

Name _____

Identifying Phases of the Moon

Waxing Crescent - A little part of the moon's right side is lit.

Full Moon - The moon's entire disk is lit because the Earth is between the sun and the moon.

Waxing Gibbous - About $\frac{3}{4}$ th of the right side moon's disk is lit.

1st Quarter - The right half of the moon's disk is lit.

Waxing - Getting larger.

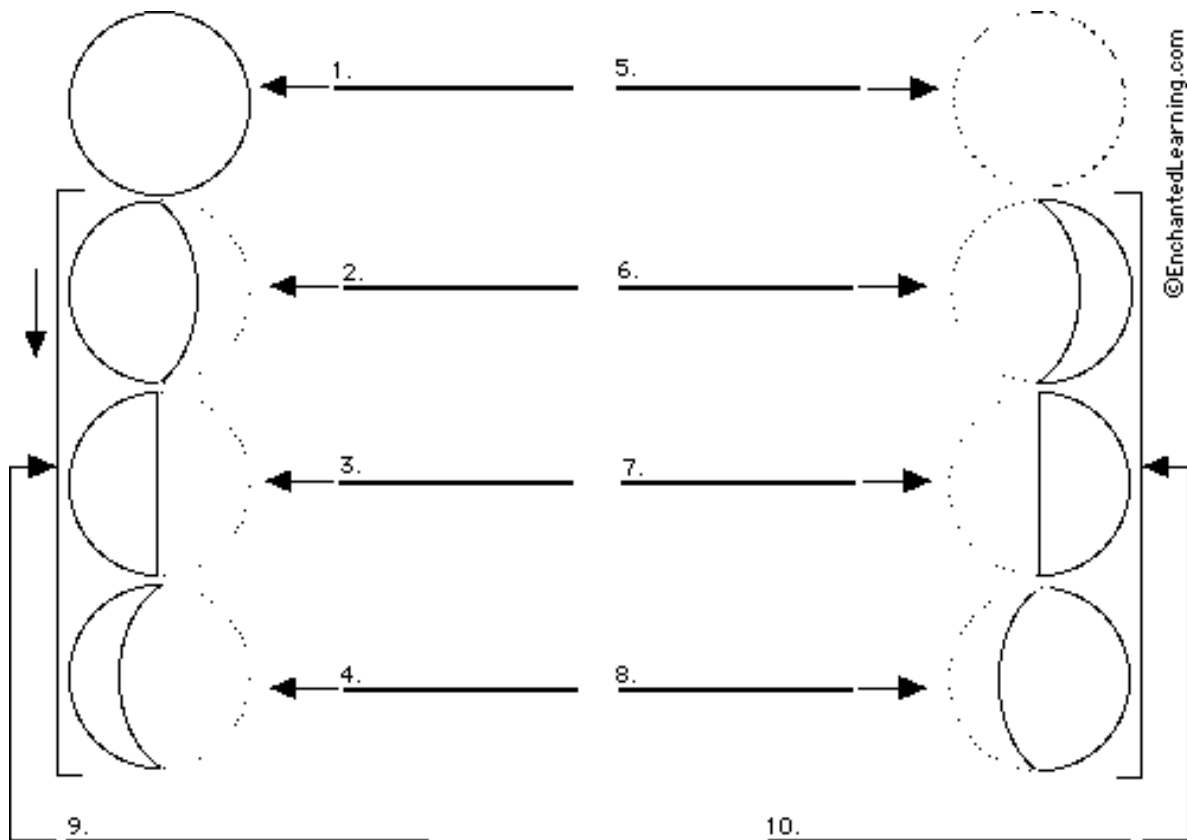
New Moon - The moon's disk facing us is dark because the moon is between the sun and the Earth.

Last Quarter - The left half of the moon's disk is lit.

Waning Crescent - A little part of the moon's left side is lit.

Waning Gibbous - About $\frac{3}{4}$ th of the left side moon's disk is lit.

Waning - Getting smaller.



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Are Moons 1-4 waxing or waning?

Are Moons 5-8 waxing or waning?

Identifying the Phases of the Moon II

Waxing Crescent - when we can see only a sliver of the moon's disk (*right-hand side*).

Full Moon - when the moon's disk is light because the Earth is between the sun and the moon

Waxing Gibbous - when we can see roughly three-quarters of the moon's disk (the *right side* of the moon is lit).

First Quarter - can see one-half of the moon's disk (at First Quarter, you see the *right half* of the moon lit [this one-quarter of the entire moon's surface]).




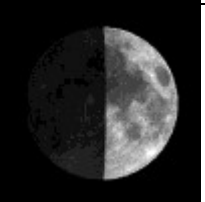
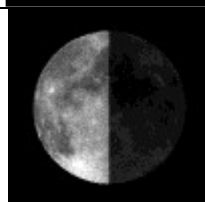



New Moon - when the moon's disk is dark (and invisible to us) because the moon is between the sun and the Earth

Last/3rd Quarter - can see one-half of the moon's disk (at Last/3rd Quarter, you see the *left half* of the moon lit [this one-quarter of the entire moon's surface]).

