

worldmoonproject.org



Student Handbook

September - December 2017



June 2017

Dear Students,

Welcome to the World MOON Project. For the next few months, students in several countries along with college students at numerous universities will be studying the Moon together.

At first you and other students in your class will observe the Moon every day and record those observations. We hope that about once each week you and the other students in your class will have a class discussion to report and compare the observations you have made. Are you making the same observations? Or are there significant differences in what you are seeing?

After you have been looking at the Moon for a while, we hope you will look for patterns in your observations. For example,

- Does the Moon stay the same shape from day to day?
- Can it always be found in the same place?
- Is it visible only at night?

Starting in October, you will write about the Moon and share your writing, via the Internet, with students from other parts of the world. When you read what they write and discuss in class what you and your classmates have read, you should be able to figure out what the Moon is doing from a global perspective.

While you are making those observations, comparing your observations with others in your class, and finding patterns in your observations, we hope you also will talk with adults about the Moon. We hope they will join you in making observations. We hope you and they will talk about how the Moon is portrayed in everyday conversation, music, poetry, movies, and literature. Do they have any special memories about the Moon? Are there any stories or songs or movies they know about the Moon?

You have an important responsibility to collect and share accurate information so we can learn together.

Welcome. We're glad you are part of the World MOON Project.

Walter S. Smith
Director
World MOON Project
Texas Tech University
Lubbock, Texas



On the pages where you report the shape of the Moon each day, in the circle please **blacken** the part of the **Moon** you see (for example, ● is a full Moon and ☾ is a crescent).

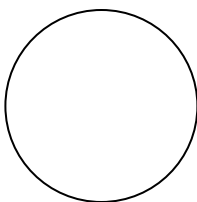
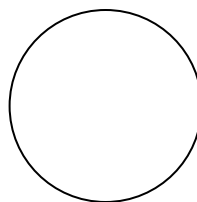
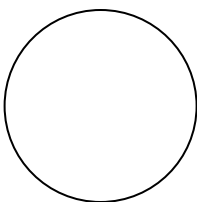
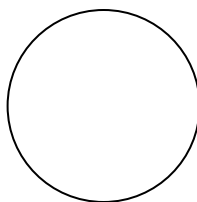
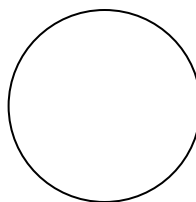
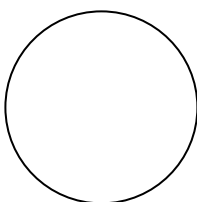
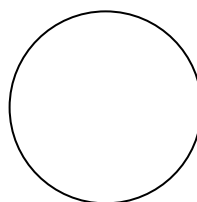
If you can't see the Moon on a particular day, write "too many clouds" or whatever was the reason you couldn't see the Moon that day.

There are two sets of spaces in which to record observations for each week. In the top set of spaces labeled "My Observations," record what you observe each day. In the bottom set of spaces labeled "Classroom Consensus Observations," record what your class agrees was the shape and location of the Moon each day.

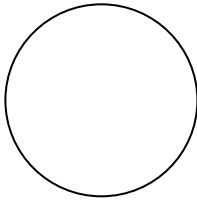
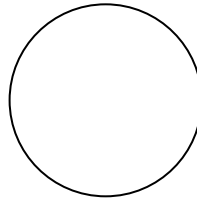
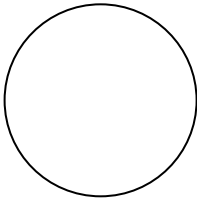
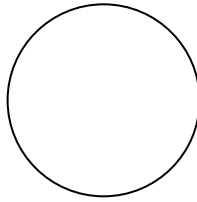
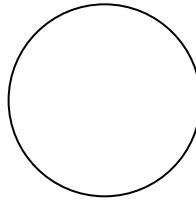
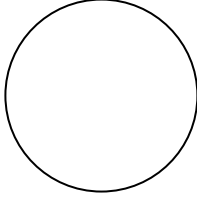
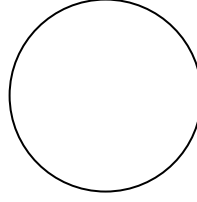
Moon Thoughts

Before you start observing the Moon, in this space write as many things as you can think of that you know about the Moon.

