

The Moon Project: Topic #2 – Moon/Planet Relationships

The Moon by Mary Barrett¹

*The Moon is really just one size
It always stays the same,
But here on Earth before our eyes,
We see it wax and wane.*

*The light grows larger every day
Exactly as it ought'er,
But logic tells us we must say
What looks like half is quarter.*

*The new moon we don't see at all,
But then there is a sliver,
The crescent moon is what we call
This slice that makes us quiver.*

*And then there's gibbous on its way
To full, the brightest face,
Then swiftly it begins to wane
'Til gone without a trace.*

*These changes happen every night;
Each month we see each phase
The moon intrigues us with its light
It truly does amaze.*

Dear God,

It is great the way you always get the stars in the right place. Why can't you do that with the moon?

Jeff (a young child)

Organization of the Moon Project (Worth a total of 75 points)

Part of Project	Point Value	Specific Requirements are on...
Observations and Graph	25 points	MP-2 through MP-4
Written Paper and illustrations	40 points	MP-5
Your review of a classmate's paper	10 points	MP-5 through MP-8

Information, Tables, and Graphs	Where to find them
Tables in which to record your observations	MP-9 through MP-14
Graph for you to complete	MP-15 through MP-16
Tables of moon facts	MP-17 through MP-21

¹ Mary Barrett is a school teacher in Berkeley, CA. This poem appeared in the Fall/Winter 1999 GEMS Network News. If you plan to teach elementary or junior high school, check out all the wonderful GEMS (Great Explorations in Math and Science) K-8 teacher's guides in math and science at <http://www.lhs.berkeley.edu/gems/gems.html>.

Purpose: This assignment is designed to give you the opportunity to...

- become intimately familiar with the various changes that the moon goes through each month and season.
- conduct a genuine scientific research project: to make systematic accurate observations and to use those observations to derive scientific conclusions WITHOUT “looking it up” somewhere.
- write a clear, complete, well-illustrated scientific paper that uses evidence and sound logical reasoning to reach a conclusion.

Question to Answer: Which way does the Moon revolve around Earth?

Yes, you can look this up in your textbook, online, or in a wide variety of other sources. The answer is well known. Your job is to prove it, using particular types of observations and a bit of logic.

Observations to Make for Topic #2

Where to Make Your Observations: The best place to make your observations is a large open area such as a sports field or parking lot, but anyplace will do as long as you can see the moon and at least one planet.

Required Number of Observations: You must observe the moon at least 20 times. Each time, a planet should also be visible. You will estimate the angular distance between the moon and that planet. Your observations will be most useful if you make them in sets of several days in a row, preferably at around the same time on each day of each set.

BEGIN YOUR OBSERVATIONS IMMEDIATELY! The sooner you start, the easier it will be. If you have trouble at first, keep trying; it gets easier. Don't worry if you don't understand what your observations mean; that's normal. No scientist ever fully understands his/her observations until s/he has had a chance to analyze a large set of them. Let yourself wonder and not know. Keep making careful observations and keep asking yourself what they are trying to tell you. The answer will come. It may slowly dawn on you or it may suddenly flash into your mind after weeks of frustration. But, if you keep trying, it will definitely come. Here's a hint: Why do you suppose I am requiring you to make all of your observations in a particular set at the same time of day?

Suggested Times of Observations: Be sure to make each observation when you can see both the moon and a planet. Thus it must be dark or dusk. Do NOT choose this topic if you feel unsafe outdoors in the dark.

Plan your observation times carefully. Sometimes (about half the time), the moon is not out in the evening; instead, it's out in the morning. On those days, you will have to do your observations in the early morning, before sunrise. To figure out whether you can see the moon in the morning or evening on any particular day, consult the “Moon Facts” tables below.

During February, Mars will be very bright and will be out all night. In the evening, it will be in the east; near midnight, it will be in the south; and in the morning, it will be in the west. Saturn will rise around 8:30 p.m. and will be out the rest of the night; it will be to the left of Mars.

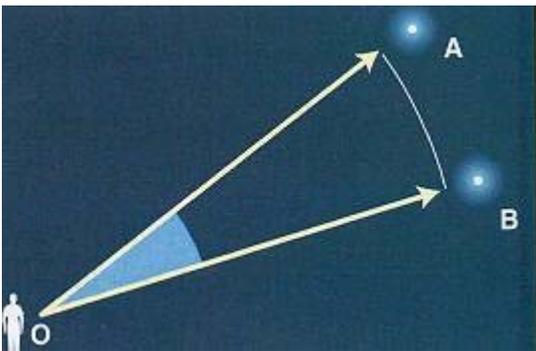
During March, Saturn will be out all night. In the evening, it will be the brightest “star” visible in the east. Mars will still be out in the evening, but will set just after midnight. In the evening, Mars will be high in the southeast.

