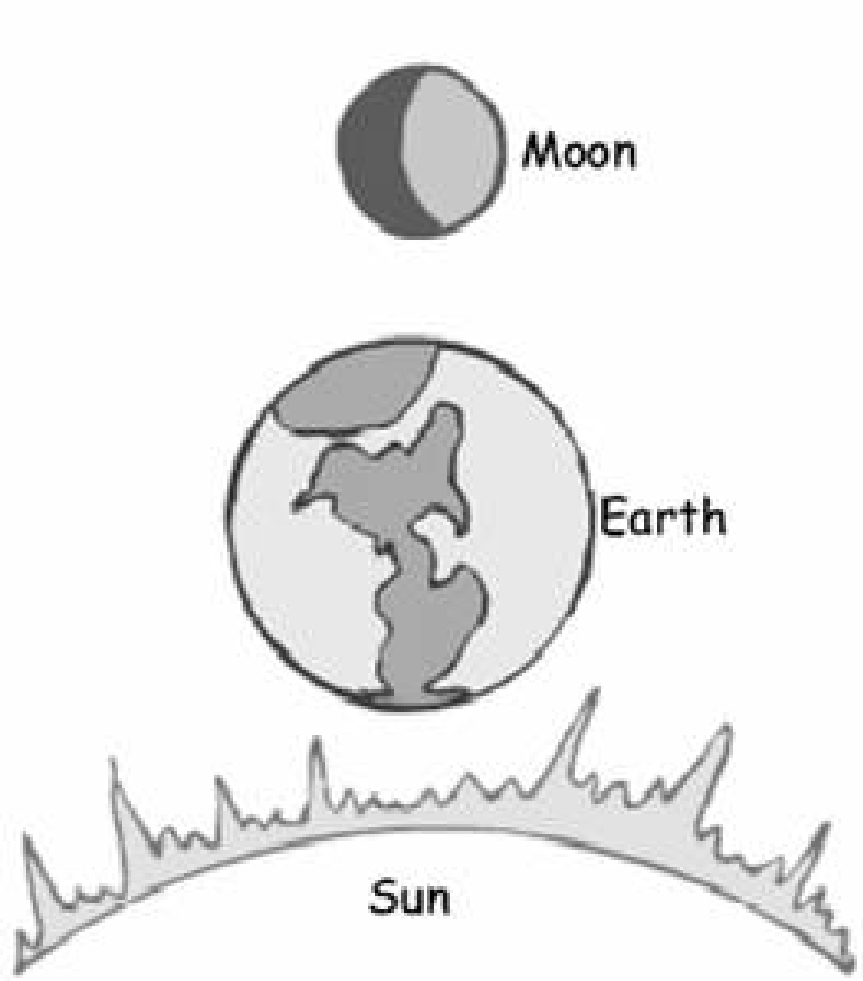
THE SUN, MOON, AND EARTH



Earth Science Unit – First Grade
SC Science Standard 1-3

Teacher: (name here)

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UNIT INFORMATION

THE SUN, MOON, AND EARTH

Teacher's Guide

Grade Level: First Grade

Unit Completion Time: Approx. 305 minutes (5 hours), plus art activities and free time

SC Standard 1-3: First Grade - Sun, Moon, Earth: The student will demonstrate an understanding of the features of the sky and the patterns of the Sun and the Moon. (Earth Science)

Indicators

1-3.1 Compare the features of the day and night sky.
1-3.2 Recall that the Sun is a source of heat and light for Earth.
1-3.3 Recognize that the Sun and the Moon appear to rise and set.
1-3.4 Illustrate changes in the Moon's appearance (including patterns over time).

This unit is formatted for 13 days of lessons / activities, although lessons 6 & 7 and 9 & 10 can be combined. Upon completion, students will show understanding of the sun, moon, and earth as indicated in standard 1-3. All lessons / activities reinforce the 4 standard indicators of 1-3.

UNIT SUMMARY

Students will morph into "Jr. Astronauts", and begin by learning vocabulary and a few basics of the Sun, Moon, and Earth (L1). After learning earth basics (L2), we will don our spacesuits (*activity*) travel upward, beyond the sky! Before we can leave the ground, a lesson (L3) on astronauts and NASA will be taught to introduce students to space travel and then we leave earth on our pretend voyage through space.

As we reach outer space, an overview of what we see (L4) will be given through a narrative first person story, with details of where each object (Sun, Moon, & Earth) is located, distance, and what each looks like to the astronaut. Students will display their view of the 3 objects through a textured art drawing (*activity*)

First stop - the Sun (L5). They will recall that the sun is huge, very far away, but is able to still provide light and is responsible for our heat (from Kindergarten's Seasonal Changes"). Further details will be given such as relative size and distance. Moving away from the Sun, we learn that objects revolve around the Sun, and our earth is one of those. The earth's tilt when moving around the sun gives us a year and seasons (L6)! A flip book chart of the sun's path across the sky will tie in with L7 as we move closer in and learn that the earth also spins on its axis. The spinning earth causes day and night. This movement also makes the sun and moon appear to rise on one side of the sky and set in the other (L8). Shadow drawing throughout the day will give the students a personalized sense of the sun's movement through the sky.

At night, the moon shines!(L9). The sun has objects circling it and the earth does too – just one - our moon. The moon moves around the earth! The moon's orbit is what causes it to "change shapes" (L10). A trip to planetarium this evening will reinforce moon lessons.

Day 11-13 sums up the unit with clay modeling one-on-one oral quiz (*activity*), a chance to turn in optional activity work (*bonus points*), project presentation, test review, and a final test.

Opportunities for learning include journaling, a learning center, textured drawings, writing projects, oral projects, clay modeling, media presentation, outdoor sketching, and a field trip to the planetarium.

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GRADE 1 – SC SCIENCE STANDARD REVIEW

Sun and Moon

Standard 1-3: The student will demonstrate an understanding of the features of the sky and the patterns of the Sun and the Moon. (Earth Science)

Indicators

1-3.5 Compare the features of the day and night sky.
1-3.6 Recall that the Sun is a source of heat and light for Earth.
1-3.7 Recognize that the Sun and the Moon appear to rise and set.
1-3.8 Illustrate changes in the Moon's appearance (including patterns over time).

Scientific Inquiry

The skills of scientific inquiry, including a knowledge of the use of tools, will be assessed cumulatively on statewide tests. Students will therefore be responsible for the scientific inquiry indicators from all of their earlier grade levels. A table of the K–12 scientific inquiry standards and indicators is provided in appendix A.

Standard 1-1: The student will demonstrate an understanding of scientific inquiry, including the processes, skills, and mathematical thinking necessary to conduct a simple scientific investigation.

Indicators

1-1.1 Compare, classify, and sequence objects by number, shape, texture, size, color, and motion, using standard English units of measurement where appropriate.
1-1.2 Use tools (including rulers) safely, accurately, and appropriately when gathering specific data.
1-1.3 Carry out simple scientific investigations when given clear directions.
1-1.4 Use appropriate safety procedures when conducting investigations.