My Observations

<p>9/11</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>9/12</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>9/13</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>9/14</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>9/15</p>  <p>Time _____ Direction _____ Angle _____</p>
<p>9/16</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>9/17</p>  <p>Time _____ Direction _____ Angle _____</p>	<p><i>Question of the week:</i> Have you been able to see the Moon this week? If you have seen it, when and where have you had to look?</p>		

Classroom Consensus Observations

<p>9/11</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>9/12</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>9/13</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>9/14</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>9/15</p>  <p>Time _____ Direction _____ Angle _____</p>
<p>9/16</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>9/17</p>  <p>Time _____ Direction _____ Angle _____</p>			

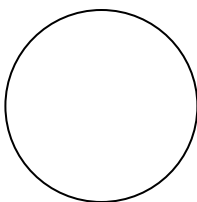
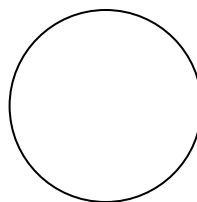
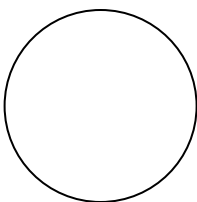
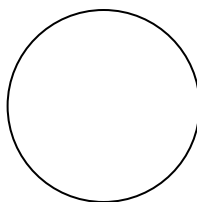
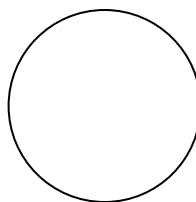
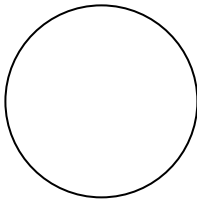
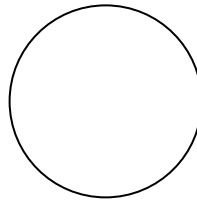
Moon Thoughts

In this space jot down some things you've learned about the Moon in the last week. Include drawings to help you convey what you want to say. Here are some things to think about.

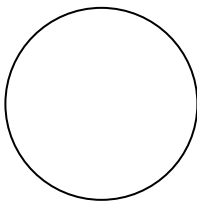
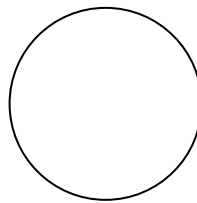
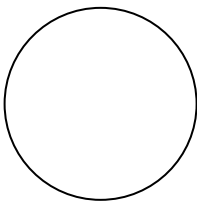
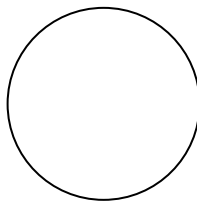
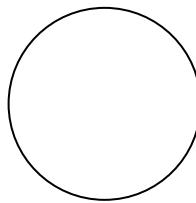
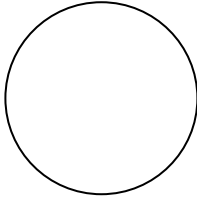
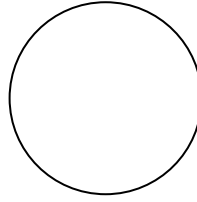
Draw the Moon as it appeared to you on about September 11, September 13, and September 15.

- Did the Moon remain the same shape over the last week?
- Did you always see the Moon in the same location?

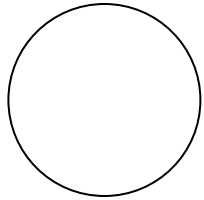
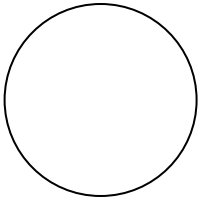
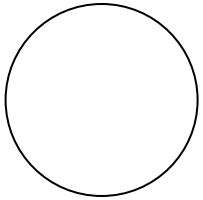
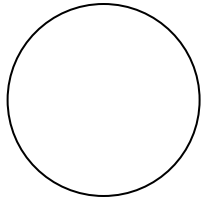
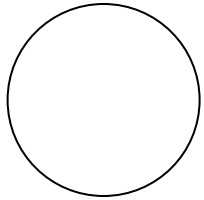
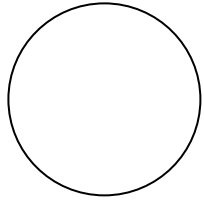
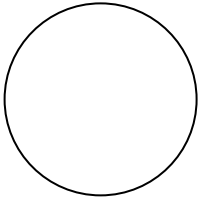
My Observations