During April, Venus will become easy to find in the evening; it will be the very bright object in the west. Saturn and Mars will still be around, but harder to find. Jupiter will be visible in the east, just before dawn.

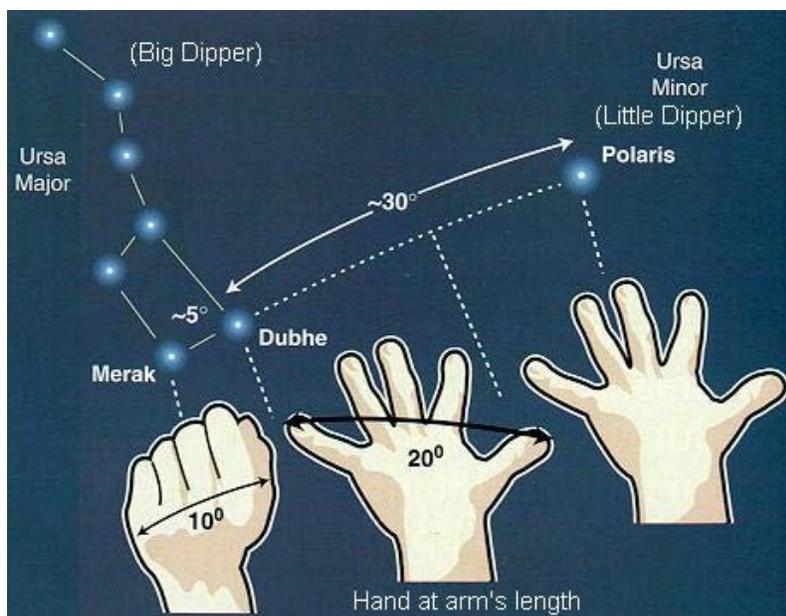
During May, Venus will be very bright in the evening; it will be in the southwest. Jupiter will be quite bright in the morning; it will be in the southeast.

Data to Record: Record your data in the given tables. The first two entries have been completed for you to serve as an example.

1. Record the date and time of each observation. **Be sure to include a.m. or p.m.** as appropriate.
2. Under “Sketch of Moon,” sketch the moon the way you see it in the sky by blackening the part of the moon that you can NOT see; leave the visible part of the moon white. Be sure to clearly show how the visible portion is “tilted” relative to the horizon (On the data table, imagine the horizon as a horizontal line on the bottom of the page.).
3. Under “Locations of Moon and Planets,” draw and label the moon and whatever planet is visible on the “Celestial Hemisphere” diagram provided. To understand what this diagram is showing, imagine yourself (represented by the stick figure) standing in a large, open field. The sky looks like a huge inverted bowl. The moon, sun, planets and stars look like objects that are moving on the inside surface of this bowl. The moon and planets follow approximately the same path across the sky each day; that path (called the ecliptic) is shown on the diagram as a gray arc that goes from east to west. The moon and any planets (if they are up) should plot somewhere near that arc.
4. Make a rough measurement of the angular distance between the moon and a planet in the sky, using your fists (One “fist” is about 10° .) as shown below. Your lab instructor will demonstrate how to do this. Write this measurement under “Angle between Moon and Planet.”



The angular distance between two objects in the sky is angle AOB.



Estimating angular distance in the sky using your hand held at arm's length. One fist is about 10° .

Source of diagrams: <http://www.geocities.com/angolano/Astronomy/PIinSky.html>

5. If it is cloudy out or if you forget to look, make a note of that, but do not sketch the moon unless you actually observe it and do not record any observations that you have not personally made of the real sky (the internet is NOT the real sky). **The worst sin that a scientist can commit is to falsify data.** Do not commit this sin! Don't laugh—students try it every semester and end up being very disappointed in their moon project grades.
6. Record your observations as neatly as possible. But neatness is much less important than honesty, thoroughness, accuracy and usefulness. For an example of an observation table made by the great scientist, Galileo, see Figure 21.15 on p. 609 in your textbook.

How to Graph

- On the blank graph provided below, plot a point showing the angular distance between the moon and one of the planets.
- Color code your data points as follows:
 - Orange = angles measured relative to Mars
 - Purple = angles measured relative to Saturn
 - Blue = angles measured relative to Venus
 - Green = angles measured relative to Jupiter
- Label the point with an “E” when the moon is east (to the left) of the planet.
- Label the point with a “W” when the moon is west (to the right) of the planet.