*** Corresponding Unit Activities**: Sun Path Flip Book (1-1.2, 1-1.3), Numbers Worksheet (1-1.3), Textured Artwork (1-1.1), Clay Modeling (1-1.1), Shadow Drawing (1-1.2), Shadow Tag (1-1.4), Space Station Learning Center (1-1.4, 1-1.1)

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VOCABULARY LIST

Earth - the 3rd planet from the sun, where we live

Sun - the closest star; it gives light and heat to the earth as well as other planets orbiting it

Moon - the earth's only natural satellite

Rocket Ship - a special vehicle made for flying into space

Astronaut - a person who travels into outer space to learn something new

Air Tank - a tank filled with oxygen that lets astronauts breathe in outer space

Gravity - the force that keeps you on the ground

Outer Space - aka the universe, it is the area outside of the earth's sky and contains the objects you see when you look up (such as sun, stars, earth, planets, comets)

Satellite - an object that revolves around another object, can be natural or manmade

Revolve - to move all the way around an object

Spin - to turn around and around in a circle

Orbit - the specific path an object travels while revolving around another object

Axis - a strait line through the middle of an object going from top to bottom or side to side

Day - the time after sunrise when it is light outside

Night - the time after sunset when it is dark outside

Shadow – created when an object blocks light from passing through it

Reflection - when light bounces off an object and travels back into the air

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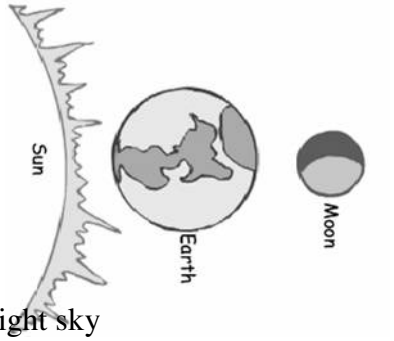
LESSON PLAN 1: INTODUCTION TO SUN, MOON, AND EARTH



Grade Level: 1st
Teaching Science W 7:00-9:30pm
November 7, 2007

I. Goal:

Indicator 1-3.1 > Compare the features of the day and night sky
Indicator 1-3.2 > Recall that the Sun is a source of heat and light for the Earth

II. Objective:

The student will have a basic understanding that they live on planet earth, the Sun shines in the day time and gives us heat, and the moon shines at night time.

III. Relevance:

"Welcome to aboard our classroom spaceship! Each day you live, play, eat, sleep, and go to school here on planet earth. But did you realize there are many other places above the sky you could learn about? Two of them we see each day! One is the Sun that gives us daytime, and one is the moon that shines for us at night. Have you ever wondered what they are like? On a hot day, you notice that the sun is shining brightly – but during the cold, cold winter the sun is shining also. Where did all the nice heat go to? Also, have you ever noticed that the moon actually looks like its changing shape?! It's the same moon every night – and we'll learn why it changes so much. During the next two weeks you will become junior astronauts as we travel through space to learn all about how the moon, sun, and our home Earth works together to make sure we have a good life!"

IV. Activating Prior Knowledge

"Remember how you've already learned that we have different kinds of weather and seasons here on earth? And how the Sun gives us light and heat? But what about in the winter, or at night? What happens to the Sun's heat in the winter….and where does its light go at night? On our trip to outer space we'll see exactly what happens to cause the different seasons and what causes day and night time."

V. Lesson Agenda:

The following agenda will be posted on the board as well as read aloud. Short answers will be written next to the first three questions.

- What is the Earth?
- What is the Sun?
- What is the Moon?
- Read Vocabulary List
- Optional Activities
- Group Project!
- Creating our Space Suit

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VI. Personalization

The lesson will be personalized to the child through them becoming Jr. Astronauts aboard our decorated classroom spaceship, and with the creation of their own space suit in art class, immediately following science. This will get them excited about the material and thinking of the places we will be exploring.

VII. Instructional Plan

A. Initial Engaging Activity:

"Alllll aboard the rocket ship!!" When it's time for science class,th Children will be instructed to stand up and we will form a line to march to our new space ship. Once children return to their seats (docking stations), the room will be darkened, and the blacklights will be turned on. This will transform the decorated "glow-in-the-dark" room, filled with stars, comets, and other space objects into an out-of-this world type of place. (Care will be taken that it is seen as an exciting adventure and enough light will be produced for more fearful children.) The real child-sized space suit that the children will have a chance to wear will be brought out and the contest will be explained (one drawing, two children win each day). They will also be informed that we will begin creation of their own space suits today in art class.

B. Modeling and Expectations:

After the initial activity, an overview of all 3 objects – Earth, Moon, and Sun will be given, along with basic facts about each. Shortened definitions will be written beside the agenda questions. *A word bank for each object on the board will be created whenever children answer questions or input thought.*.

* Beginning with the earth, we will learn briefly that the Earth is round, has land and water, people and animals, oxygen to breathe, seasons, and day & night. Children will be asked what they normally do during the day, night, and various seasons. Prompt questions will be asked such as "Is it hot or cool during Christmas? Why do you believe that is?" to give the teacher a feel for prior beliefs and knowledge. Sample word bank on Earth: Big, Round, Green, Blue, Air, Dogs, Winter, Summer, School, Moms.

* The Sun's basic facts will then be reviewed – it is large, gives us heat, and gives us light. The students will be introduced to the fact that the Sun is millions of miles away (so far it would take hundreds of years to drive there!), but is so huge that it's light and heat reaches us anyway. The fact that it is made of pure gas and doesn't have land will be touched upon as well, getting students prepared for Lesson 5 (Hello, Sun!). Sample word bank on Sun: Huge, Gas, Yellow, Orange, Rise, Go Down, Light, Hot, Beach.

* Finally, the moon will be introduced. "What do you think the moon is?" will be asked to get a feel for the children's knowledge of the moon so far. Many unusual answers will be expected, such as "It's made of cheese", "It's the Sun at night", and "It's where the man on the moon lives" due to the fact that moon knowledge has most likely never been touched upon for the children, and because it's an object they have personally looked upon more than the sun – and therefore had time to quietly think about these issues. Sample word bank on Sun: Huge, Gas, Yellow, Orange, Rise, Go Down, Light, Hot, Beach.

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* After giving basic facts on our three object topics, a unit vocabulary sheet will be gone over. There are 17 words on the sheet, some of which the student may be familiar with (Earth, Sun, Moon, Spin, Astronaut, Rocket Ship) and the other words will be directly related to the topic of the remaining unit lessons. Definitions have been simplified to correspond immediately to the unit information and what the child needs to know.

* Three Optional "Fun" Unit Activities (designed for the more gifted students) are available for the students – writing a story about their trip to space using the vocabulary, completing a numbers worksheet, and writing their own Bedtime Poem, with reference to the moon, after the reading of "Goodnight, Moon!" in Lesson 9. These activities will be discussed briefly and students will be instructed to think about what they may be interested in doing. The activities are worth bonus points, and only one can be completed. Individual activity sheets for all 3 will be handed out at separate points during the unit based difficulty and how much they're worth.

* The Unit Project will also be handed out and discussed. Children will be divided into three groups today and assigned a role as either. Earth, Moon, or Sun. Group topics and further information will be given tomorrow so children won't be too overloaded with information.

* To sum up the core lesson, we will discuss the creation of our space suits as promised during the initial activity. The children will learn they will create a helmet and air tank to protect them as our spaceship travels. Space suits will be started during art class immediately following science class.

* 3-5 minutes of journaling time will be given for students to write their personal thoughts in the "Jr. Astronaut" section of their science journal.

C. Guided Practice

During discussion, students will be encouraged to submit words that relate to each of our three topics (Sun, Earth, Moon) for our word bank.

D. Key Points and Summary

"Ok class, we need to get out of our rocket ship now so we can head back to class. (Class stands, marches around the room, lights turn on, blacklights are turned off, and everyone sits back down.) Won't it be such fun once we get our suits created and we can blast off for outer space in the ship? Let's look at the board - what a terrific word bank we have come up with. Look at how much you all know already! (I will then read over the word bank, and the short answers for the agenda questions). Tomorrow we will learn more detail about what our earth is like, and then on Wednesday our space suits will be finished and we'll prepare for our journey by learning what real astronauts are like!"