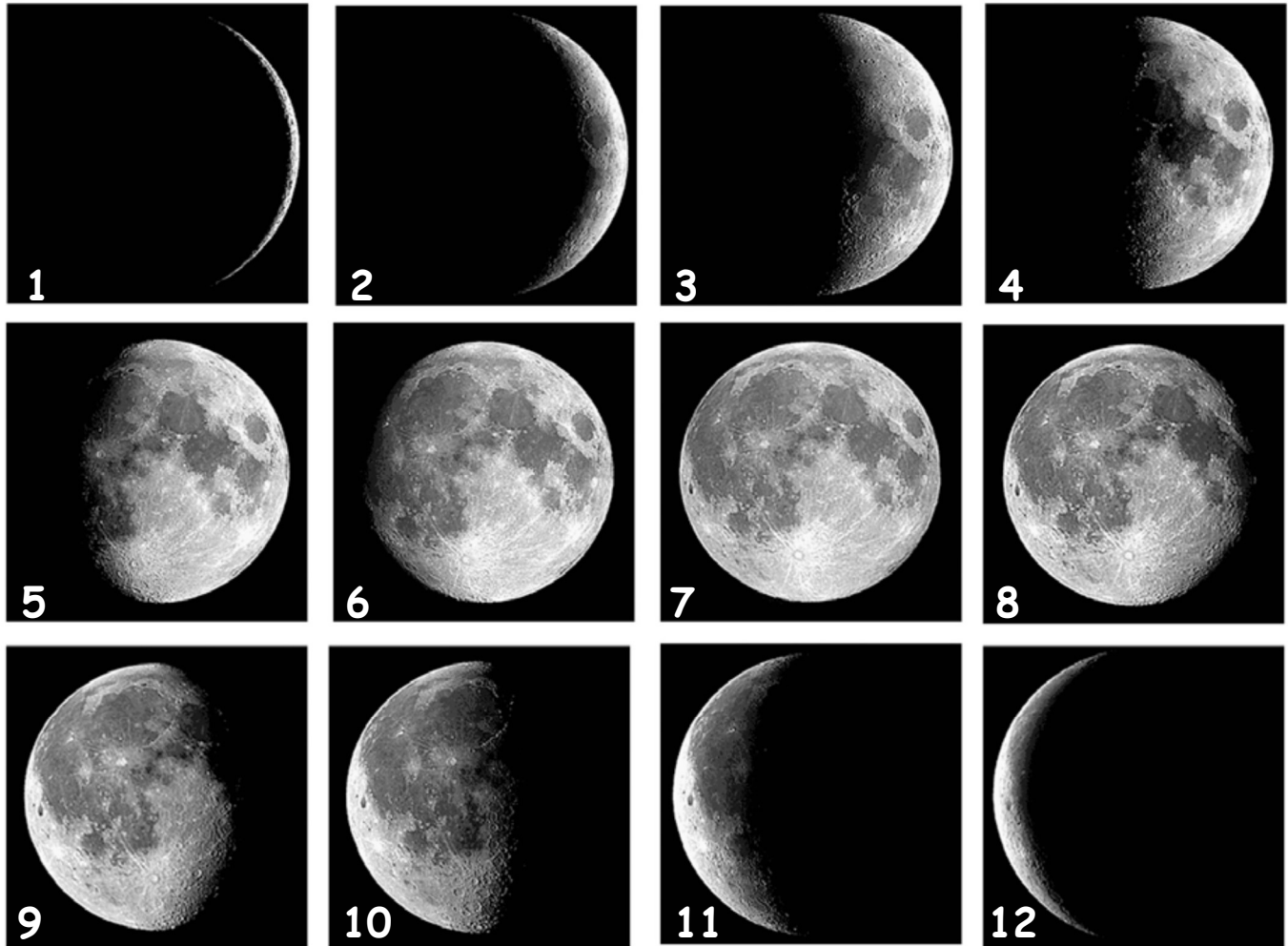
Waning Gibbous - when we can see roughly three-quarters of the moon's disk (the *left side* of the moon is lit).

Waning Crescent - when we can see only a sliver of the moon's disk (*left-hand side*).

Using the table above, write the phase of the moon shown in the picture.

Identifying Phases of the Moon III



Using the pictures above, complete the worksheet.

Which image shows First Quarter? _____ Full? _____ Third Quarter? _____

Which images are crescents? _____ Gibbous? _____

Which images are waxing? _____ through _____

Which images are waning? _____ through _____

Identifying Phases of the Moon IV

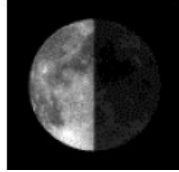
For each of the diagrams below, *identify the exact phase* of each and then *order* the phases (1 thru 8) in sequence beginning with the New Moon as #1.



A

Phase:

Order:



B

Phase:

Order:



C

Phase:

Order:



D

Phase:

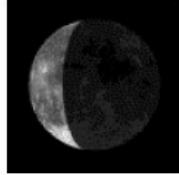
Order:



E

Phase:

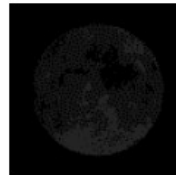
Order:



F

Phase:

Order:



G

Phase:

Order:



H

Phase:

Order:

Phases:

1. New Moon
2. Waxing Crescent
3. 1st Quarter
4. Waxing Gibbous
5. Full Moon
6. Waning Gibbous
7. Last Quarter
8. Waning Crescent

Matching Moon Phases

Read the description on the left and match it with the Moon phase on the right. Please put the letter of the Moon phase on the far left blank line and draw a line to the matching word.

Example:

1. b The opposite of dark is...