<p>9/18</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>9/19</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>9/20</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>9/21</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>9/22</p>  <p>Time _____ Direction _____ Angle _____</p>
<p>9/23</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>9/24</p>  <p>Time _____ Direction _____ Angle _____</p>	<p><i>Question of the week:</i> Has the Moon remained the same shape all week? Could you see the Moon this week at 7 PM? Could you see it in the morning on the way to school?</p>		

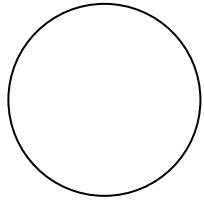
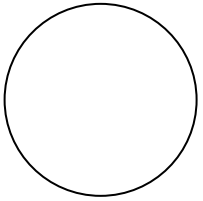
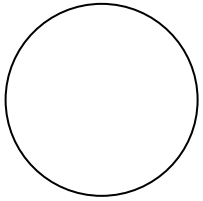
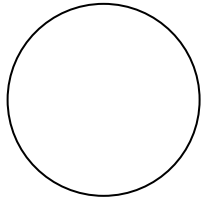
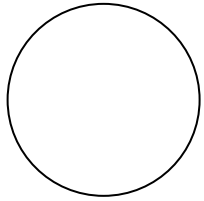
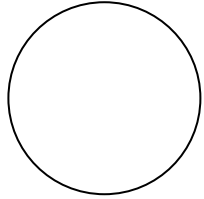
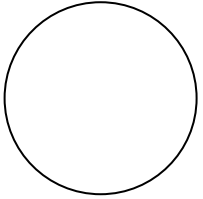
Classroom Consensus Observations

<p>9/18</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>9/19</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>9/20</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>9/21</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>9/22</p>  <p>Time _____ Direction _____ Angle _____</p>
<p>9/23</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>9/24</p>  <p>Time _____ Direction _____ Angle _____</p>			

My Observations

<p>9/25</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>9/26</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>9/27</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>9/28</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>9/29</p>  <p>Time _____ Direction _____ Angle _____</p>
<p>9/30</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/1</p>  <p>Time _____ Direction _____ Angle _____</p>	<p><i>Question of the week:</i> Has the Moon remained the same shape all week? Could you see the Moon this week at 7 PM? Could you see it in the morning on the way to school?</p>		

Classroom Consensus Observations

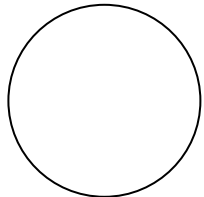
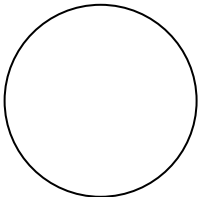
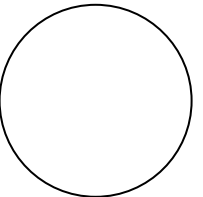
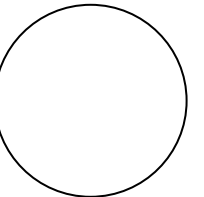
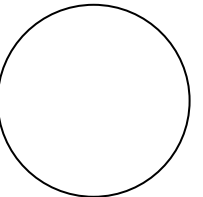
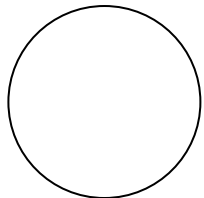
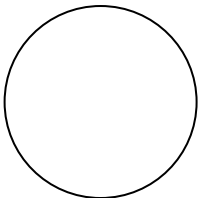
<p>9/25</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>9/26</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>9/27</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>9/28</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>9/29</p>  <p>Time _____ Direction _____ Angle _____</p>
<p>9/30</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/1</p>  <p>Time _____ Direction _____ Angle _____</p>			