E. Independent Practice

Vocabulary sheet will be passed out to take home for study. At the end of the lesson, as with each lesson in the unit, a prompt / thought question will given to the students to journal about. Today, students will be asked to create their own word bank for the Sun, Moon, and Earth in their journal – copying the words on the board – and to come up with as many other words that they feel relate to the object.

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F. Resources and Materials

Classroom Decorations (See included Unit Teacher Guide)
Child-size Astronaut Suit (purchased by teacher at amazon.com!)
Vocabulary Sheet (included in Unit Teacher's Guide)
Chalkboard, Dry Erase Board or Smart Board for Word Bank

VIII. Assessment:

The independent practice will be used as today's assessment. Journaling activities will provide authentic assessment for the entire unit. (See assessment guide and worksheets for more information)

A. **Matched Objective:** During the overview, students learned about two specific objects in the sky – the Sun (day), and the Moon (night) (I. 1-3.1). Students discussed the role of the sun and it's affect on seasons, as well as made contributions to the word bank (I. 1-3.2).

B. Consistent with Strategies

Throughout the lesson, I asked specific fact based questions and guided children to create a word bank. The journaling assessment for the day uses the same word bank creation, and quizzing strategy during later lessons will be primarily fact based using the same questions asked of children during class.

IX. Accommodations:

Summary: 15 kids, ages 6-7 (9 girls, 6 boys)
Special Situations: One deaf student, one blind student

A. Accommodation of Learning Differences

- Blind / Auditory Learners – Stomping sounds were made as we headed "to the space ship". Descriptive adjectives were used during the lesson, and the object topic (i.e. Moon) was continually reinforced ("The moon is.."). Each word bank entry was said aloud 2 times. All written words on the board were read aloud while being pointed out. Vocabulary list was gone over verbally. Unit Project and Optional Projects were described verbally.
- Deaf / Visual Learners – All instructions, agenda items, object topics, and word bank items were written out. The classroom was visually stimulating, and labels of many space object names and facts were scattered around the room. Vocabulary list was passed out to each student. When words or agenda items were spoken, the written item was pointed out. The astronaut suit was spoken of, as well as shown around the room.
- Kinesthetic – Chances to move around the room were given twice as we headed to and from our space ship and "docking stations" (seats). Students were also encouraged to "jump up" when they had a new word bank addition.

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- Other – all information is given at a pace suitable for slower learners. Much of the information is repeated 2-3 times during the course of the lesson.

B. Rates of Completing Tasks:
   - This lesson did not contain any tasks that could not be completed during the specified time. If the student wishes to continue his journaling during free time or at home, he may. Blind students keep a cassette tape journal of their thoughts and may wish to complete at home.

X. **Teaching Strategies**

A. Promotion of Various Levels of Thinking
   - Knowledge – topic facts, vocabulary list review
   - Application – the student applied their new knowledge by coming up with word bank ideas verbally, and by continuing their word bank in their science journal.

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LESSON PLAN 9: GOODNIGHT, MOON!

Grade Level: 1st
Teaching Science W 7:00-9:30pm
November 7, 2007

XI. Goal:
Indicator 1-3.3 > Recognize the…moon appears to rise and set.

XII. Objective:
After having produced a Sun-Path Flip Book, and studied Sun patterns in the day, students will be able to apply their knowledge to the moon and realize that the moon has the same moving pattern. They will also understand that the moon is made of rock, it has no air to breath, and it reflects the sun's light.

XIII. Relevance:
This lesson builds upon prior knowledge that objects in the sky appear to travel in a path during the day – and as, as we learn, well as night.

XIV. Activating Prior Knowledge
"Remember how we've learned that the Sun travels in a path due to the earth spinning round and round? Today we will learn about the moon. The moon is like the sun in that it appears to rise and set in the sky. If you wanted to, you could even do a Moon Flip Book!"

XV. Lesson Agenda:
The following agenda will be posted on the board as well as read aloud.

- Read *Goodnight, Moon*
- What is the Moon? (review)
- Details about the Moon
- Intro to Moon Phases
- Option Activity #3 – Bedtime Poem
- Journaling and Free Time for Science Activity of Choice

XVI. Personalization
Children will be asked after the initial story what it is like at their home at bedtime. What time do they go to bed? Do they go to be when it's dark? Do they sometimes sleep when it's daylight? Why do we sleep when it's dark? What would happen if we didn't have the moon coming out at night time?

XVII. Instructional Plan

A. Initial Engaging Activity:
"Allll aboard the rocket ship!!" Ok, Class. Let's put on our space suits (don completed helmet and air tank) and head to our rocket ship (march

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around the room, darken, and turn on black lights, as with previous lessons). Once class is settled, read *Goodnight, Moon!* by Margaret Wise Brown.

B. Modeling and Expectations:

After *Goodnight, Moon*., students will be asked personalized questions about their own bedtime routines, their thoughts of night time, and their views of the moon. (See Personalization)

* Basic facts (from Lesson 1) about the moon will be reviewed, as well as a recreation of the moon word bank (students will refer to their journal)

* As our classroom rocket ship "lands" on the moon, I will walk around the room, describing what "we see" in detail. Vivid adlibbed description would include: "Gee, Class, I sure am glad we have our air tank! This moon has no air on it so we couldn't breathe without it. Boy, its weird how it is always night here. ..How fun it is! Watch me! I can bounce really high because there isn't much *gravity* (see vocab list)! Since you guys are smaller than me, do you think you can bounce higher? (Yes). Let's all try it together! (Children stand up and bounce around the room for a minute…then settle back down as our rocket ship moves to a crater. Students are encouraged to tell what they see while bouncing around). This is a deep crater! It's filled with moon rocks and moon dust. I don't see any plants or life around here – it must be because there is no water or oxygen on the moon! And, look, there's the sun. I'm glad we have space suits to keep us cool or else we'd melt from the sun's heat on the moon!". More factual details will also be given such as how the moon reflects the sunlight, it is smaller than the earth, and how it has no life or sky. This will tie in with the visit to the planetarium the following evening when the children travel with Larry Cat to go live on the moon.

* A brief introduction to moon phases will be given – name of the phases, and pictures & models to show what they look like. Children will learn the phases in detail during Lesson 10.

* Optional activity #3 – Bedtime Poem, with Moon Reference will be handed out and briefly discussed.

* A few minutes of Journaling time will be given, with a prompt question of "Would you like to live on the moon?". Free Time will then be allowed for students to work on unit projects, optional activities, finish their clay modeling project, or to visit the learning center.

C. Guided Practice

During discussion, students will be encouraged to voice their knowledge of the moon based on Lesson 1 and add words to the Moon Word Bank.

D. Key Points and Summary

(Rocket ship returns to earth as in previous lessons.) Let's review our word bank. (I will then read over the word bank). What new words did we add? Remember to add these to your science journal. Tomorrow we will learn more detail about why the moon changes shape and then tomorrow evening we will take our trip to the DuPont Planetarium to watch an amazing astronomy show about a cartoon cat who lives with his family on the moon!

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E. Independent Practice

Vocabulary list will need to be referred to for some of the lesson's words. At the end of the lesson, as with each lesson in the unit, a prompt / thought question will be given to the students to journal about. Today, students will be asked to add new words to their moon word bank and to answer the question "Would you want to live on the moon?"

F. Resources and Materials

Goodnight, Moon by Margaret Wise Brown
Moon Models and Photos to Introduce Phases
Children's space suits (should remain in the classroom each day)
Vocabulary Sheet (included in Unit Teacher's Guide)
Chalkboard, Dry Erase Board or Smart Board for Word Bank

XVIII. Assessment:

The independent journaling will be used as today's assessment. Journaling activities will provide authentic assessment for the entire unit. (See assessment guide and worksheets for more information)

A. **Matched Objective:** During the review, recalled that all of the objects in the sky appear to move in a path – and that the rule applies to the moon (I. 1-3.1).