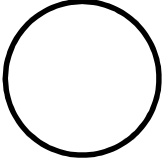
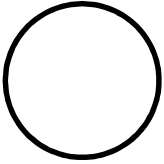
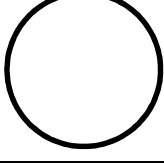
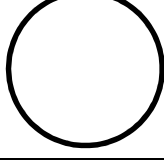
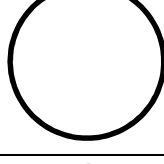
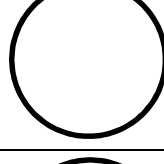
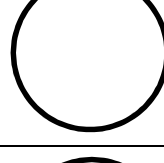
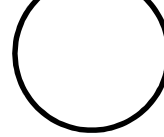
a. gold

b. light

-
- | | |
|--|--------------------------------------|
| <u> </u> 1. The Moon is almost directly between the Sun and Earth (start of cycle). | a. Waning Gibbous Moon |
| <u> </u> 2. The Moon is almost directly between the Sun and Earth (cycles starts again). | b. Full Moon |
| <u> </u> 3. A bit of the Sunlit side of the Moon shows, with the Sunlit side being on the right. | c. New Moon |
| <u> </u> 4. Two weeks have passed since the new Moon. We see the entire face of the Moon shining. | d. Waxing Crescent Moon |
| <u> </u> 5. The Moon is three-quarters of its way around Earth. | e. First Quarter Moon |
| <u> </u> 6. The Moon is a quarter of its way around Earth. | f. Waxing Crescent Moon |
| <u> </u> 7. A bit of the Sunlit side of the Moon shows with the light side being on the left. | g. Last/3 rd Quarter Moon |
| <u> </u> 8. The Moon is between full Moon and last quarter | h. Waxing Gibbous Moon |
| <u> </u> 9. The Moon is increasing in light between a first quarter Moon and a full Moon. | i. Waning Gibbous Moon |
| <u> </u> 10. The Moon is decreasing in light between a full Moon and a last quarter Moon. | j. New Moon |

Drawing Moon Phases

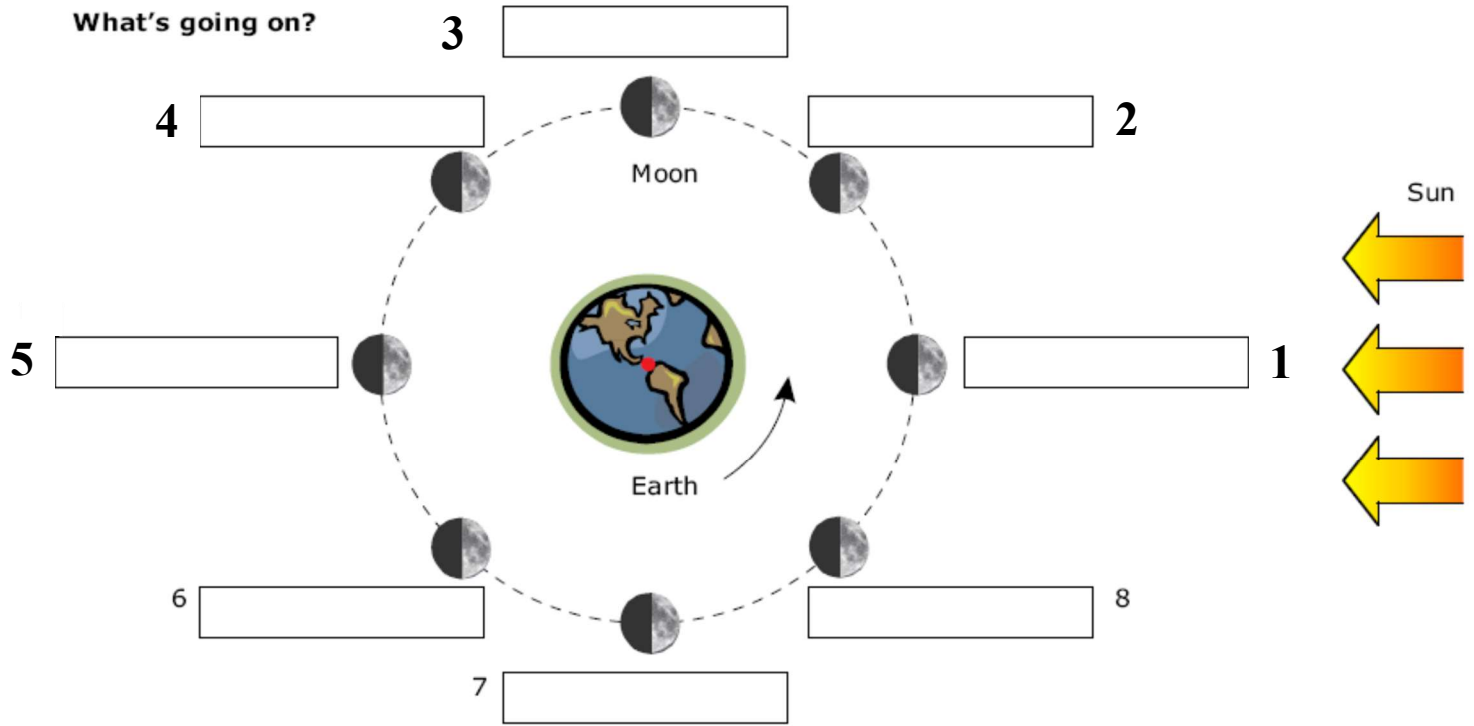
Using the description and matching words, complete worksheet by adding the drawing of that phase of the moon.

<p>1. New Moon Moon is almost directly between the sun and Earth (start of cycle).</p>	
<p>2. Waxing Crescent Moon A bit of the sunlit side of the moon shows on the right side.</p>	
<p>3. First Quarter Moon The moon is a quarter of its way around Earth. It is in its first quarter phase.</p>	
<p>4. Waxing Gibbous Moon The moon is increasing in light between a first quarter moon and a full moon.</p>	
<p>5. Full Moon Two weeks have passed since the new moon. We see the entire face of the moon shining.</p>	
<p>6. Waning Gibbous Moon The moon is decreasing in light between a full moon and a last quarter moon.</p>	
<p>7. Last Quarter Moon The moon is three-quarters of its way around Earth. It is in its last quarter phase.</p>	
<p>8. Waning Crescent Moon A bit of the waning sunlit side of the moon shows on the left side.</p>	

8 Identifying Moon Phases

Complete the diagram below.