Due Date: The observations and graphs will be due BEFORE the complete moon project is due. See your syllabus for the exact date.

What to Hand In: For the “Observations and Graphs” part of the moon project, hand in your original completed moon observation tables and your completed graph(s).

Written Paper: Requirements

1. State the direction of the Moon's revolution around Earth (clockwise or counterclockwise as viewed from above the North Pole).
2. Use your data as evidence to support your statement. Clearly explain, in a logical way, how YOUR data leads to your conclusion (i.e. no further supporting evidence is needed, just discuss the significance of your data). Your written explanation should consist of 200-300 well-chosen words (No more; no less).
3. Illustrate your paper with at least one clearly labeled diagram.
4. All text must be typed. Each page must have a page number.
5. Hand-drawn diagrams and graphs are, however, perfectly acceptable.

Peer Review of Your Paper

Before you turn in your paper, you must...

1. Have a classmate conduct a peer review of your paper. This classmate must be working on a topic other than yours. After receiving the review, rewrite and improve the paper as needed.
2. Conduct a peer review of a classmate's paper. You will use the rubric on the following page for this purpose; circle the box that applies in each category. In addition, write as many specific suggestions as you can think of to help your classmate improve his/her paper and feel free to mark up your classmate's work with red (or any color) pen. And remember, "being nice" will not help him/her; constructive criticism will.

Final Submission of Moon Project

Your final submission of your moon project must include (in order)...

1. Your observations and graph(s).
2. The final drafts of your paper and illustrations.
3. The first drafts of your paper and illustrations (the ones reviewed by a classmate).
4. The review of your first drafts completed by your classmate.
5. A photocopy of the review you did of a classmate's paper.

Use ordinary paper, stapled together. Simplicity (and conservation of natural resources) is best.

Writer’s Name _____

Reviewer’s Name _____

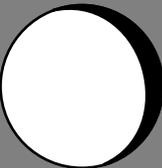
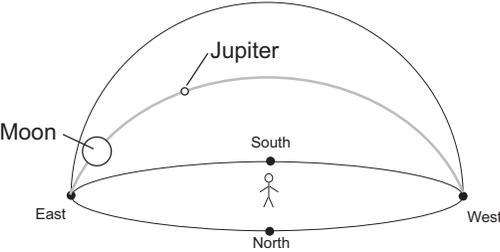
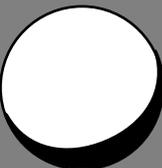
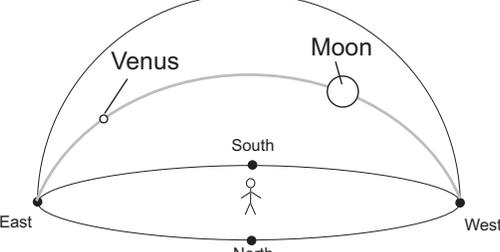
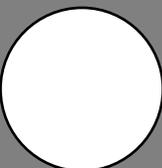
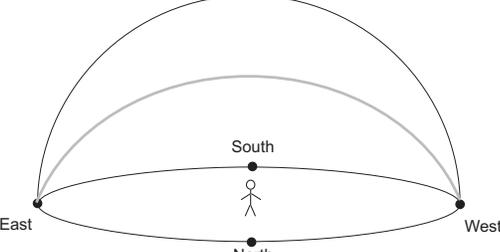
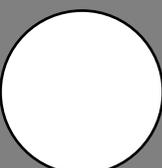
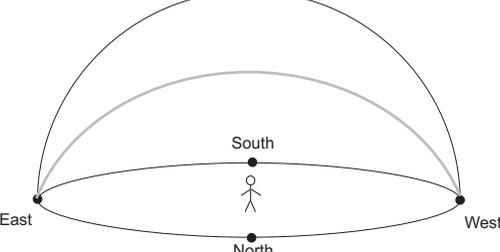
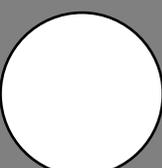
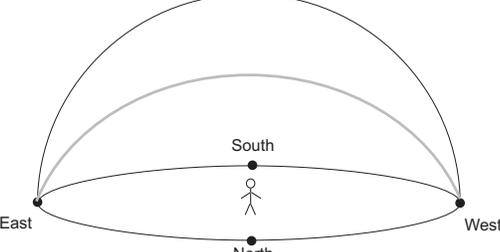
Grading Rubric for the Explanations of the Concepts

