

## Activity Sequence #1

### Introduction/Opener

View Introduction Video to learn a brief history of Skylab at:

[http://smithsonian.mobilemuseums.org/educators/pg/smithsonian\\_gallery/?view=smithsonian\\_gallery&album=1897#1898](http://smithsonian.mobilemuseums.org/educators/pg/smithsonian_gallery/?view=smithsonian_gallery&album=1897#1898)

After students have listened to the “Ode to Skylab” poem written by the teacher, they can be encouraged to write their own poems about things found in space.

#### Activity Description:

The teacher chooses a form of poetry appropriate for the age level of students (see Poetry Types examples in resources below). Each child writes a poem using that style of poetry. The teacher may choose to tell the students the topic of their poems or let the students brainstorm a list of possible things in space their poems could be about.

Students may also choose to illustrate their poems.

### Description of Instructional Activities

1. Students learn more facts about the Skylab missions by working with a partner to view the National Air and Space Museum Online Exhibit and take notes about interesting facts about each mission they find there.

[www.nasm.si.edu/exhibitions/gall14/SpaceRace/sec500/sec510.htm](http://www.nasm.si.edu/exhibitions/gall14/SpaceRace/sec500/sec510.htm)

2. View Making Meaning Video (see link in Opener above)

Students create and solve math story problems related to the Skylab Missions.

#### Activity Description:

1. Give students grade level appropriate story problems to solve and discuss their solution strategies. See example problems below for some possibilities.

K-1: If 3 astronauts went into space in each of the manned Skylab Missions, how many astronauts went into space? If astronauts were in space for 28 days during the Skylab 2 mission, how many weeks were they in space?

2-3: If Skylab 4 was in space for 84 days, how much longer was it in space than Skylab 2? Skylab 3?

If Skylab 4 was in space for 84 days, how many months is that?

4-5: If Skylab 4 was in space for 84 days, how many hours is that?

If it took 93 minutes to make one orbit around Earth, how many orbits around Earth did Skylab make in Skylab 4?

There is an amazing amount of data that was collected from these missions and untold numbers of questions that could be asked using the data collected from any of the missions.

2. Students review their notes taken above and view more facts by analyzing the data found on the Skylab Data Chart

(<http://www-pao.ksc.nasa.gov/kscpao/history/skylab/skylab-stats.htm>) to make up their own Skylab math story problems.

Students can be encouraged to illustrate their story problems, as well.

4. View The Connections Video ((see link in Opener above))

Students determine categories of activities they do in a day. Then, they create a data collection method and keep track of the amount of time they spend doing particular activities. Pick one activity and calculate how much time is spent on it per week? Per year?

## Conclusion

Students act in the same manner as Mission Scientists by figuring out how to collect and organize data about their daily activities. In an oral presentation they show their data collection methods and explain how they interpreted the data by finding out how much time they spend over a week or year doing a particular activity. Young children may adapt this lesson by organizing their data in order from greatest amount of time to least amount of time or finding out how many more minutes they spend completing one activity compared to another. They may need assistance from a family member to find out how much time it takes them to complete different activities.

## Extension Activities

Students view the Skylab Stamps found within the virtual exhibit at:

[http://www.arago.si.edu/flash/?eid=294|d\\_all=0|sf=1|sq=Skylab|s1=6|](http://www.arago.si.edu/flash/?eid=294|d_all=0|sf=1|sq=Skylab|s1=6|)

They can be encouraged to create their own design for a space related stamp and/or make up story problems related to stamp money values or age of different stamps.

For further research on other space related tools, they could view the online book *Tools in Space* found at:

<http://spaceplace.nasa.gov/en/kids/storybooks/index.shtml#> and do further research on a tool of their choice. Other books at this site may be more appropriate for Kindergarten and first grade students. They may need to have the book read orally while they view it on the screen.

## — Resources

Links:

MLI Intro, Making Meaning, and Connections Videos:

[http://smithsonian.mobilemuseums.org/educators/pg/smithsonian\\_gallery/?view=smithsonian\\_gallery&album=1897#1898](http://smithsonian.mobilemuseums.org/educators/pg/smithsonian_gallery/?view=smithsonian_gallery&album=1897#1898)

Websites to explore for more information related to Skylab

[www.nasm.si.edu/exhibitions/gall114/SpaceRace/sec500/sec510.htm](http://www.nasm.si.edu/exhibitions/gall114/SpaceRace/sec500/sec510.htm)

<http://heasarc.gsfc.nasa.gov/docs/heasarc/missions/skylab.html>

<http://www-pao.ksc.nasa.gov/kscpao/history/skylab/skylab.htm>

[http://www.smithsonianeducation.org/educators/lesson\\_plans/universe/index.html](http://www.smithsonianeducation.org/educators/lesson_plans/universe/index.html)

Data Chart:

<http://www-pao.ksc.nasa.gov/kscpao/history/skylab/skylab-stats.htm>

Online Books with Space Theme:

<http://spaceplace.nasa.gov/en/kids/storybooks/index.shtml#>

Skylab Stamps:

<http://arago.si.edu/flash/?s1=5|set=4944>

Postal Museum Online Virtual Exhibit:

[http://www.arago.si.edu/flash/?eid=294|d\\_all=0|sf=1|sq=Skylab|s1=6|](http://www.arago.si.edu/flash/?eid=294|d_all=0|sf=1|sq=Skylab|s1=6|)

## Poetry Types

The list starts with easiest types that can be used for almost any reading age and goes on to those appropriate for older students only.