B. Consistent with Strategies

Throughout the lesson, I asked specific fact based questions and guided children to create a word bank. The journaling assessment for the day builds upon the word bank creation, and quizzing strategy during later lessons will be primarily fact based using the same questions asked of children during class.

XIX. **Accommodations**:

Summary: 15 kids, ages 6-7 (9 girls, 6 boys)
Special Situations: One deaf student, one blind student

C. Accommodation of Learning Differences

- Blind / Auditory Learners – Stomping sounds were made as we headed "to the space ship". Descriptive adjectives were used during the lesson. Each word bank entry was said aloud 2 times. All written words on the board were read aloud while being pointed out. Vocabulary list was gone over verbally. Unit Project and Optional Projects were described verbally.
- Deaf / Visual Learners – All instructions, agenda items, object topics, and word bank items were written out. The classroom was visually stimulating, and labels of many space object names and facts were scattered around the room. Large photos and models of the Moon and its phases were used. When words or agenda items were spoken, the written item was pointed out. Each child wore

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their space suit. I performed exaggerated bouncing to emphasize lower moon gravity.

- Kinesthetic – Chances to move around the room were given twice as we headed to and from our space ship and "docking stations" (seats). Students were also encouraged to "jump up" when they had a new word bank addition. Exaggerated bouncing "around the moon" was also a fun, personalized activity about lower gravity.
- Other – all information is given at a pace suitable for slower learners. Much of the information is repeated 2-3 times during the course of the lesson.

D. Rates of Completing Tasks:

- Free time was given so students could work on finishing a project of choice. Journaling time was given and a short answer is expected. Students may take journals home if they want to go into more detail. Students have

XX. **Teaching Strategies**

A. Promotion of Various Levels of Thinking

- Knowledge – moon facts, first person "visit" to the moon
- Application – the student applied their new knowledge by coming up with new moon word bank ideas verbally, describing what they saw on the moon, and by journaling their prompt question.

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LESSON OUTLINE

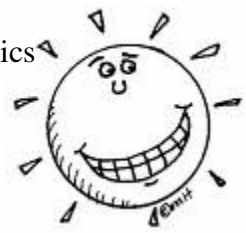
I. Lesson 1 (15 min. lesson, 10 minutes for vocabulary and activity / project discussions)
   a. *"Intro to Sun, Moon, & Earth"*
      - Overview of all 3 objects and their relationship to one another
   b. Go over vocabulary sheets
   c. Discuss optional activities for unit
   d. Introduce Unit Project - instructions and group divisions
   e. Begin Space Suits – Helmet and Air tank (*art class*)

II. Lesson 2 (25 minutes for lesson & quiz)
   a. *"Welcome to Earth, Our Home!"*
      - Basic info on seasonal changes, days & nights, land, & oceans
   b. **Quiz on Earth & vocabulary** (5 questions)
   c. Continue Space Suits (*art class*)

III. Lesson 3 (25 minutes for lesson and activity overview)
   a. *"Preparing for Our Journey"*
      - Discussion of astronauts and their duties; intro to NASA, spaceships, and what is like in outer space
   b. Pass out Optional Activity #1 (1st person story of a trip to space)
   c. Finish Suits (*art class*)

IV. Lesson 4 (20 Minutes)
   a. *"Above the Sky: Where are the Sun and Moon?" (Wear Space Suits!)*
      - Basic locations of all 3 objects and distances from each other
   b. Texture Drawing – Sun, Moon, & Earth using glitter, sand, grass, & paint (Art Class)

V. Lesson 5 (25 minutes for lesson and activity overview)
   a. *"Hello, Sun: Our Closest Star" (Wear Space Suits!)*
      - Details of the Sun's size, roles (heat, light), and characteristics
   b. Pass out Optional Activity #2 (worksheet on time & measurements)
   c. Free Time – Unit project, optional activities, finish textured drawing



VI. Lesson 6 (35 minutes for lesson and flipbook discussion)
   a. *"Our Earth, the Spaceship"*
      - Orbits, satellites, the earth's movement/revolution around the sun, year length, and causes of seasonal changes
   b. Pass out and discuss flip-books and tomorrow's drawings
   c. Free Time – Unit project, optional activities, color flip books, unit project

VII. Lesson 7 (25 minutes for lesson, 5-10 minutes for each plotting)
   a. *"Hold Tight! Spaceship Earth is Spiinnnnniiinnnnggg!"*
      - Axis rotation, day length, causes of day and night
   b. Flipbook Plotting – Early morning, noon, afternoon (before dismissal)
   c. **Quiz on the Sun / Earth's Revolution around Sun / Vocab** (5 questions)

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VIII. Lesson 8 (20 minutes for lesson / incorporation, 5-10 minutes for shadow activities)
- *a. "Sunrise, Sunset"*
  - ➢ Sun's movement across the sky and causes (Incorporate of flipbook)
- b. Shadow Drawing – Pairs will draw their body shadows in the morning & afternoon
- c. Shadow Tag - Students try to step on other's moving shadows (rules apply)
- d. Begin Clay Modeling of Sun, Moon & Earth

IX. Lesson 9 (30 minutes for lesson and activity discussion)
- *a. "Goodnight, Moon!"*
  - ➢ Reading of Goodnight, Moon; Details of the Moon's size, roles, and characteristics
- b. Pass out Optional Activity #3 (Bedtime Poem incorporating the Moon)
- c. Free Time – Journal, optional Activities, Learning Center, or Clay Modeling

X. Lesson 10 (30 minutes for lesson)
- *a. "The Moon and It's Phases"*
  - ➢ Revolution of the Moon around the Earth & time it takes, position of the moon during each phase (New, Whole, Half)
- b. Finish Clay Modeling
- **c. Field Trip to DuPont Planetarium this evening (Early Show)!**

XI. Day 11
- a. **Clay Modeling One-on-One Verbal Quiz** (5 questions)
- b. Review for *Test*
- c. Turn in Optional Activities

XII. Day 12
- a. Unit Projects Due & Group *Presentation*
- b. Free Time – Study, Learning Center, Individual Help

XIII. Day 13
- a. **TEST DAY! (16 questions, 1 bonus)**

THEME DECORATION & CONSIDERATIONS

During the unit, to let the child experience astronomy to its fullest, the classroom should be decorated as outer space. Bulletin boards, ceiling-hanging laminates of space objects and rocket ships, labels, wall art, globes, and other models can be utilized. A space on the wall should be reserved to showcase students' textured art drawings. The Sun/Moon/Earth learning center should remain set up during the entire unit as to be accessed at any point during the day. Black lights & posters, glow in the dark stars, flashlights, and window darkeners will add to the outer space feel, but are optional if unavailable.

Enough time (3 days for art projects, 1-2 weeks for optional activities, and 2 weeks for unit project) is given to ensure classroom completion of all activities. Free time can be incorporated any time during the day (recess, breaks) in which children are indoors – not necessarily directly after the lesson. Please allow for at least 4 free time periods of 10-15 minutes in which children can work directly on unit projects / activities.

