

Identifying and Counting Craters

Target Standard

Number and Operations

- Count with understanding and recognize “how many” in sets of objects
- Develop understanding of the relative position and magnitude of whole numbers, ordinal, and cardinal numbers and their connections
- Understanding the effects of adding and subtracting whole numbers
- Develop and use strategies for whole number computations, with a focus on addition and subtraction
- Use a variety of methods and tools to compute, including objects, mental computation, estimation, paper and pencil, and calculators

Related Standard

Problem Solving

- Build new mathematical knowledge through problem solving
- Solve problems that arise in mathematics and in other contexts
- Apply and adapt a variety of appropriate strategies to solve problems
- Monitor and reflect on the process of mathematical problem solving

Prior Knowledge

- K: understanding one to one correspondence, number writing; number sense

- 1st grade: addition skills, comparison of the size of two sets, estimation
- 2nd grade: multiple term addition, order of numbers from least to greatest

Teaching Plan

Materials

Activity Sheet: Counting Craters Alpha Task, Beta Task, and Gamma Task

Implementation

Kindergarten

Counting Craters Activity Sheet (Alpha Task)

How many craters do you see in these pictures of the Moon? Count the craters and write the number on the line under the pictures. Circle the largest number.

Teacher Questions:

1. What is a crater?
2. Which picture has the most craters?
3. Which picture has the least number of craters?
4. Do any pictures have the same number of craters?
5. Which picture has the biggest crater?

1st Grade

Counting Craters Activity Sheet (Beta Task)

Estimate the number of craters in each picture of the Moon. Write that number on the line above each picture. Now, count the craters in each Moon picture and write that number on the line below each picture.

Teacher Questions:

1. For what pictures was your estimation of the number of craters higher than the count?
2. For what pictures was your estimation of the number of craters lower than the count?
3. What strategies did you use to make your estimations?
4. Why do you sometimes want to estimate a number instead of counting the total?

Add the number of craters for each row and write the answers in the circles.

Teacher Questions:

1. Which row has the most craters?
2. How many more?

2nd Grade

Counting Craters Activity Sheet (Gamma Task)

Estimate the number of craters in this large picture of the Moon. Write that number on the line above each picture. Now, count the number of craters in each quarter picture of the Moon, and write that number on the line below each quarter picture. Write a number sentence to find the total number of craters.

Teacher Questions:

1. What strategy did you use to estimate the number of craters in the Moon picture?
2. What strategy did you use to find the total number of craters in the Moon picture?
3. Did anybody find any “broken” craters? How did you count them?
4. Do you think this number is all of the craters on the Moon? Why or why not?
5. Why do you sometimes want to estimate a number instead of counting the total?

Extensions

1. Have each student write a story problem about the craters of the Moon. Illustrate the story problem, and make a classroom book.
2. A long time ago, people used to believe there was a Man in the Moon! That is because the craters on the Moon made it look like the Moon had a face. The next time there is a Full Moon, see if you can see the face of the Man in the Moon. Draw what you see.

Resources

For Teachers:

[A Man on the Moon](#), by Andrew Chaikin; ISBN 0 14 02.7201 1

[“All We Did Was Fly To The Moon”](#), by the astronauts, as told to Dick Lattimer; ISBN 0-9611228-0-3

[The Last Man on the Moon](#), by Eugene Cernan; ISBN 0-312-19906-6

[Moon Shot](#), By Alan Shepard and Deke Slayton; ISBN 1-878685-54-6

[John Glenn: A Memoir](#), by John Glenn; ISBN 0-533-11074-8

[Men From Earth](#), by Buzz Aldrin; ISBN 0-533-05374-4

[We Seven](#), by the Astronauts Themselves (the Mercury 7)

[Back In Orbit](#), by Scott Montgomery and Timothy R. Gaffney; ISBN 1-56352-525-9

[Apollo](#), by Alan Bean; ISBN 0-86713-050-4

[Full Moon](#), by Michael Light; ISBN 0-375-40634-4

[NASA & The Exploration of Space](#), by Roger D. Launius; ISBN 1-55670-696-0

For Students:

[Spacebusters: The Race to the Moon](#), by Philip Wilkinson; ISBN 0-7894-2961-6

[Project Apollo](#), by Diane M. and Paul P. Sipiera; ISBN 0-516-26273-4

[Moonwalk: The First Trip to the Moon](#), by Judy Donnelly; ISBN 0-394-82457-1

[Finding Out About Sun Moon and Planets](#), by Usborne Explainers; ISBN 0-86020-580-0

