8	Tape, Ruler, White poster board, Black marker, Straight pin, Scissors, pencil, glue
Week 9	Desk lamp, 2 thermometers, Ruler, Construction paper, one black & one white, 2 empty metal cans, Scissors, tape
Week 10	2 clear drinking cups, 2 pennies, 2 grape-sized pieces of modeling clay
Week 11	Yardstick, Ruler, Modeling clay
Week 12	Curling ribbon(about 3 feet long), Tennis ball, Straight pin, Foil, Newspaper, Carbon paper, Typing paper, 1 golf ball
Week 13	Aluminum foil, Flashlight, Glass bowl, Pencil
Week 14	Shoe box, Black construction paper, Flashlight, Nail or straight pin, Tape and Scissors
Week 15	Planetarium, Flashlight, Black Construction paper
Week 16	White paper-3 sheets, Tape, Desk lamp, Scissors
Week 17	2 thermometers, 2 glasses, Aluminum foil, Rubber glove, Desk lamp, Cotton handkerchief
Week 18	Liquid cooking oil, 1 clear glass, Eye dropper, Water, Rubbing alcohol

Astronomy Memory Work

Planet poem

From *In My Backyard* © calgary science centre

Close to the Sun, the Moon it is not.
This planet is Mercury, rocky and hot.

Hotter than Mercury, second from the Sun.
To live on cloudy Venus wouldn't be fun.

The actual book contains the remainder of the poem here.

Astronomy Lesson Plans Week 12

<table>
<tr><th>Day 1</th><th>Day 2</th><th>Day 3</th><th>Day 4</th><th>Day 5</th></tr>
<tr><td>Usborne Space
Pg. 42-43
Bits & Pieces</td><td>Usborne Spotter's Guide
Pg. 44-45
Comets & Asteroids</td><td>Usborne Spotter's Guide
Pg. 50-51
Meteors</td><td rowspan="2">Experiment for Write-Up:
Plop
(SG pg. 82)</td><td rowspan="3">• Review what you have learned about the solar system
• Give Astronomy Week 12 Quiz</td></tr>
<tr><td>Narration Sheet
(SG pg. 48)
Picture
(SG pg. 107)</td><td>Make a comet
(directions are below)
Narration in SG on pg. 48</td><td>Narration Sheet
(SG pg. 48)
Picture
(SG pg. 107)</td></tr>
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Narration Sheet: As you go through the following weeks your student will be doing narrations after you read each section. If they have trouble getting their thoughts out, ask questions like… What was your favorite part about _____? What is one thing you learned today about ____ ? Expect 1-2 sentences a day. When they are finished have them color the picture.

Vocabulary:

- Meteor—a meteoroid that burns up in the planet's atmosphere, also called a shooting star.

Want More?

- Draw a comet on black paper using a white crayon. Then use silver glitter to decorate it.

Directions for Making a Comet (Day 2): Cut curling ribbon in lengths, curl them and tie them together at one end. Pin the tied end of the ribbon onto the tennis ball using the straight pins. Cut a piece of foil, about 7" x 7" and cover the ball allowing the comet's tail (ribbon) to come out through the foil. You can now play with your comet! Put a picture of your comet on the narration page, SG pg. 48.

Experiment for Write-up (Day 4): *Plop*

See *JVC Astronomy* pg. 116-117 for directions. This experiment will help your child to determine how craters are formed by falling meteorites.

Materials Needed This Week:

- Curling ribbon(about 3 feet long)
- Tennis ball
- Straight pin
- Foil
- Newspaper
- Carbon paper
- Typing paper
- 1 golf ball

Astronomy Lesson Plans Week 12 (2-day)

	Day 1	Day 2
Readings	*Usborne Space* *Pg. 42-43 Bits & Pieces*	*Usborne Spotter's Guide* *Pg. 44-45 Comets & Asteroids, & Pg. 50-51 Meteors*
Activity	Narration Sheet (SG pg. 48) Picture (SG pg. 107) & Experiment for Write-Up: *Plop* (SG pg. 82)	Make a comet (directions are below) & Narration Sheet (SG pg. 48) Picture (SG pg. 107)
Additional Assignments	Introduce Vocabulary & Look for the Vocabulary in your Reading	Oral Vocabulary Test & Give Astronomy Week 12 Quiz

Narration Sheet: As you go through the following weeks your student will be doing narrations after you read each section. If they have trouble getting their thoughts out, ask questions like… What was your favorite part about _____? What is one thing you learned today about ____ ? Expect 1-2 sentences a day. When they are finished have them color the picture.