Source: http://littlejackscorner.mrscoles.com – Permission to use for homeschool or teaching

ACTIVITIES
*** See activities section for complete description of individual activities**

During a Lesson:
Paper Mache - Astronaut Helmet & Milk Carton Breath Tank to wear during lessons in space
Textured Drawing – Sun, Moon, & Earth as viewed from outer space
Sun Path Flip Book – Plotting the Sun's path through the sky (3 from morning, 3 from afternoon)
Shadow Drawing – Students paired up to draw body shadows as cast in morning and late noon
Shadow Tag – Students try to step on other students shadows while obeying certain rules!
Clay Modeling – Circular models representing the Sun / Moon / Earth and their size / location

Throughout the Unit:
Win a Chance to Wear the Astronaut Suit – Real child-sized astronaut suit, 2 students a day
Sun/Moon/Earth Learning Center - Shadow puppets, activities, books, view-master, moon rocks
Astronaut Journal – Short writing each day covering what the Jr. Astronaut believes he learned
Optional Activities – Three activities; students choose one (story, poem, or numbers worksheet)
Unit Project – Three per group (5 groups), one student per group assigned as earth, sun or moon, with individual written work and group oral presentation at end of unit.

End of Unit Field Trip:
DuPont Planetarium – "Larry Cat in Space: Life on the Moon", evening showing

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ASSESSMENTS

Traditional
Quiz on Earth & Vocabulary - lesson based (5 pts)
Quiz on Sun – lesson based (5 pts)
Project Presentation (Individual-10pts, Group-5pts)
Final Test – unit, lesson, and activity based (16 questions – 50 pts; Optional Drawing – 5 pts)

Authentic
Textured Drawing – grasp of basic facts and spatial relationships / roles of Earth/Sun/Moon (5 pts)
Astronaut Journal – grasp of lesson, ability to answer specifically, writing skills, completion (5 pts)
Sun Path Flip Book – grasp of sun path, ability to follow instructions, visual comprehension (5 pts)
Clay Modeling / Oral Quiz –
Part 1: Hand/eye coordination, geometric shape, size comparison, visual modeling (5 pts)
Part 2: Sun/Moon/Earth relationships & Roles (5 pts)

Optional Activities:
Narrative Space Story - worth 4 bonus pts
Measurement Page - worth 3 bonus pts
Bedtime Poem - worth 2 pts

Total Points Available: Traditional: 75 pts, Authentic: 25 pts, Bonus: up to 9 pts = 109 pts.

Grade Scaling:
90-100 = A 80-89 = B 70-79 = C 63-69 = D Below 63 = Fail

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OTHER SUBJECT INCORPORATIONS

Math - Sun flip book (charting), number relationships (24 hr/earth, 365 day/sun, 28 day/moon), time of day (shadows), optional activity (worksheet), size comparison (clay modeling), geometry (clay modeling)

Language Arts – Vocabulary, optional activities (story or poem), journaling, unit project

Art Media - Space suit creation, texture drawing, clay modeling, unit project, shadow drawing

Physical Education - Shadow tag

Social Studies - NASA and astronaut history (L3)

Technology – Space Suit creation, discussion of rocket ships

MY CLASSROOM DESCRIPTION

Summary: 15 kids, ages 6-7
Special Situations: One deaf student, one blind student

Adapted Activities for this Unit:

Deaf: modeling, artwork, bulletin boards, classroom decorations, photos, written words & instructions for all activities, quizzes, and tests, vocabulary on paper, sun path flip book, planetarium trip

Blind: modeling, verbal answers for all quizzes & one-on-one verbal test, touch & feel of all students texture & clay artwork, descriptive verbal words during, verbal description of the sun's path, using hands and fingers to point out sun's path, choice to make flipbook "textured", feeling of movement of the globe & clay models, perimeter walk around shadow drawings, specific sounds from other students for when shadow is tagged, textured art project

Gifted: Three "Optional Activity" projects available for bonus points (choose one)

Kinestetic: Shadow tag & drawing, clay modeling, paper mache helmet, textured art project

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ASSESSMENT SUMMARY

First Grade - Sun, Moon, Earth
SC Science Standard 1-3: The student will demonstrate an understanding of the features of the sky and the patterns of the Sun and the Moon. (Earth Science)
Indicators

Upon unit completion, students will be able to:

1-3.9 Compare the features of the day and night sky.
1-3.10 Recall that the Sun is a source of heat and light for Earth.
1-3.11 Recognize that the Sun and the Moon appear to rise and set.
1-3.12 Illustrate changes in the Moon's appearance (including patterns over time).

Traditional
1-3.5-8: Quiz on Earth & *Vocabulary* - lesson based (5 questions, 5 pts)
1-3.6-7: Quiz on Sun Properties, Earth's Revolution, & Vocab – lesson based (5 questions, 5 pts)
Standard 1.3: Unit Project Presentation (Individual-10pts, Group-5pts)
Standard 1.3: Final Test – unit, lesson, & activity based (16 questions – 50 pts; Bonus – 5 pts)

Authentic
Standard 1.3: Textured Drawing – basic facts, spatial relationships, roles of Earth/Sun/Moon (5 pts)
Standard 1.3: Astronaut Journal – grasp of lessons, writing skills, completion (5 pts)
1-3.7: Sun Path Flip Book – grasp of sun path, following instructions, visual comprehension (5 pts)
Standard 1.3 Clay Modeling / Oral Demonstration –
Part 1: Hand/eye coordination, geometric shape, size comparison, visual modeling (5 pts)
Part 2: Sun/Moon/Earth relationships & Roles (5 pts)

Optional Activities:
Standard 1.3: Narrative Space Story - 4 bonus pts
Standard 1.3: Measurement Page - 3 bonus pts
1-3.7: Bedtime Poem - 2 pts

Total Points Available:
Traditional: 75 pts
Authentic: 25 pts
Bonus: up to 9 pts
Total: 109 possible pts.

A record / grade keeping master checklist is included. Make copies for each of your children and fill out points earned as the unit progresses.

Source: http://littlejackscorner.mrscoles.com – Permission to use for homeschool or teaching

Rubric & Grade Scaling:

90-100 = A
80-89 = B
70-79 = C
63-69 = D
Below 63 = Fail

GRADE:	90-100 PTS	80-89 PTS	70-79 PTS	63-69 PTS	BELOW 63
A	Student retained exception amount of astronomy info.				
B		Student achieved above average results			
C			Student performed average work		
D				Student performed below average.	
F					Student did not grasp unit information.

* A grade of D will require an individual student meeting with the teacher to go over test results, what happened, and to get a firm grasp on where the student's true knowledge stands – and to find ways to reinforce what was taught

* A grade of F will require a parent / teacher meeting to discuss reasons why child did poorly and what can be done to improve performance.

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TRADITIONAL ASSESSMENTS – 75 Points

For written quizzes and tests, students will be given the questions orally and have a chance to see them written on the board. Blind students will have a chance to respond privately and orally to teacher after initial quiz. Blind students will be able to hand in a recorded audio of their topic, instead of a written paper. Deaf students will be shown written instructions when asked to present their project.

Introduction, Earth, & Vocabulary Quiz – 1 point per question

1. What star gives us light and heat? *(Sun)*
2. What large object do we see in the sky at night? *(Moon)*
3. What are the changes in weather patterns on earth called? *(Seasons)*
4. What does Axis mean? Draw an example. *(strait line through the middle of an object going from top to bottom or side to side)*
5. What is gravity? *(force that keeps you on the earth's ground)*

Sun Properties & Earth Revolution Quiz – 1 point per question

1. What is the Sun made of? *(Gas)*
2. How far away from the earth is the Sun? *(93 million miles or 212 years going 50 mph)*
3. How long does it take the earth to revolve around the sun? *(365 Days)*
4. What is a satellite? *(an object that revolves around another object, can be natural or manmade)*
5. What is an orbit? *(specific path an object travels while revolving around another object)*

Unit Project / Presentation – 15 points (10 Individual, 5 Group)

Individual Assessment: 10 pts

1. Report Completion (2 pts)
2. Knowledge of Assigned Role (2 pts)
3. Property Facts (2 pts)
4. Role Facts (2 pts)
5. Grammar (1 pt)
6. Neatness (1 pt)

Group Assessment: 5 pts

1. Teamwork (1 pt)
2. Oral Communication (1 pts)
3. Overall Presentation (1 pt)
4. Knowledge of Group Topic

FINAL TEST ON UNIT – 50 points and 5 Bonus Points

1. Multiple Choice = #1-5 worth 2 pts each, #6 worth 3 pts (13 pts total)
2. Matching = 7 questions, 3 pts each (21 pts total)
3. Short Answer = 4 questions, 4 pts each (16 pts total)
4. Bonus Drawing/Labeling = up to 5 pts

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SUN, MOON, AND EARTH
UNIT TEST ANSWER KEY
Science Class – First Grade

MULTIPLE CHOICE: Read the questions carefully and circle the correct answer.