[Eye On the Universe: The Moon](#), by Niki Walker; ISBN 0-86505-689-7

[Armadillo Ray](#), by John Beifuss; ISBN 0-8118-0334-1

[Tales of the Shimmering Sky](#), retold by Susan Milord; ISBN 1-885593-01-5

Moon Was Tired of Walking On Air, by Natalia M. Belting; ISBN 0-395-53806-8
Regards to the Man in the Moon, by Ezra Jack Keats; ISBN 0-689-71160-3
The Man in the Moon, by Christine Price; ISBN 0-8172-6428-0
Grandpa Takes Me to the Moon, by Timothy R. Gaffney; ISBN 0-688-13938-8
Rock-a-Bye Moon, by Christine Price; ISBN 0-8172-6427-2
Moontellers, by Lynn Moroney; ISBN 0-87358-601-8
The Moon Book, by Gail Gibbons; ISBN 0-590-14905-9

Web Sites:

Moon:

<http://seds.lpl.arizona.edu/nineplanets/psc/fullmoons.html>
<http://www.space.com/scienceastronomy/solarsystem/moon-ez.html>
<http://www.seds.org/~rme/lunar.html>
[http://spacelink.nasa.gov/Instructional.Materials/Curriculum.Support/Space.Science/Our.Solar.Sy
stem/Earth's.Moon/.index.html](http://spacelink.nasa.gov/Instructional.Materials/Curriculum.Support/Space.Science/Our.Solar.System/Earth's.Moon/.index.html)
<http://seds.lpl.arizona.edu/nineplanets/nineplanets/luna.html>
<http://lunar.arc.nasa.gov/education/tg/teach1.html>
[http://www.windows.umich.edu/cgi-
bin/tour.cgi?link=/the_universe/uts/moon2.html&sw=false&sn=4444&edu=mid&a
mp;cdp=/windows3.html&cd=false&frp=/windows3.html&tour=&fr=f](http://www.windows.umich.edu/cgi-bin/tour.cgi?link=/the_universe/uts/moon2.html&sw=false&sn=4444&edu=mid&cdp=/windows3.html&cd=false&frp=/windows3.html&tour=&fr=f)

Lunar Samples:

<http://www-curator.jsc.nasa.gov/>
http://cass.jsc.nasa.gov/expmoon/Apollo11/A11_Samples_tools.html
<http://www-curator.jsc.nasa.gov/lunar/lunar.htm>

Impact Craters:

http://www.soest.hawaii.edu/SPACEGRANT/class_acts/CrateringDoc.html

NAME: _____

Counting Craters Worksheet - Alpha Task









NAME: _____

Counting Craters Worksheet - Beta Task

Apollo

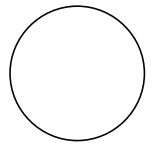


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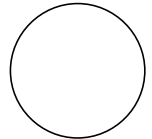
Atlantis

Discovery



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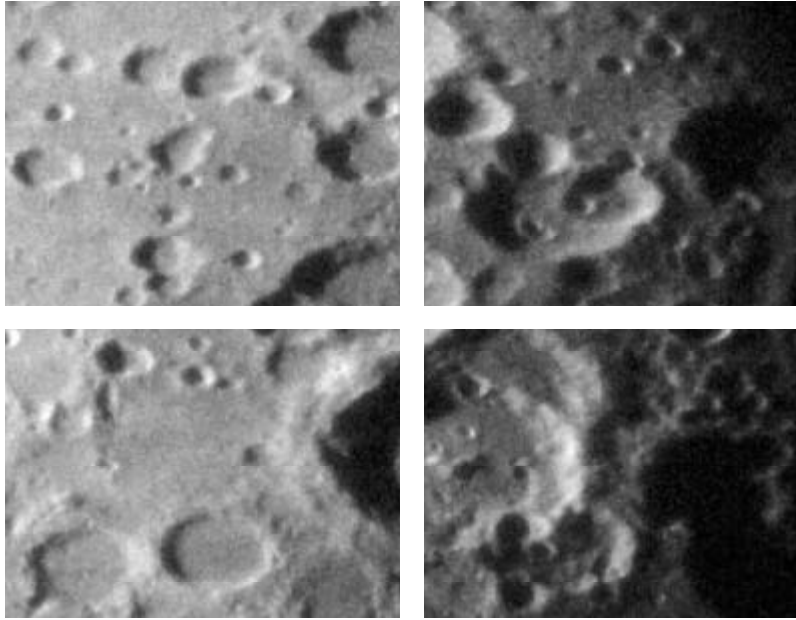
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Counting Craters Worksheet – Gamma Task

Estimation: _____



Write a number sentence to find the total number of craters: