Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Lab Night \_\_\_\_\_\_\_\_\_

The Moon (Rev Oct 2015)

**Objectives**

Understand the phases of the Moon

Be able to identify various features on the Moon. Calculate diameter.

Observe Moon if clear. Explain phrases about Moon.

Part A

OBSERVATIONS OF MOON (OUTSIDE VERSION)

**Telescope blank below refers to letter of scope you are using.**

OBJECT: Moon DATE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Low Power Sketch (7pts) High Power Sketch (7pts)

TIME:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ TIME:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

TELESCOPE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ TELESCOPE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Eyepiece: \_\_32\_mm Eyepiece: \_\_ 13\_\_\_\_mm

MAG: \_\_\_\_\_\_\_\_\_\_\_\_\_ X MAG: \_\_\_\_\_\_\_\_\_\_\_\_\_ X

(1 point each blank) (1 point each blank)

B. The Moon in our language (3 points each)

Below are words or phrases involving the Moon. . Put answer below term. You may need to do an Internet search for some terms. (3 points each)

|  |  |
| --- | --- |
| “To shoot for the Moon”“Over the Moon” comes from a nursery rhyme involving an animal going over the Moon. What is the animal?“Moonshine” (Slang meaning connected with stock car racing)“Mooning” (Slang meaning)“Moonlighting” (slang meaning, not TV show)“Once in a blue Moon” (slang meaning) |   |

C. **Find and draw 4 craters, 3 mares and 1 mountain chain in the circle below**. Use small circle for crater, large circle for mare and zigzag line for mountain**. Label with specific names not categories.**

**Also locate two of the Apollo Moon landing sites**. Label with “Apollo Landing #” (# = 11,12,14-17). Moon maps with features labeled can be found at the web sites below.

(2 points each)

# Moon Map Sites

http://www.enchantedlearning.com/subjects/astronomy/moon/Map.shtml

http://www.oarval.org/MoonMapen.htm

http://www.lunasociety.org/atlas/

http://nssdc.gsfc.nasa.gov/planetary/lunar/apolloland.html

http://www.google.com/moon/

 

**D**. Answer the following questions about the Sun & Moon. Use Internet, text or Voyager**.**

(3 points each)

1. At which location does the Sun rise first: Miami or San Francisco? (Hint which way does the Earth rotate?) \_\_\_\_\_\_\_\_\_\_

 2. How much (percent) of the Moon is always lit up by the Sun (except during a

 Lunar eclipse)? \_\_\_\_\_\_\_\_\_\_\_\_

 3. If the phase of the Moon is Full, in which direction (N,E,W,S) will it be rising

 at sunset? \_\_\_\_\_\_\_\_\_

 4. In which mare (sea) did Apollo 11 land on the Moon? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 5. The \_\_\_\_\_\_\_\_ performed the first hard (unpowered) Moon landing in 1959. A)

 European Union B) United States C) Soviet Union D) Chinese Space Agency

 6. Who is given credit for being the first to draw the Moon as seen through a telescope?

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 7. The first human to set foot on the Moon was \_\_\_\_\_\_\_\_\_\_\_\_

 8. One side of the Moon always faces the Earth. This is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rotation.

E. Finding the diameter of the Moon

1. Obtain one of the negatives from your instructor and measure the diameter in millimeters. Put results below. Return negative and ruler when finished. If negatives are not available measure the diameter of a penny.
2. Get the focal length of the Celestron 8 telescope from telescope lab report or owner’s manual technical data page. Put results below
3. Find out the average distance (d) to the Moon in kilometers (from Internet or text) today). Put results below.
4. The value of A (angle in radians) is given by A = diameter of image on film / focal length of scope. Put results below.
5. The diameter (D) of the Moon is given by D = Ad. Put your calculated value of diameter below.
6. Look up diameter of Moon (Voyager, Internet, or text). Put results below. **If your value is not close (within 10%) check for errors. Extra points will be counted off for wildly wrong answers.**

Results (3 points each)

Image Diameter (**mm**) \_\_\_\_\_\_\_\_\_\_\_\_\_

Focal Length (**mm**) \_\_\_\_\_\_\_\_\_\_\_\_\_

Distance to Moon (**km**) \_\_\_\_\_\_\_\_\_\_\_\_\_

Value of A \_\_\_\_\_\_\_\_\_\_\_\_\_

Calculated Moon Diameter (**km**) \_\_\_\_\_\_\_\_\_\_\_\_\_

“Book” Value of Diameter (**km**) \_\_\_\_\_\_\_\_\_\_\_\_\_

Part A

OBSERVATIONS OF MOON (Bad Weather Version)

As a substitute for observing outside find a labeled map and draw the features and **area** around the two features given below. Put Astronomical Union (Latin) name and arrow pointing to Straight wall. Include at least 3 craters (look at ends of Straight Wall). For Alpine Valley put Astronomical Union name and arrow pointing to Alpine Valley. Include the large crater named after a Greek philosopher and 2 other craters. (10 points each)

OBJECT: Moon

 STRAIGHT WALL ALPINE VALLEY