1. A
2. C
3. D
4. B
5. A
6. B

MATCHING: Read definitions & choose correct answer from the list. Not all words are used!

7. Day
8. Reflection
9. Shadow
10. Night
11. Moon
12. Astronaut
13. Rocket Ship

SHORT ANSWER: Please read the question carefully and answer in your own words

14. Gravity: the force that keeps you on the ground
15. Satallite: an object that revolves around another object; natural or manmade
16. The sun changed positions; it was going along a path; the earth was spinning
17. The sun's movement across the sky; the earth is spinning

BONUS QUESTION -

Labeling of all learned lesson facts (2 pts)
Correct positioning / size comparison (1 pt)
Creativity (1 pt)
Extra labeling (Stars, Comets, etc) (1 pt)

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OPTIONAL ACTIVITY #2
NUMBERS WORKSHEET ANSWER KEY
Science Class – First Grade

Short Answer: Please give the number that answers the following questions!

1. 24 hours
2. 28 days
3. 93 million miles
4. 365 (or 366)
5. 7 days
6. Apprx. 238,900 miles
7. 1,000,000
8. 49

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SUN, MOON, AND EARTH UNIT TEST

Science Class – First Grade

Name: _____ **Date: _____**

MULTIPLE CHOICE: Read the questions carefully and circle the correct answer.

1. What is the closest star to earth?
    a. Sun
    b. Moon
    c. Andromeda
    d. Pluto

2. When do we see the Moon?
    a. In school
    b. At recess
    c. At night
    d. During the day

3. Why couldn't Larry Cat breathe on the moon?
    a. He was tired from the ride
    b. He was sick
    c. He had just chased his brother into a crater
    d. There was no oxygen

4. What does SPIN mean?
    a. To jump up and down
    b. To turn around and around in circles
    c. To fall down
    d. To play a game

5. How long is one day?
    a. 24 hours
    b. 15 hours
    c. 6 am to 4 pm
    d. 4 weeks

6. How long does it take the Moon (earth's satellite!) to revolve around the earth?
    a. one year
    b. 28 days
    c. 365 days
    d. 28 weeks

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MATCHING: Read definitions & choose correct answer from the list. Not all words are used!

Moon	Day	Reflection
Rocket Ship	Gravity	Night
Astronaut	Shadow	Orbit

7. _____: the time after sunrise when it is light outside.
8. _____: when light bounces off an object and travels back into the air
9. _____: created when an object blocks light from passing through it
10. _____: the time after sunset when it is dark outside
11. _____: the earth's only natural satellite
12. _____: a person who travels into outer space to learn something new
13. _____: a special vehicle made for flying into space

SHORT ANSWER: Please read the question carefully and answer in your own words

13. What does GRAVITY mean?

_____

_____

_____

14. What is a SATALLITE? Name one of the Sun's Satellites.

_____

_____

_____

15. Describe what happens in your flip book? What happened to the Sun? Why?

_____

_____

_____

16. What caused your shadow to move? What is really moving – the sun or earth?

_____

_____

_____

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BONUS QUESTION: Complete the optional activity question below to earn bonus points! Just like our other extra activities, this is optional, and you will not lose points if you don't do it.

ATTENTION ASTRONAUTS:

The Space Camera is Broken!
Draw, color, and label the sun, moon, and earth as it would look if you were in outer space.
Draw in *everything* you think you might see in space.
When you finish, answer the thought question.

THOUGHT QUESTION:

Where would you send this drawing if you were a real astronaut, working out in space?

Answer:_____

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AUTHENTIC ASSESSMENTS – 25 Points

Astronaut Journal - 5 points

1. Creativity (1 pt).
2. Noticeable grasp of daily lessons (1 pt)
3. Attempted daily thought questions (1 pt)
3. Completed all entries (2 pt)

Textured Drawing – 5 points

1. Creativity (1 pt).
2. Size / Distance relationships (1 pt)
3. Correctness of labeled / drawn facts (2 pt)

Sun Flip Book - 5 points

1. Neatness (1 pt).
2. Grasp of "why" it moves – discussion participation (1 pt)
3. Followed Directions / Completed (1 pt)
3. Sun follows an obvious path (2 pt)

Sun, Earth, & Moon Clay Modeling – 2 parts, 10 total points

Prompt Questions:

1. What are the 3 objects you have designed.
2. Why do they look the way they look?
3. Can you describe each of their roles?
4. Demonstrate what object revolves around the earth.
5. Demonstrate what object revolves around the sun.

Model also graded on:

Hand/eye coordination during creation (1 pt)
Geometric shape – circles (1 pt)
Size comparison – small, medium, large (1 pt)
Visual modeling – ability to position objects correct as if looking from space (2 pts)

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OPTIONAL ACTIVITY #2
NUMBERS WORKSHEET
Science Class – First Grade

Name: _____ **Date: _____**

Short Answer: Please give the number that answers the following questions!

1. How many hours in one day?

2. How long does it take the moon to revolve around the earth?

3. How many miles away from the earth is the sun?

4. How many days does it take for the earth to go around the sun??

5. How many days are there in one week?

6. How many miles is the moon away from the earth?

7. How many earths would fit inside of the sun?

8. How many moons would fit inside the earth?

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OPTIONAL ACTIVITY #3
Bedtime Poem – Moon Reference
Science Class – First Grade

Name: _____ **Date:** _____

We just finished reading *Goodnight, Moon* in class.
Think about what you do at home for your own bedtime.

Write a 2 stanza poem with 4 lines each (like we learned in English)
about your bedtime or what you like to do at night.
Include the moon as part of your poem.

BE CREATIVE!

STANZA 1

LINE 1

LINE 2

LINE 3

LINE 4

STANZA 2

LINE 5

LINE 6

LINE 7

LINE 8

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OPTIONAL ACTIVITY #1
YOUR TRIP THROUGH SPACE
Science Class – First Grade

Name: _____ **Date:** _____

Pretend you are on a voyage in space. Describe how you got there, what you will wear, and what you see happening. Be creative!

You must include at least 10 words
from your vocabulary list in your 2 page story!