Simple, four line rhyme scheme. Many patterns are possible (e.g., aabb, abab, abcb, aaaa). See examples below :

Twinkle, twinkle little star  
How I wonder what you are,  
Up above the world so high,  
Like a diamond in the sky.  
Twinkle, twinkle little star  
How I wonder what you are?

Author Unknown  
(rhyming a,a,b,b)

### Mary's Rocket Ride

Mary rode in a rocket  
It blasted into space  
Its job was to fly to Skylab and dock it  
To learn more to aid the human race.

By Jackie Cooke  
(rhyming a,b,c,b)

### Cinquain

A short poem consisting of five, usually unrhymed lines containing respectively two, four, six, eight and two syllables:

Pluto

Little,  
Demoted dwarf,  
Charon, Hydra, and Nix  
At edge of the solar system  
Pluto.

By: Jackie Cooke

### Haiku

A Japanese poem of 17 syllables arranged in three lines of 5, 7 and 5 syllables:

Star Gazing

Walking empty streets  
Gazing at the stars above,  
Gems in the night sky.

By: Jackie Cooke

### Free Verse

Rhymed or unrhymed verse made free of conventional and traditional limitations and restrictions in regard to metrical structure. Cadence, especially that of common speech, is often substituted for regular metrical pattern:

Ode to Skylab

It was called Skylab,  
A science lab beyond the clouds.

From answers learned there, the world was wowed.  
 Skylab verified,  
 That we could live in space.  
 It is evident even today,  
 That Skylab was a successful entrant  
 In the technology race.  
 By: Jackie Cooke

**Sonnet**

A poem of 14 lines, usually in iambic pentameter (stress is on the 2nd, 4th, 6th, 8th and 10th syllables of each line), restricted to a definite rhyme scheme.

-- Italian, or Petrarchan, sonnet is composed of an octave and a sestet (rhyming abbaabba cdecde)

-- Elizabethan, or Shakespearean, sonnet is composed of three quatrains and a couplet (rhyming abab cdcd efef gg)

Example of a modern day Italian sonnet about the sun.

So permanent you seem; you light my sky,  
 You guide me in my orbiting through space,  
 I wait your dawning in this dismal place  
 Of darkness where we all must live and die.  
 When faced with night and asking how and why,  
 Your glow bestirs a humor and a grace,  
 I spin, then, at an optimistic pace,  
 In love with living. Your warmth makes me fly.  
 By George Motisher






**Poetry Rubric**

Here is an example of a rubric you could use to assess students' space poetry.

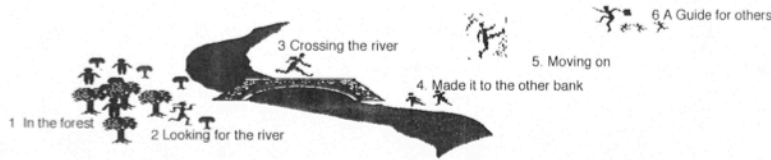
Poetry Writing Traits			
	1 - Novice	3 - Proficient	5 - Advanced
Ideas	<ul style="list-style-type: none"> <li>Idea is unclear or unfocused</li> <li>May include random ideas.</li> </ul>	<ul style="list-style-type: none"> <li>Focuses on a single idea.</li> <li>Idea may be understandable, but still fuzzy</li> </ul>	<ul style="list-style-type: none"> <li>Clear focus on an idea, feeling, or experience</li> <li>Uses specific, concrete images</li> </ul>
Organization	<ul style="list-style-type: none"> <li>Sequencing is illogical, or not evident.</li> </ul>	<ul style="list-style-type: none"> <li>Sequencing is logical</li> <li>The poetry form has been followed with few or no errors.</li> </ul>	<ul style="list-style-type: none"> <li>Uses a logical, effective organizational strategy.</li> <li>Poem uses form to interpret idea creatively and effectively</li> </ul>
Word choice	<ul style="list-style-type: none"> <li>General or ordinary words</li> <li>Attempts new words with limited success that may include inappropriate words or limited use of vocabulary</li> </ul>	<ul style="list-style-type: none"> <li>Attempts to use descriptive words to create images</li> <li>Tries to use words for specificity</li> <li>Experiments with new and different words with some success</li> </ul>	<ul style="list-style-type: none"> <li>Precise, original, fresh words</li> <li>Creates vivid images</li> </ul>