Moon Thoughts

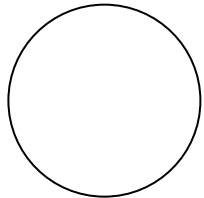
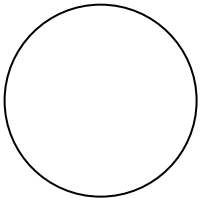
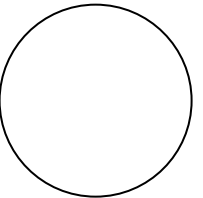
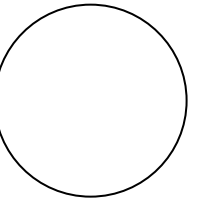
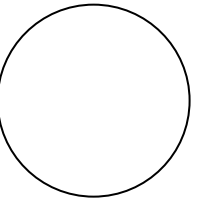
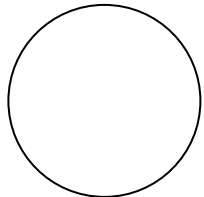
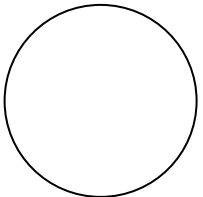
In this space jot down some things you've learned about the Moon since you started to record your observations in this handbook. Include drawings to help you convey what you want to say. Here are some things to think about.

- Draw the Moon as it appeared to you on about September 22, September 26 and September 29.
- Did the Moon remain the same shape during this week?
- Did you always see the Moon in the same location?

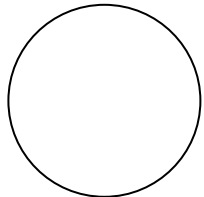
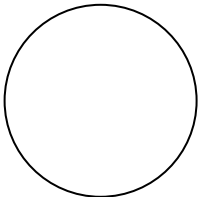
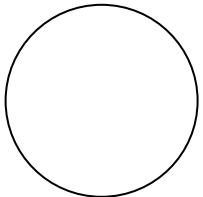
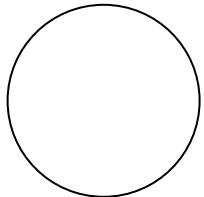
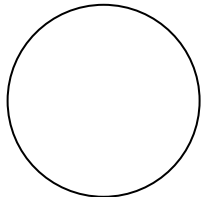
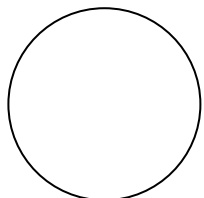
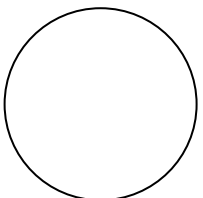
My Observations

<p>10/2</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/3</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/4</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/5</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/6</p>  <p>Time _____ Direction _____ Angle _____</p>
<p>10/7</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/8</p>  <p>Time _____ Direction _____ Angle _____</p>	<p><i>Question of the week:</i> How much has the Moon's shape changed this week? When was the last time the Moon had that same shape?</p>		

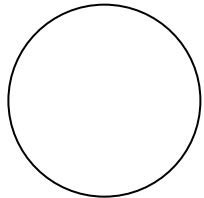
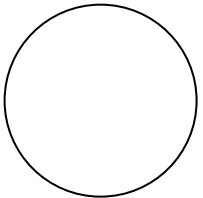
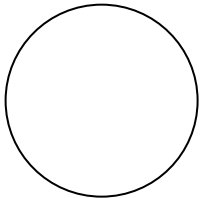
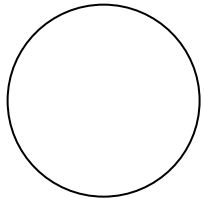
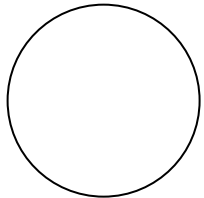
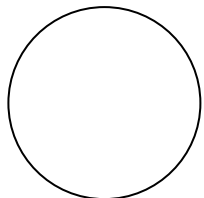
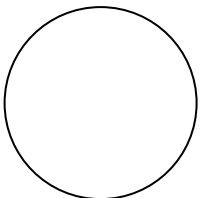
Classroom Consensus Observations

<p>10/2</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/3</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/4</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/5</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/6</p>  <p>Time _____ Direction _____ Angle _____</p>
<p>10/7</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/8</p>  <p>Time _____ Direction _____ Angle _____</p>			

My Observations

<p>10/9</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/10</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/11</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/12</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/13</p>  <p>Time _____ Direction _____ Angle _____</p>
<p>10/14</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/15</p>  <p>Time _____ Direction _____ Angle _____</p>	<p><i>Question of the week:</i> What shape did the Moon have? When it could be seen this week? When was the last time the Moon had that same shape? Was the Moon in the same location at 7 PM on Monday and Saturday?</p>		