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UNIT GRADE RECORDS - Traditional

Child's Name: _____ Overall Points: _____

Date: _____ Introduction, Earth, & Vocabulary Quiz – 1 point per question

POINTS:

_____ 1. What star gives us light and heat? *(Sun)*
_____ 2. What large object do we see in the sky at night? *(Moon)*
_____ 3. What are the changes in weather patterns on earth called? *(Seasons)*
_____ 4. What does Axis mean? Draw an example. *(strait line through the middle of an object going from top to bottom or side to side)*
_____ 5. What is gravity? *(force that keeps you on the earth's ground)*

_____ **= TOTAL POINTS**

Date: _____ Sun Properties & Earth Revolution Quiz – 1 point per question

POINTS:

_____ 1. What is the Sun made of? *(Gas)*
_____ 2. How far away from the earth is the Sun? *(93 million mi. or 212 yrs at 50 mph)*
_____ 3. How long does it take the earth to revolve around the sun? *(365 Days)*
_____ 4. What is a satellite? *(an object that revolves around another object, can be natural or manmade)*
_____ 5. What is an orbit? *(specific path an object travels while revolving around another object)*
_____ **= TOTAL POINTS**

Date: _____ Unit Project / Presentation – 15 points (10 Individual, 5 Group)

Individual Assessment: 10 pts

1. Report Completion (2 pts) _____
2. Knowledge of Role (2 pts) _____
3. Property Facts (2 pts) _____
4. Role Facts (2 pts) _____
5. Grammar (1 pt) _____
6. Neatness (1 pt) _____

Group Assessment: 5 pts

7. Teamwork (1 pt) _____
8. Oral Communication (1 pts) _____
9. Overall Presentation (1 pt) _____
10. Knowledge of Group Topic _____

_____ **= TOTAL POINTS**

Date: _____ FINAL TEST ON UNIT – 50 points and 5 Bonus Points

POINTS:

_____ 1. Multiple Choice = #1-5 worth 2 pts each, #6 worth 3 pts (13 pts total)
_____ 2. Matching = 7 questions, 3 pts each (21 pts total)
_____ 3. Short Answer = 4 questions, 4 pts each (16 pts total)
_____ 4. Bonus Drawing/Labeling = up to 5 pts

_____ **= TOTAL POINTS**

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UNIT GRADE RECORDS - Authentic

Child's Name: _____ Overall Points: _____

Date: _____ Astronaut Journal - 5 points

POINTS:
_____ 1. Creativity (1 pt).
_____ 2. Noticeable grasp of daily lessons (1 pt)
_____ 3. Attempted daily thought questions (1 pt)
_____ 3. Completed all entries (2 pt)

_____ **= TOTAL POINTS**

Date: _____ Textured Drawing – 5 points

POINTS:
_____ 1. Creativity (1 pt).
_____ 2. Size / Distance relationships (1 pt)
_____ 3. Correctness of labels (2 pt)

_____ **= TOTAL POINTS**

Date: _____ Sun Flip Book - 5 points

POINTS:
_____ 1. Neatness (1 pt).
_____ 2. Grasp of "why" (1 pt)
_____ 3. Completed Correctly (1 pt)
_____ 3. Sun follows an obvious path (2 pt)

_____ **= TOTAL POINTS**

Date: _____ Sun, Earth, & Moon Clay Modeling – 2 parts, 10 total points

POINTS:
_____ 1. What are names of each?
_____ 2. Why do they look the way they look?
_____ 3. Can you describe each of their roles?
_____ 4. Demonstrate which object revolves around the earth.
_____ 5. Demonstrate what object revolves around the sun.

POINTS:
_____ Hand/Eye Coordination (1 pt)
_____ Geometric shape – circles (1 pt)
_____ Compare – small, medium, large (1 pt)
_____ Visual modeling – ability to position objects as if viewing from space (2 pts)

_____ **= TOTAL POINTS**

Date: _____ Optional Activities – worth up to 4 points, students choose only one

Narrative Story (4 pts):

POINTS:

_____1. 10 Vocab Words (2 pts)
_____2. Creative (2 pts)

Numbers Worksheet (3 pts):

POINTS:

_____1. Completion (1 pt)
_____2. All Correct (2 pts)

Bedtime Poem (2 pts):

POINTS:

_____1. Completion (1 pt)
_____2. Referenced Moon (1 pt)

_____ **= TOTAL POINTS**

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UNIT ACTIVITIES

Activity 1: Creation of Student Space Suits

Subject: Science, Art, Technology, Social Studies
Grade: 1st Grade
Prep Time: 30 minutes
Duration: 25-30 minutes per day over 3 day period

Mission: Students will create their own space suit for wearing during the unit!

Objective: Students will learn about two forms of necessary equipment for survival in space

Paper-Mache Astronaut Helmet

- See instructional print out from www.NASAexplores.com for Helmet information
- Omit provided articles to save art time and focus only on the project as students will have learned the information in the day's "Preparing for Our Journey" (L3)

Milk Carton Air Tank

Materials:

- 30+ individual quart milk cartons (previously donated by parents)
- Construction paper
- Glue or tape
- Yarn
- Old elephant tubing
- NASA badge color page to paste on

Preparation – punch 4 holes in one side of each carton in the upper & bottom left & right corners

Directions:

1. Explain the purpose of the Air tank
2. Pass out construction paper color of choice & paste NASA badge on it
3. Allow children to color NASA badge and decorate the air tank cover
4. Have each student glue 2 milk cartons side by side, ensuring the holes are on the back
5. Glue Construction paper to the front to make a "cover"
6. Thread yarn through the wholes to convert tank into a wearable "backpack"

* Children will wear completed Space suits beginning with the 4th day's lesson. This gives the paper-mache helmet and glued air tank enough time to dry. Suits are to be worn when exploring the sun, the earth's revolution around the sun, watching the earth spin, and the two moon lessons. Be sure to have a couple of extra space suits on hand for children who are unable to complete projects.

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Activity 2: Textured Drawing

"Sun, Moon, & Earth in Outer Space"

Subject: Science, Art
Grade: 1st Grade
Prep Time: Gather materials, no prior prep
Duration: 15-25 minutes per day over 3 day period

Mission: Students will draw and label the sun, moon, and earth as they would appear in outer space

Objective: Student will demonstrate a spatial understanding of the relative positions of the Earth, Moon, and Sun in outer space, along with visual understanding of modeling an object. Labeling will also demonstrate a comprehension of basic facts, names, previous knowledge and beliefs, and charting skills.

Materials:

- 10x10 sheets of paper
- Water Color Paints & Brushes
- Crayons
- Little, Big, Biggest Circles for Size Comparison / Tracing
- Puff Paint for outlining circles
- Sand, Grass, & Blue Paint (For Earth)
- Gold (For Sun) & Silver Glitter (For Moon)
- Glue

Directions

1. Ensure students understand this is a graded activity and encourage detail
2. Have supplies set out at each table (students can share)
3. Explain what the student is to accomplish
4. Help individually with those who need circle drawing help
5. Prompt for relative size comparisons ("Is the moon smaller than the earth?", "How much bigger is the Sun?", "Which is closer, the sun or the moon?"
6. Prompt for correct use of materials as noted above, but do not force
7. Encourage drawing of what they already know is in outerspace (stars, rocketships, comets)
8. On the last day, have students label everything in their pictures as detailed as possible from what's on earth (sand, water, land, people) to what else they drew in outerspace (star, constellation

* Display finished artwork on dedicated wall or bulletin board for the rest of the unit

AUTHENTIC ASSESSMENT – WORTH 5 POINTS

- See assessment worksheets for breakdown

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Activity 3: Sun Path Flip Book

Subject: Science, Math
Grade: 1st Grade
Prep Time: 40 minutes to create flipbook master, make copies, bind together
Duration: 5 minutes each session, 6 times in one day (once each hour or so)

Mission: Students will create a personal flip book of the sun's path over a recognized area at school

Objective: Student will demonstrate an understanding of that the sun appears to move through the sky, and that it's position varies based on the time of day.