# Grade Level Appropriate Math Problem Solving Scoring Guides

## Primary Analytic Scoring Guide

I. Dissect the Problem	II. Show the Work	III. Explanation	IV. Check	Final Answer
Show that I understand the question. 	Show how I work to the solution. 	Tell how and why I did the work. 	Check to see if my answer works. 	Identify the answer. 
Did I show what I think the problem is asking me to do? • Underline important words • Explain in my own words what I think I am asked to do	Did I show what I used to help solve the problem? • Pictures • Numbers • Words • Models	Does my work explain what I did from start to finish? • Clear path • Why I think I am right	Did I show how I checked my answer? • Correct math • Answer the question in context • Look for more answers that could work • Look from a different way	Did I label my solution clearly? • Arrows • Words • Box

### What My Score Means



2010-2011

### Young Reader's Mathematics Scoring Guide Draft

2010-2011

Process Dimensions	5 / 6**	4	3	1 / 2*
<b>Making Sense of the Problem</b> <i>Understand the ideas and change them into a math task</i>  <b>WHAT?</b>	<ul style="list-style-type: none"> <li>The problem is changed into complete ideas that work and is connected to other math ideas</li> <li>The ideas are connected to other math ideas.</li> </ul>	<ul style="list-style-type: none"> <li>The problem is changed into math ideas that work</li> </ul>	<ul style="list-style-type: none"> <li>Parts of the problem are changed into math ideas that can work or parts of the prompt are understood</li> </ul>	<ul style="list-style-type: none"> <li>Only a small amount of the problem is understood <b>OR</b></li> <li>No understanding is shown</li> </ul>
<b>Representing and Solving the Problem</b> <i>Choose the strategy that works best for this problem.</i>  <b>HOW?</b>	<ul style="list-style-type: none"> <li>A complete plan using pictures, charts, words graphs or numbers that may contain more than one step</li> </ul>	<ul style="list-style-type: none"> <li>A plan using pictures, charts, words, graphs, or numbers is used to solve the problem</li> </ul>	<ul style="list-style-type: none"> <li>The plan could solve some parts of the problem or the plan has a few missing parts</li> </ul>	<ul style="list-style-type: none"> <li>The plan has many missing parts, cannot work <b>OR</b></li> <li>No work is shown</li> </ul>
<b>Communicating and Reasoning</b> <i>Use the language of math (words, equations, graphs, charts) to make your ideas clear to others.</i>  <b>WHY?</b>	<ul style="list-style-type: none"> <li>The steps to complete the work are very clear</li> <li>An explanation of why is given.</li> </ul>	<ul style="list-style-type: none"> <li>The path through the work can be followed</li> <li>Some attempt is made to explain why</li> </ul>	<ul style="list-style-type: none"> <li>The path is not clear or doesn't show much of the work</li> </ul>	<ul style="list-style-type: none"> <li>The steps to complete the work are just started <b>OR</b></li> <li>There are no steps shown</li> </ul>
<b>Accuracy</b> <i>The answer is...</i>  <b>WHERE?</b>	<ul style="list-style-type: none"> <li>The solution is correct and may be extended or shown another way.</li> </ul>	<ul style="list-style-type: none"> <li>The answer given is correct</li> </ul>	<ul style="list-style-type: none"> <li>The answer given may have a small error but the important parts work fine</li> </ul>	<ul style="list-style-type: none"> <li>The answer given is not correct</li> <li>Is not finished <b>OR</b></li> <li>It doesn't match the work</li> </ul>
<b>Reflecting and Evaluating</b> <i>Check your answer and explain why it makes sense.</i>  <b>CHECK?</b>	<ul style="list-style-type: none"> <li>It is clear a second look has been taken to completely check the work</li> <li>A new way may be used for the check</li> </ul>	<ul style="list-style-type: none"> <li>The problem is solved a second time to check the work</li> </ul>	<ul style="list-style-type: none"> <li>Some but not all the work is checked</li> </ul>	<ul style="list-style-type: none"> <li>The check doesn't work <b>OR</b></li> <li>Is barely started <b>OR</b></li> <li>Is not there at all</li> </ul>

## Project Grading Points

### Organizing and Data Collection

	(Total: 90 points)
Clear Activity Categories	<input type="text"/> /10
Accurate Time Recording w/ multiple units	<input type="text"/> /10
Data organized and aesthetically pleasing	<input type="text"/> /25
Neat handwriting throughout	<input type="text"/> /10
Generating Questions from Data	<input type="text"/> /10
Solution of choice question	<input type="text"/> /25

### Oral Presentation

	(Total: 110 points)
Introduction	<input type="text"/> /10
Explanation and analysis of data displayed	<input type="text"/> /25
Identifying question solved	<input type="text"/> /10
Explaining how student knows he or she is right	<input type="text"/> /10
Answer labeled in context	<input type="text"/> /5
Speaking loud enough	<input type="text"/> /10
Making eye contact	<input type="text"/> /10
Appearing poised and confident	<input type="text"/> /10
Interesting and engaging	<input type="text"/> /5
Conclusion answers So What?	<input type="text"/> /15
Extending Beyond Assignment	<input type="text"/> /50

**Total**