Classroom Consensus Observations

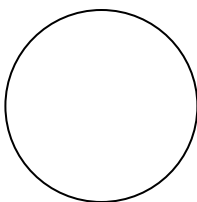
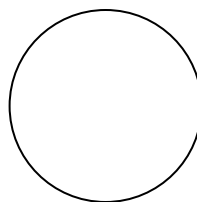
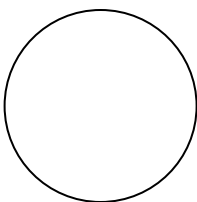
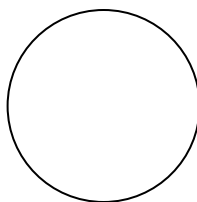
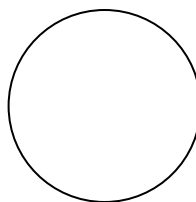
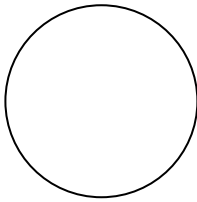
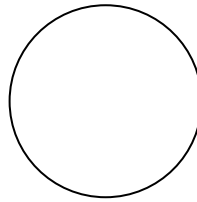
<p>10/9</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/10</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/11</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/12</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/13</p>  <p>Time _____ Direction _____ Angle _____</p>
<p>10/14</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/15</p>  <p>Time _____ Direction _____ Angle _____</p>			

Moon Thoughts

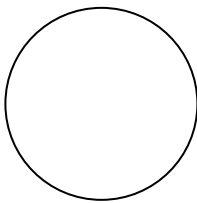
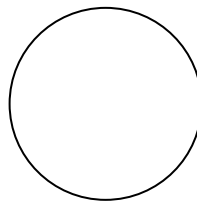
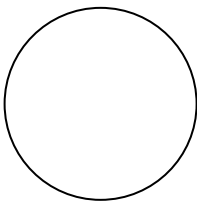
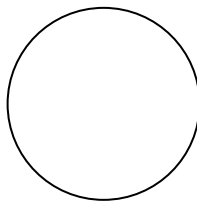
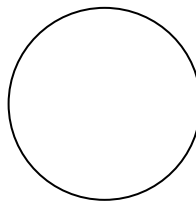
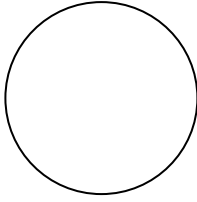
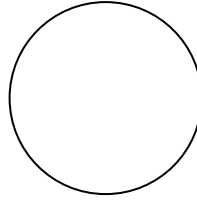
Students in both the Southern and Northern hemisphere are taking part in the World MOON Project this semester. What do you think students in the opposite hemisphere from where you live are seeing when they look at the Moon?

- For example, when you saw a full moon during September do you think the students in the opposite hemisphere also saw a full moon that day?
- Draw how the Moon appeared to you the last time you saw a first quarter moon. (Some people call this a waxing half moon.) Then draw how you think the Moon appeared to students in the opposite hemisphere on the same day. Label one drawing “Northern Hemisphere” and the other “Southern Hemisphere.” Write down the date of the day you saw the half moon that you have drawn.

My Observations

<p>10/16</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/17</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/18</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/19</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/20</p>  <p>Time _____ Direction _____ Angle _____</p>
<p>10/21</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/22</p>  <p>Time _____ Direction _____ Angle _____</p>	<p><i>Question of the week:</i></p> <p>When did the moon have the same shape in September and October?</p>		

Classroom Consensus Observations

<p>10/16</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/17</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/18</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/19</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/20</p>  <p>Time _____ Direction _____ Angle _____</p>
<p>10/21</p>  <p>Time _____ Direction _____ Angle _____</p>	<p>10/22</p>  <p>Time _____ Direction _____ Angle _____</p>			

Essay #1

Moon Writing Checklist for Essay about Observations

Submit your essay on the Internet between October 2 and October 16.

In your writing, did you describe the Moon on three different days? Specifically, did you describe the Moon:

- a. between September 21 – 23 with *September 22* being the target date,
- b. between September 25 – 27 with *September 26* being the target date, and
- c. between September 28 – 30 with *September 29* being the target date.