Vocabulary:

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Want More?

- Draw a comet on black paper using a white crayon. Then use silver glitter to decorate it.

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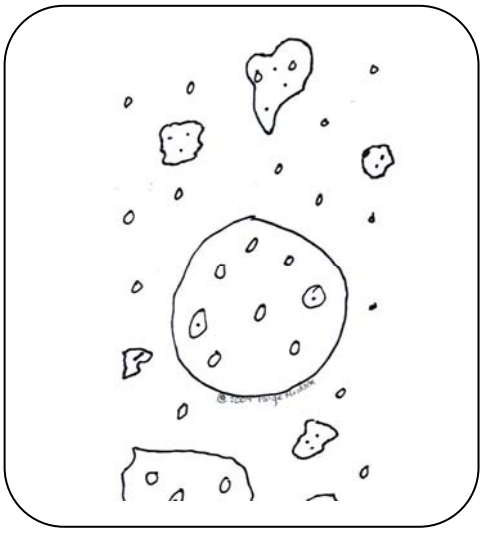
Experiment for Write-up (Day 1): *Plop*

See *JVC Astronomy* pg. 116-117 for directions. This experiment will help your child to determine how craters are formed by falling meteorites.

Materials Needed This Week:

- Curling ribbon(about 3 feet long)
- Tennis ball
- Straight pin
- Foil
- Newspaper
- Carbon paper
- Typing paper
- 1 golf ball

Astronomy Narration Page



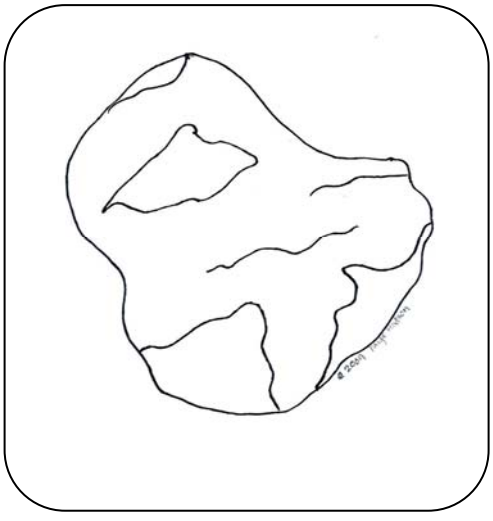
Asteroids:

Sample from Student Workbook

Comets:

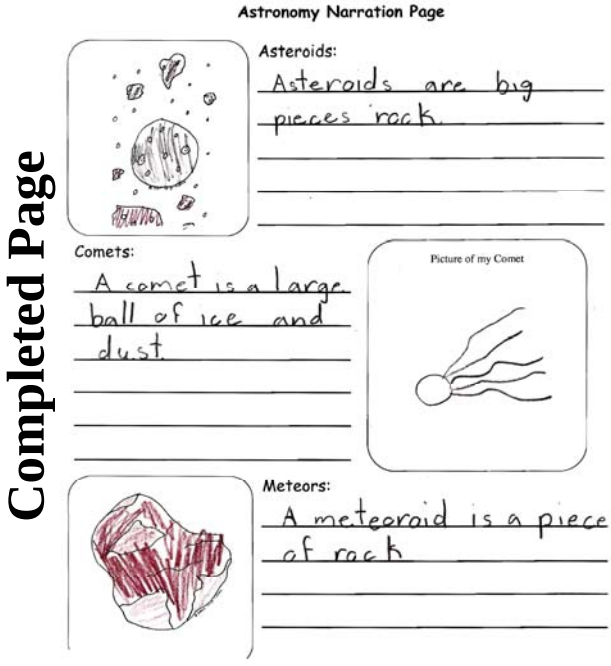
Pictures are included, but they are on a separate sheet to be cut out and colored by child, then pasted in the squares.