The Phases of the Moon






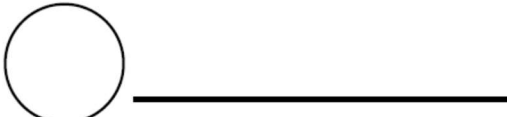

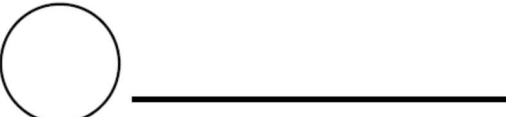

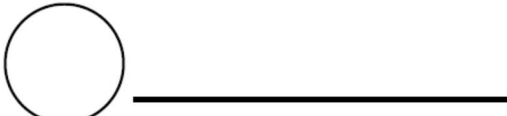

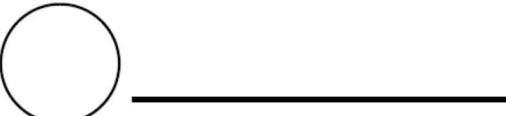


Moon Phases

- First Quarter
- Full Moon
- Waning Gibbous
- Waxing Gibbous
- Last Quarter
- New Moon
- Waxing Crescent
- Waning Crescent

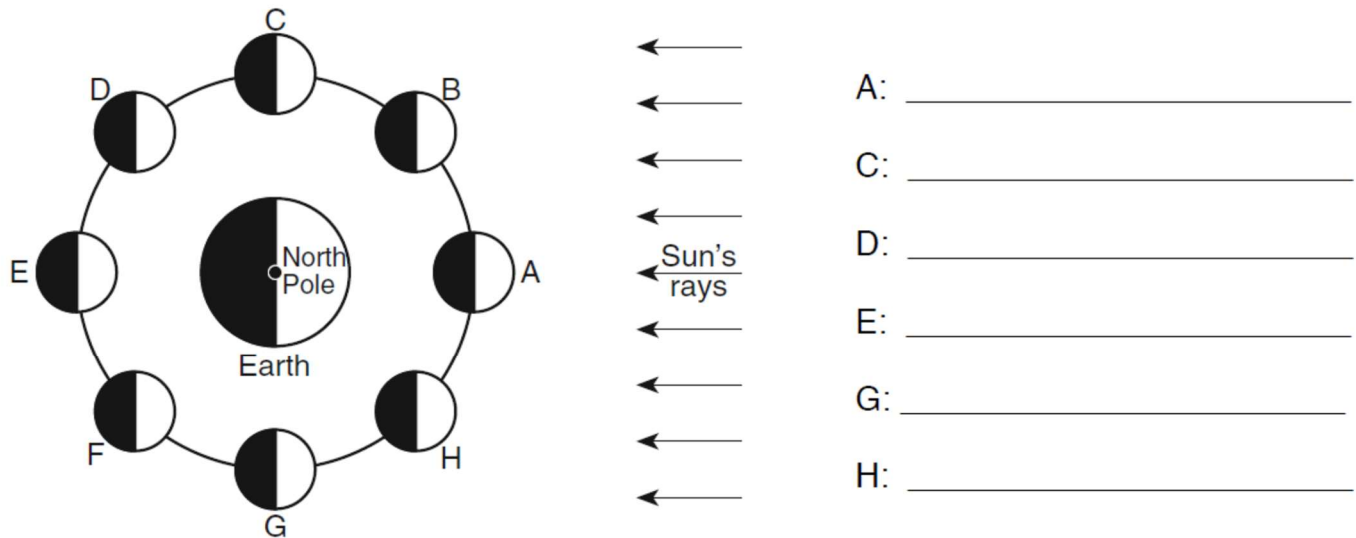
Moon Phases

In the blank circle, draw the Moon phase we would see if we were on Earth in the diagram and write the name of that Moon phase on the blank line.

Earth, we would see a waxing quarter Moon.

Use the diagram below to fill in the name of the moon phases for the position indicated by the letter



A: _____

C: _____

D: _____

E: _____

G: _____

H: _____

In the space below, draw a diagram with the Sun on the right, so that if we were on Earth we would see a waning crescent moon.

In the space below, draw a diagram with the sun on the left, so that if we were on Earth we would see a waxing quarter moon.

Lunacy

By Ken Kaye, Staff Writer

Sun-Sentinel

(Ft. Lauderdale, FL)

Aug. 11, 2003, pp. D1

The worst things in the world happen during a full Moon, right? Wrong.

For those given to lore, it might seem likely that a full Moon shone on the sinking of the Titanic in 1912, the bombing of Pearl Harbor in 1941 or the Sept. 11, 2001, terrorist attacks.

The full Moon, after all, is frequently associated with dark calamities, if not werewolves and haunted houses.

But that wasn't the case.

Surely, then, the Moon turned full on the day the stock market crashed in 1929, or that Amelia Earhart vanished in 1937 or President John F. Kennedy was assassinated in 1963, right?

Nope.

The fact is a full Moon ... has been in the sky during very few major world events in the past century, which would seem to debunk the myth that lunar forces inspire aberrant behavior or influence the course of history on Earth.

"There are always lots of reports of strange things during a full Moon. But I think if you look at overall statistics, there's no [link]," says Geoff Chester of the U.S. Naval Observatory in Washington, D.C., which has kept a careful record of full Moons dating to 1700.

A review of full Moon dates, compiled by the Naval Observatory, shows that most of the major events of our time took place during some other lunar phase.