For each date, did you:

- state the date and time you observed the Moon that day?
- describe the Moon's shape that day?
- describe the Moon's orientation? For example, was the illuminated part of the Moon straight up and down on the right side of the Moon, or on the lower right, or lower left or what?
- describe the Moon's location in terms of its angle or number of degrees above the horizon?
- describe the Moon's location in terms of its direction? (Your teacher may ask you to use compass terms like east or west or southwest, or your teacher may ask you to write in terms of number of degrees from north. Each approach to describing direction is OK.)

Did you check your spelling, grammar and punctuation?

Follow your teacher's directions to write your observations in these two tables.

Table One

Shape of the Moon	Date 1	Date 2	Days Between

Table Two

Shape of the Moon	Date 1	Date 2	Days Between

Comparing Lunar Observations Around the World

On the Internet, read what the other students have written about their Moon observations between **September 21 – 30**. Then fill out this table (sometimes called a matrix). In the first cell in each row write the name of the student’s location (for example, Michigan; 42°N, 83° W). You might want to find that location on a map or globe. Start with the most northerly location in the first row. Then in that same row in the cell in the column headed **September 21 – 23**, write in the date and time of the student’s observation and draw the Moon’s shape (phase) observed that day by the student. Next, write where the students reported seeing the Moon (for example, in the SW sky about 45° above the horizon). Then fill in the same kind of information in the cells for **September 25 – 27** and **September 28 – 30**.

Then in the next row fill in the same kind of information from the next most northerly student. Continue in the same way for information from all the students in your group.

Location	September 21 – 23	September 25 – 27	September 28 – 30

Location	September 21 – 23	September 25 – 27	September 28 – 30

Location	September 21 – 23	September 25 – 27	September 28 – 30

FINDING GLOBAL PATTERNS

Look across each row of the above matrix.

- Does the Moon remain the same shape between **September 21 – 30** from the point of view of the student in each of the rows? (By “shape” we mean the shape of the illuminated portion of the Moon. Sometimes this shape is called “phase.”)

If you conclude that the Moon changed shape between **September 21 – 30** from the point of view of each of the students, then you have found a **pattern** in the Moon’s behavior. If you were asked to describe this pattern, you might write “The first pattern I found was that the Moon changed shape between **September 21 – 30** from the point of view of all the students.”

Look again across each row of the above matrix:

- Does the Moon change shapes between **September 21 – 30** in the same way for all the students?

When you answer this question, you are finding a second pattern in how the Moon appears to observers in various locations around the Earth. Now write a sentence or two to describe this pattern that you have found.

Continue to look across the rows for more patterns that deal with the Moon’s location on various days. Also look up and down each column to find additional patterns. Sometimes patterns deal with similarities. Sometimes patterns deal with differences. Sometimes patterns deal with the order in which things happen. Compare the Moon’s shape and location in the northern and southern hemispheres. In the space below and on the back of this page, describe these additional patterns you have found.

Essay #2

Moon Writing Checklist for Essay about Patterns

In your writing, did you:

- describe one pattern you found in how the Moon appeared to students worldwide between **September 21 – 30**?
- provide evidence that the Moon displays that pattern?
- check your spelling, grammar and punctuation?

Moon Thoughts

Talk with adults around you about what they know about the Moon or think about the Moon. For example:

- Do they think of the Moon as being romantic? Does it cause people to behave in a certain way?
- Do they know any music or art or literature or movies in which the Moon plays a part?

Essay #3

Moon Writing Checklist for Essay on Explanations

In your writing, did you:

- provide an explanation for what caused one pattern students found for how the Moon behaved between **September 21 – 30**? For example, if you said that one pattern in the Moon's behavior was that it changed shape; did you explain what caused it to change shape?
- include your rationale for the explanation you found?
- check your spelling, grammar and punctuation?

Moon Thoughts

Look back at what you wrote that you knew about the Moon before the World MOON Project began. In this space, write what you know about the Moon today. Especially focus on ideas you've learned from your own observations. Also, focus on new ideas you have learned about the Moon from communicating with others in your classroom and in other locations.

More Moon Questions

Do you have any unanswered questions about the Moon? What would you like to find out? How can you go about finding your answer?