Teacher Preparation:

1. Find a spot in the school yard the sun will be visible from during each session.
2. Situate an 8x10 blank page landscape style and draw a basic shapes outline of the view, with the horizon line going across the center. Recognizable buildings, trees, playground features should be at the top of the line, ground features below the horizon (parking spaces, grass, etc). Do not draw in a sun, clouds or sky features! Be sure to mark your spot as your students will need to view the real scene exactly as you do.
3. Make one *full* copy of your drawing for each student on card stock
4. One regular copy paper, make 6 more copies of the scene for each student
5. Using a cutting board, chop the copy paper copies along the horizon (you'll end up with just the top half with the buildings / sky exposed (10x4)
6. Attach 6 half page copies to one full card stock scene, attach another blank card stock for the back cover, hole punch along edges and thread with yarn to make a binding.

Materials:

- Copies of a blank flipbook (see above)
- Same accessible spot for all 6 viewings
- Pencils
- Sunny Day
- Crayons

Directions

1. Ensure students understand this will be a graded activity
2. Have students sit at your marked spot during 6 different times of the day
3. Instruct students to look where the sun is located and draw it on their first page, using the familiar scenery as a guide to where to put it. The plotting begins on the first half page.
4. Ensure students record the time of day on top of the page being used
5. After the 6 plots, the students will have a noticeable pathway of sun movement when they "flip" through their pages

AUTHENTIC ASSESSMENT – WORTH 5 POINTS

- See assessment worksheets for breakdown

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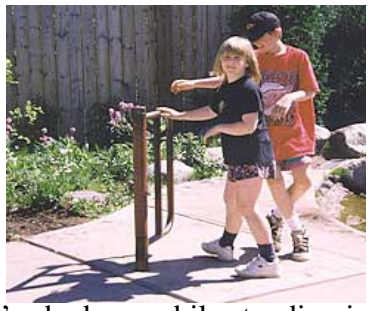
Activity 4: Shadow Drawing



Subject: Science, Art
Grade: 1st Grade
Duration: 5 minutes each session, Morning & Afternoon)

Mission: Student pairs (Shadow & Drawer) will draw each other's shadows while standing in the same spot (one morning, one afternoon) and explain why they are in different spots

Objective: Student will demonstrate an understanding of the sun's movement during the day, and therefore, the shadows move based on what part of the object the sun's light is hitting

Materials:

- Same sunny, accessible spot for both drawings
- Sidewalk Chalk
- Pavement

Directions

1. Pair students into groups of 2 (uneven matches could work with teacher)
2. For the morning drawing, have student #1 be the shadow and #2 be the drawer
3. The shadow should stand in one spot, and let the drawer mark it
4. Have the drawer trace the shadow on the ground
5. For the noon drawing, have #1 & #2 switch roles
6. Standing in the same spot, have the drawer trace another shadow
7. Discuss their findings – Why has the shadow moved?

Activity 5: Shadow Tag Game

Subject: Science, Phys. Ed.
Duration: 5-10 minutes after shadow drawings, 2 times in one day (morning & afternoon)

Mission: One group of morning students will attempt to step on the other students shadows, while following guidelines. In the afternoon, the groups will reverse roles – but not places!

Objective: Student will demonstrate a personal understanding of the sun's movement during the day, and how their own shadows move based on where the sun is in the sky

Directions

1. Divide class into two groups and have each group face each other behind 2 very long parallel lines, ensuring group #1 has their back to the sun (morning)
2. Instruct group #2 to jump on #1's shadows. Group #1 can try to escape by running left to right, but not front or back. The child is out when their shadow is tagged!
3. In the afternoon, have groups in same spots but now their roles are reversed due to the sun's movement – group #1 are the taggers and #2 are the shadows.
4. Discuss their findings – Why has their roles reversed? What caused it?

Source: http://littlejackscorner.mrscoles.com – Permission to use for homeschool or teaching

Activity 6: Clay Modeling

Circular models representing the Sun / Moon / Earth's size and location

Clay Rocket

Subject: Science, Art, Math (Size Comparison & Geometry)
Grade: 1st Grade
Prep Time: 30 minutes (make homemade clay and teacher model)
Duration: 20 minutes per day over a 3 day period

Mission: Student pairs (Shadow & Drawer) will draw each other's shadows while standing in the same spot (one morning, one afternoon) and explain why they are in different spots

Objective: Student will demonstrate an understanding of the sun's movement during the day, and therefore, the shadows move based on what part of the object the sun's light is hitting

Materials:

- Homemade clay
- Previously made models (in clay and on paper)
- Paints & Brushes
- *Optional: Leftover texture materials from Textured Drawing activity*

Directions

2. Instruct children as to what is expected of them and the upcoming quiz
3. Explain the meaning of model and show a completed teacher-made models
4. Have children construct round models of the sun, moon, and earth out of clay, making each model a relative size to each other.
5. Once clay is dry, have students paint each ball according to its correct properties. Students may also use leftover textured materials if available.

AUTHENTIC ASSESSMENT – 2 PARTS, WORTH 10 POINTS TOTAL

- See assessment worksheets for breakdown

Optional Activities for Bonus Points – Due on Day 11:

Student can choose only one. Not mandatory. All 3 will be discussed at the beginning of the unit to give children the chance to think upon what they would like to do. Each project will be handed out during various points in the unit based on the difficulty and length of time to complete.

1. **First Person Narrative Space Story** – write a two page paper about your trip into space. You must at least 10 words from our vocabulary list! (LA / Writing)

2. **Measurement and Numbers Worksheet** – answer 8 number questions relating to the earth, sun, and moon. Some information the student may need to look up individually! (Math)

3. **Bedtime Poem with Moon Reference** – At least 2 stanzas, 4 lines each (LA / Poetry)

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Extended Activities Throughout the Unit:

1. **Win a Chance to Wear the Astronaut Suit**! A drawing will be held each morning, selecting two student names from the pile to see who will get to wear the space suit the next day. Selected winners will be able to don the full space suit for 30 minutes during the morning (winner 1) and afternoon (winner 2). Space suit is sized to fit the larger kids in class, and was purchased by teacher on sale at amazon.com.

2. **Sun/Moon/Earth Learning Center** – A "space station" will be set up during the entire unit for the students to explore shadow puppets, flashlights, planet / star models, space themed coloring pages, guided activities, books, view-master slides, NASA information, short astronaut biographies, sand, earth rocks, moon rocks, and short, kid-friendly historical articles on the earth, sun & moon. This "space station" also has a docking port (computer) where the child can link to kid-friendly astronomy sites and outer space web quests.

3. **Astronaut Journal** – (Part of their regular Science Journal Book); Short writing each day covering what the Jr. Astronaut has learned during his travels through space. (Writing)

End of Unit Field Trip – Evening of Day 10

DuPont Planetarium in Aiken, SC: Students will take a field trip to the early evening showing of "Larry Cat in Space: Life on the Moon". The show lets children ride travel with Larry and his family as they leave earth and head for their new home on a space station docked on the moon. Larry's adventure educates children about aspects of the moon's atmosphere, surface, and what it would be like to live there. This will reinforce the week's lessons about the moon. Parents are invited!

Unit Project / Presentation – Due on Day 12

Three students to a group: Each student in a group is assigned to be an earth, sun or moon. Individuals will be create a one page written report on "who they are" (sun? moon? Earth?), what they look like, what they do, time it takes them to do things, and the specific roles they play. The individual student is also responsible for an easily visible art media project representing "who they are" (photo, drawing, painting, modeling, etc.). Groups are responsible for giving an oral presentation to answer their assigned topic. Topics include: Does the earth move or does the sun move?, What does the moon look during each phase?, What causes day and night?, What causes the weather to change?, Show the revolution of the earth around the sun and the moon around the earth?, Where would you be on earth if it was daytime? Night time?.

Most of the unit project can be completed in class and is designed to give children an introduction to group work. Individual work is graded heavier (10 pts) than group work (5 pts).

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