For instance, when the atomic bomb was dropped on Hiroshima, Japan, on Aug. 6, 1945, the Moon was in its last-quarter phase. When civil rights leader Martin Luther King Jr. was assassinated in April 1968, the Moon was new. President Richard Nixon's resignation in August 1974 came six days after the full Moon.

Even for humankind's major forays into space, when you might think a full Moon would be appropriate, it was a no-show.

When Soviet cosmonaut Yuri Gagarin became the first man in space in April 1961, the Moon was in its last-quarter phase. When Neil Armstrong took the first step on the lunar surface in July 1969, it was during the gibbous waxing Moon.

Some major developments did happen close to a full Moon:

One day after a full Moon, on Feb. 20, 1962, John Glenn became the first American to orbit the Earth.

Two days after a full Moon, on Jan. 28, 1986, the space shuttle *Challenger* exploded, killing seven astronauts, including schoolteacher Christa McAuliffe.

But of the major historic milestones in the past 100 years, only D-Day, June 6, 1944, when Allied Forces stormed the beaches of northern France to begin the conquest of Germany in Europe, took place during a full Moon.

And that was deliberate: Military commanders wanted lots of Moonlight so airborne troops could land near enemy lines and Navy ships could fire on German targets with precision before dawn...

Strange Things Happen

From a global standpoint, full Moons have seen their share of mayhem:

- Ⓒ On Jan. 16, 1995, a Japan earthquake killed more than 400 people.
- Ⓒ On Nov. 11, 2000, 170 skiers and snowboarders were trapped and killed when their cable car caught fire while being pulled through an Alpine tunnel.
- Ⓒ On Jan. 28, 2002, more than 600 were killed in Nigeria, trying to flee explosions at an army weapons depot, only to drown.

Did the Moon actually provoke any of these episodes?

No way, astronomers and historians say.

"It's pure coincidence," says Travis Wright, an employee at Buehler Planetarium in Davie. "I doubt that it has anything to do with the voice of the universe telling people what to do."

On the other hand, astrologers, or those who think celestial bodies affect the course of human events, say a full Moon makes people more amorous.

"The Moon affects tides, and since our bodies are mostly water, there probably is a physical reaction," says Linea Van Horn, an accredited astrologer who works for Astrology.com, the largest astrological site on the Internet, based in San Francisco. "When it's big and beautiful in the sky, it does awaken something in us humans."

According to folklore, the full Moon usually has negative connotations, says Christine Jackson, a professor of humanities at Nova Southeastern University in Davie.

For instance, she says it is believed the full Moon triggers more suicides than usual and sends more people to mental institutions.

In fiction and film, the Werewolf needed the light of the full Moon to come to life, and Dracula had to avoid Moonlight to suck blood from his victims.

In the recent movie, *Pirates of the Caribbean*, moonlight revealed the pirates were half-dead, nothing but skeletons.

"So the light of a full Moon can sometimes show death," she says

Only a Minute

Astronomically speaking, a full Moon occurs for about one minute, when the Moon and the Sun are on opposite sides of the Earth. The reason this instant is so short is that all three bodies are in constant motion.

However, planetarium officials consider the full Moon to occur over a full day and even more loosely, over three days, says Jack Horkheimer, director of Miami Planetarium.

"The night before a full Moon and night after full Moon look that same to the untrained eye," he says.

The Moon has four major phases in a month, or more precisely, 29.5 days: New Moon, first quarter, full Moon, and last quarter.

Those phases are further broken down into waxing crescent, waxing gibbous, waning crescent and waning gibbous, based on how much of the lighted surface is visible...

Horkheimer says the myth that the Moon creates strange events arises from ancient times, when there were few cities and the countryside was extremely dark on Moonless nights.

The full Moon provided enough light for people to attend festivals and other gatherings at night. This was when they were most susceptible to thieves, pickpockets and robbers, he says.

That led to the fear that the full Moon created havoc in people's lives, he says.

Today, police can't say for sure whether crime increases during a full Moon, other than to say the "freaks" tend to come out. But then, they note such people come out the rest of [the] time as well.

"In general, in South Florida, it's irrelevant whether the Moon's in or out," says Hollywood Police Lt. Tony Rode. "We have our fair share of crime either way."

As for that term "lunatics," derived from "Luna," the Roman Moon goddess: Horkheimer says the light of a full Moon might keep people up at night, and a lack of sleep might make them cranky, if not crazy.

But does the full Moon inspire werewolves to howl or monsters to come out?

Only in people's imaginations, Horkheimer says.

"People want to believe in the mysterious, in magic and in things beyond their control," he said. "So if something happens they can say it must have been the full Moon."

Moon Facts

- › The Moon is believed to be 4.6 billion years old, the same age as the Earth.
- › It has no atmosphere or water.
- › It is comprised of a rocky material that is heavily scarred with craters from meteorite impacts.
- › The same side is permanently turned toward Earth.
- › The gravitational forces between the Earth and the Moon generate two ocean high tides per day.
- › The word "lunatic" comes from the notion that the Moon's forces could make a person go crazy.
- › The Moon is moving away from the Earth at a rate of 3.8 centimeters each year. When it formed, the Moon was about 14,000 miles from Earth; now it's about 240,000 miles away.