Picture of my Comet



Meteors:

Completed Page



Name: _____

Date: _____

Plop: How are craters formed?

Sample from Student Workbook

What we used…

What we did…

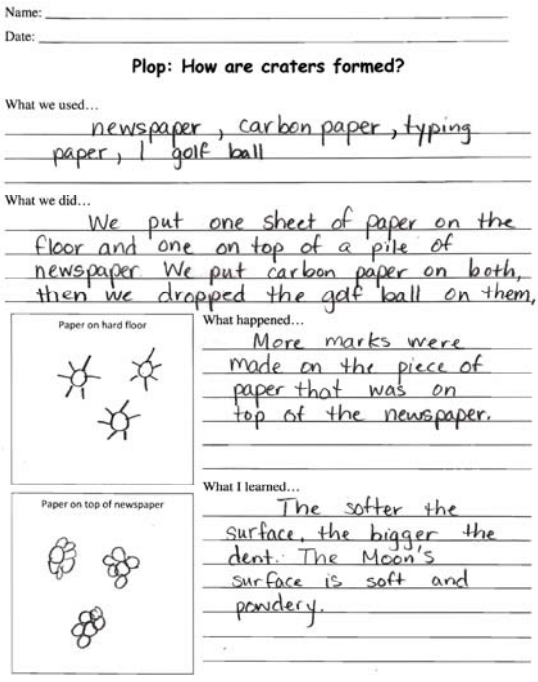
Paper on hard floor

Paper on top of newspaper

What happened…

What I lear

Completed Page



Name: _____

Date: _____

Plop: How are craters formed?

What we used…

newspaper, carbon paper, typing paper, 1 golf ball

What we did…

We put one sheet of paper on the floor and one on top of a pile of newspaper. We put carbon paper on both, then we dropped the golf ball on them.

Paper on hard floor

What happened…

More marks were made on the piece of paper that was on top of the newspaper.

Paper on top of newspaper

What I learned…

The softer the surface, the bigger the dent. The Moon's surface is soft and powdery.

Astronomy Week 12

Circle the right answer:

1. True or False. Meteorites are dust or small chunks of rock in orbit around the Sun.

2. True or False. Comets are large balls of cotton and sand.

3. Meteors are also called _____.

   really cool shooting stars planets

4. What is the most interesting thing you learned this week?

_____

_____

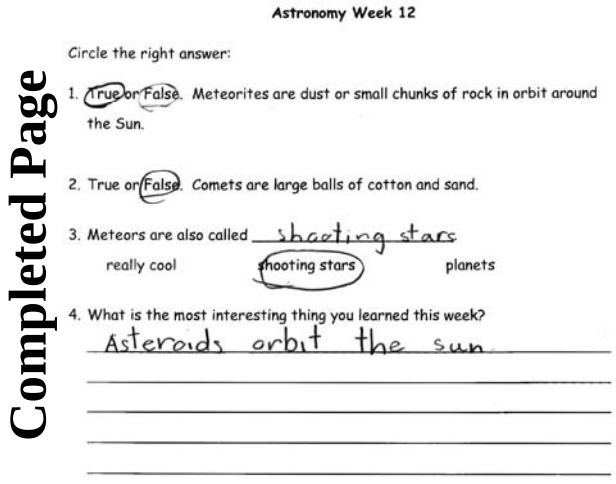
_____

_____

_____

_____

Completed Page



Astronomy Week 12

Circle the right answer:

1. True or False. Meteorites are dust or small chunks of rock in orbit around the Sun.

2. True or False. Comets are large balls of cotton and sand.

3. Meteors are also called shooting stars

really cool shooting stars planets

4. What is the most interesting thing you learned this week?

Asteroids orbit the sun