Moon Nicknames

- › January: Wolf Moon
- › February: Ice or Snow Moon
- › March: Storm or Worm Moon
- › April: Growing or Pink Moon
- › May: Hare or Flower Moon
- › June: Mead or Strawberry Moon
- › July: Hay or Buck Moon
- › August: Corn or Sturgeon Moon
- › September: Harvest Moon
- › October: Blood or Hunter's Moon
- › November: Snow or Beaver Moon
- › December: Cold Moon

Historic Moon Events

- › Dec. 16, 1773: Boston Tea Party; new Moon
- › July 4, 1776: Declaration of Independence; waning gibbous.
- › April 12, 1865: Surrender of the Confederate Army after the battle of Appomattox, signaling the end of the Civil War; waning gibbous
- › April 14, 1865: President Abraham Lincoln assassinated; waning gibbous

Lunacy Worksheet

1. Lunar forces inspire unusual behavior or influence the course of history on Earth.

a. True

b. False

2. Most of the major events of our time did not happen during a Full Moon.

a. True

b. False

3. According to astronomers and historians, a full Moon causing bad things to happen is pure _____.

4. A full Moon occurs _____.

5. List three Moon facts.

a. _____

b. _____

c. _____

6. During which month is the Moon called the Wolf Moon?

7. During which month is the Moon called the Ice or Snow Moon?

8. During which month is the Moon called the Storm or Worm Moon?

9. Lists the phase of the Moon for the following events:

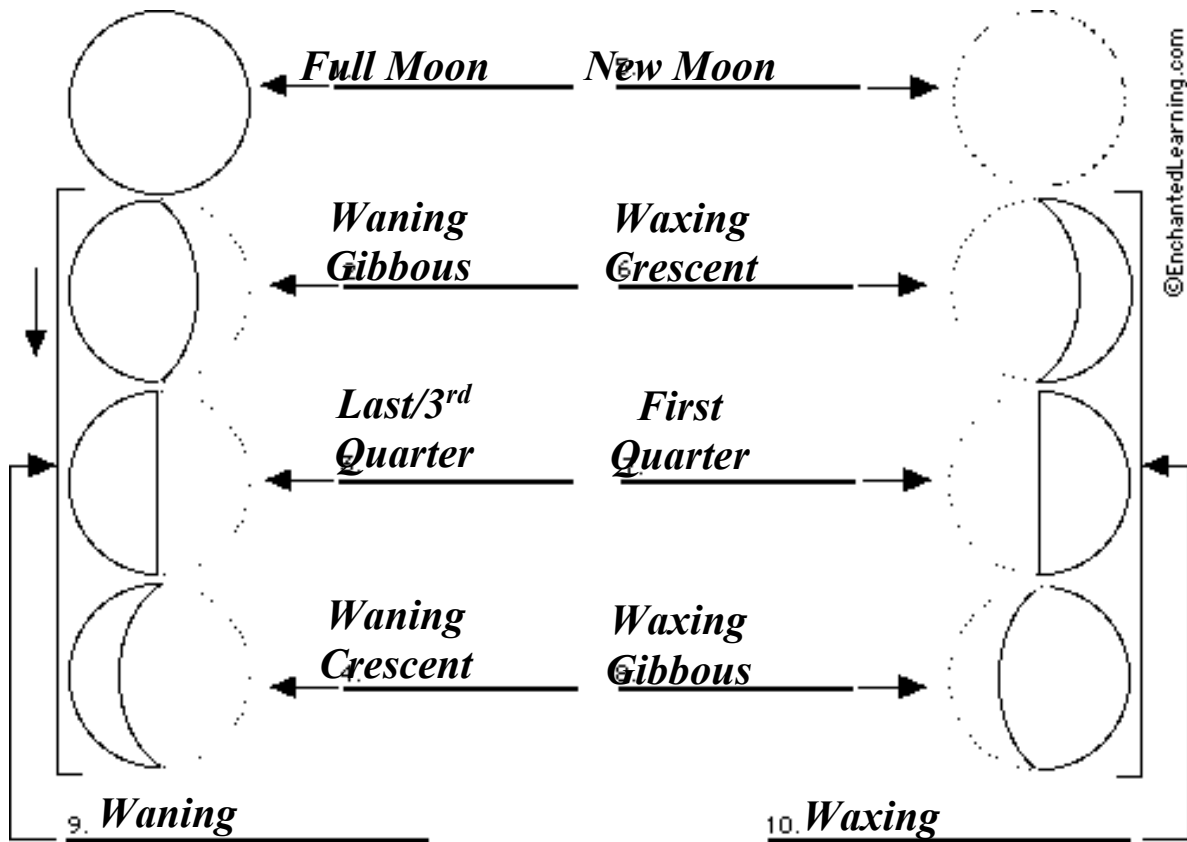
a. Boston Tea Party: _____

b. Declaration of Independence: _____

c. End of the Civil War: _____

d. President Abraham Lincoln assassinated: _____

Identifying Phases of the Moon | - Key











Are Moons 1-4 waxing or waning?

Are Moons 5-8 waxing or waning?

Identifying the Phases of the Moon II - Key

Using the table above, write the phase of the moon shown in the picture.

	<i>Waning Gibbous</i>	<i>Waning Crescent</i>	
	<i>New Moon</i>	<i>First Quarter</i>	
	<i>Last/3rd Quarter</i>	<i>Full Moon</i>	
	<i>Waxing Crescent</i>	<i>Waxing Gibbous</i>	

Identifying Phases of the Moon III - Key

Which image shows First Quarter? **4** Full? **7** Third Quarter? **10**

Which images are crescents? **1,2,3, 11,12** gibbous? **5,6,8,9**

Which images are waxing? **1** through **6**

Which images are waning? **8** through **12**

Identifying Phases of the Moon IV - Key



A

Phase:
Full Moon
Order: 5



B

Phase: Last/3rd
Quarter
Order: 7



C

Phase:
Waning
Gibbous
Order: 6



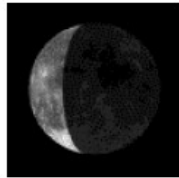
D

Phase:
Waxing
Gibbous
Order: 4



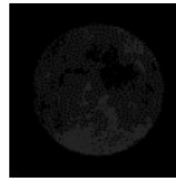
E

Phase: Waxing
Crescent
Order: 2



F

Phase: Waning
Crescent
Order: 8



G

Phase:
New Moon
Order: 1



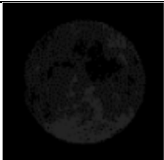







H

Phase: First
Quarter
Order: 3

Matching Moon Phases - Key

- C or J** 1. The Moon is almost directly between the Sun and Earth (start of cycle).
- C or J** 2. The Moon is almost directly between the Sun and Earth (cycles starts again).
- D** 3. A bit of the Sunlit side of the Moon shows, with the Sunlit side being on the right.
- B** 4. Two weeks have passed since the new Moon. We see the entire face of the Moon shining.
- G** 5. The Moon is three-quarters of its way around Earth.
- E** 6. The Moon is a quarter of its way around Earth.
- F** 7. A bit of the Sunlit side of the Moon shows with the light side being on the left.
- A or I** 8. The Moon is between full Moon and last quarter
- H** 9. The Moon is increasing in light between a first quarter Moon and a full Moon.
- A or I** 10. The Moon is decreasing in light between a full Moon and a last quarter Moon.

Drawing Moon Phases - Key

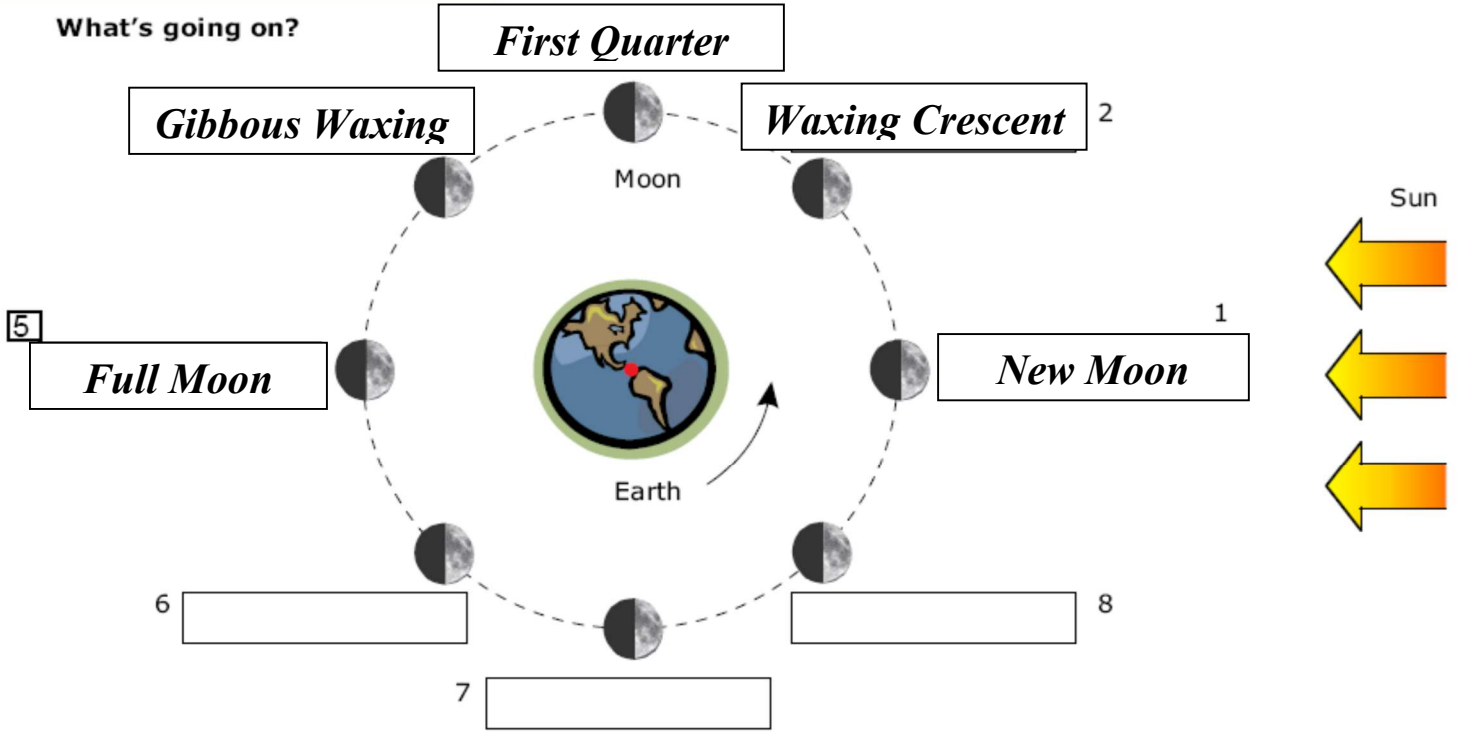
<p>1. New Moon Moon is almost directly between the sun and Earth (start of cycle).</p>	
<p>2. Waxing Crescent Moon A bit of the sunlit side of the moon shows on the right side.</p>	
<p>3. First Quarter Moon The moon is a quarter of its way around Earth. It is in its first quarter phase.</p>	
<p>4. Waxing Gibbous Moon The moon is increasing in light between a first quarter moon and a full moon.</p>	
<p>5. Full Moon Two weeks have passed since the new moon. We see the entire face of the moon shining.</p>	
<p>6. Waning Gibbous Moon The moon is decreasing in light between a full moon and a last quarter moon.</p>	
<p>7. Last Quarter Moon The moon is three-quarters of its way around Earth. It is in its last quarter phase.</p>	
<p>8. Waning Crescent Moon A bit of the waning sunlit side of the moon shows on the left side.</p>	

Waning Gibbous *Waxing Gibbous* *Waning Crescent*

Last/3rd Quarter

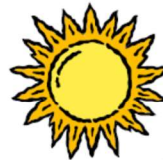
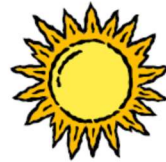
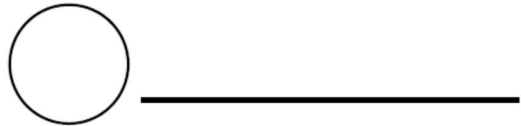
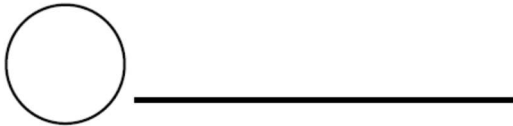
Complete the diagram below.

The Phases of the Moon

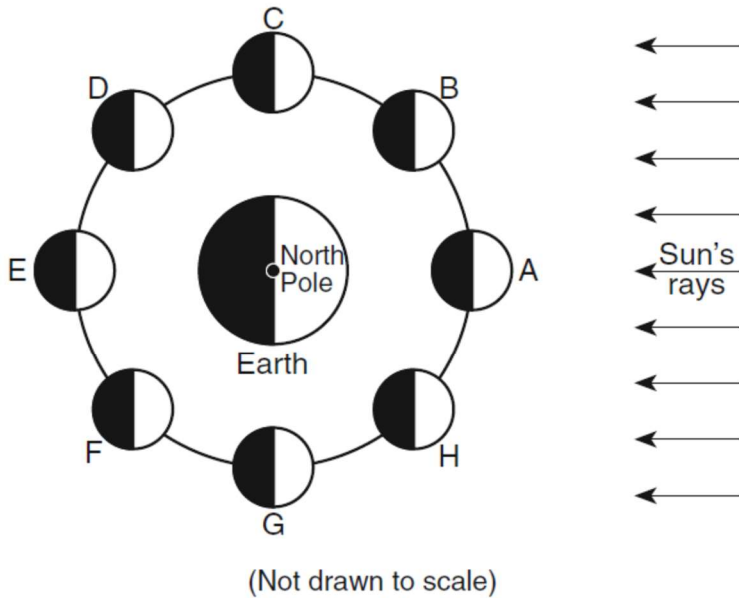


Moon Phases - Key

In the blank circle, draw the moon phase we would see if we were on Earth in the diagram and then write the name of that moon phase on the blank line

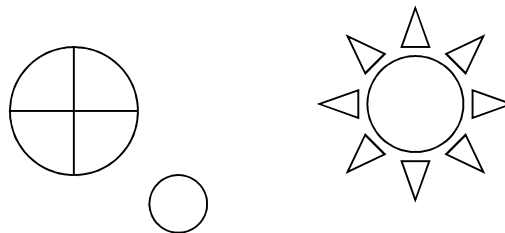


Use the diagram below to fill in the name of the moon phases for the position indicated by the letter

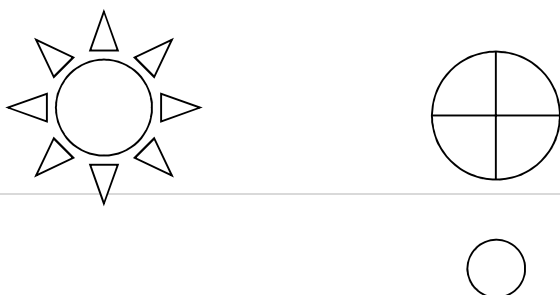


- A: *New Moon*
- C: *First Quarter*
- D: *Waxing Gibbous*
- E: *Full Moon*
- G: *Last Quarter*
- H: *Waning Crescent*

In the space below, draw a diagram with the Sun on the right, so that if we were on Earth we would see a waning crescent moon.



In the space below, draw a diagram with the sun on the left, so that if we were on Earth we would see a waxing quarter moon.



Lunacy Worksheet - Key

1. Lunar forces inspire unusual behavior or influence the course of history on Earth.

b. False

2. Most of the major events of our time did not happen during a Full Moon.

a. True

3. According to astronomers and historians, a full Moon causing bad things to happen is pure ***coincidence***.

4. A full Moon occurs ***for about one minute***.

5. List three Moon facts.

Answers should include three facts from this list.

☾ ***The Moon is believed to be 4.6 billion years old, the same age as the Earth.***

☾ ***It has no atmosphere or water.***

☾ ***It is comprised of a rocky material that is heavily scarred with craters from meteorite impacts.***

☾ ***The same side is permanently turned toward Earth.***

☾ ***The gravitational forces between the Earth and the Moon generate two ocean high tides per day.***

☾ ***The word "lunatic" comes from the notion that the Moon's forces could make a person go crazy.***

☾ ***The Moon is moving away from the Earth at a rate of 3.8 centimeters each year. When it formed, the Moon was about 14,000 miles from Earth; now it's about 240,000 miles away.***

6. During which month is the Moon called the Wolf Moon?

January

7. During which month is the Moon called the Harvest Moon?

February

8. During which month is the Moon called the Storm or Worm Moon?

March

9. Lists the phase of the Moon for the following events:

a. Boston Tea Party; ***New Moon***

b. Declaration of Independence: ***Waning Gibbous***

c. End of the Civil War: ***Waning Gibbous***

d. President Abraham Lincoln assassinated: ***Waning Gibbous***