Component	Weight ¹	Unacceptable (0-2)	Fair (3)	Good (4)	Excellent (5)	Points
Explanation	4	Explanation is incorrect and full of gaps. The logic is invalid and impossible to follow. The writer assumes far too much prior knowledge in reader.	Explanation is mostly correct. Gaps in logic or invalid logic make the explanation hard to follow. The writer assumes too much prior knowledge in the reader.	Explanation is correct but a little unclear or incomplete. There are a few gaps in logic. The writer assumes a bit too much prior knowledge in the reader.	The writer makes a strong irrefutable case for his/her answer, clearly and logically explaining how that answer is supported by the data collected and the graphs plotted.	
Diagram	2	Diagram is missing altogether or is useless because it illustrates something irrelevant to the explanations given in the text.	Diagram contains major factual errors or is unclear. Caption, labels or written explanation is poor or missing.	Diagram contains minor errors or is a bit unclear. Caption, labels or written explanation incomplete.	Diagram is neat, accurate and greatly aids in understanding the text. Caption, labels, and/ or written explanation clearly reveal what diagrams are showing.	
Grammar, spelling, capitalization, punctuation, etc.	2	Poorly worded. Meaning unclear. Full of errors.	Text is quite wordy or unclear. Spelling or grammar errors partially obscure the meaning of the text.	Text is a bit too wordy or is so concise as to be unclear. Some wording is awkward or contains grammar or spelling errors. Minor formatting errors.	The writing is elegant and original; creative analogies clarify concepts. Free of errors. Formatted according to instructions.	
Total Points (out of 40):						

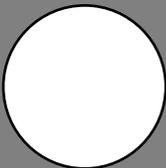
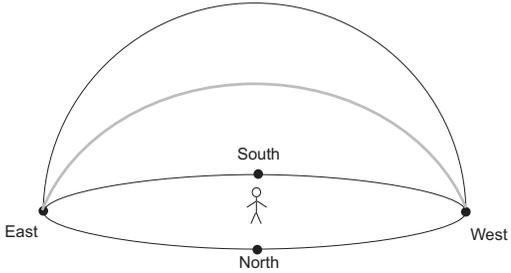
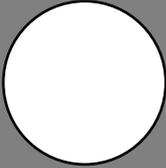
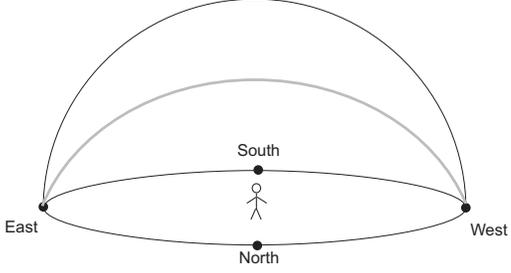
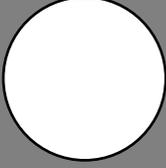
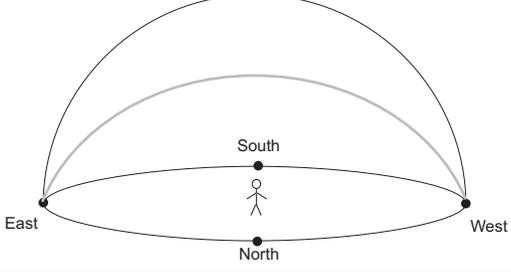
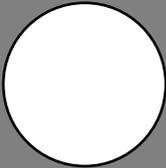
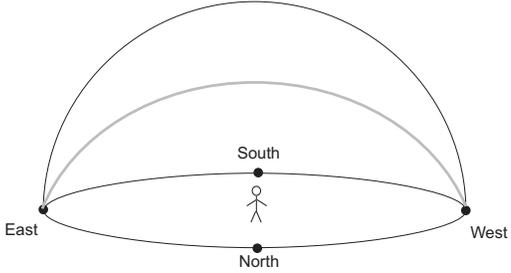
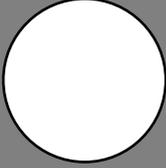
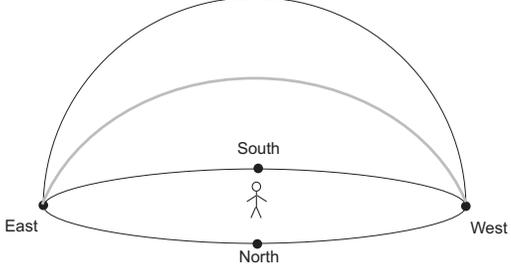
¹ Multiply raw score by this number to calculate the points earned.

Specific Suggestions for Improving the Paper:

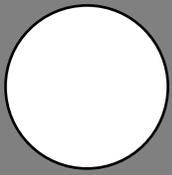
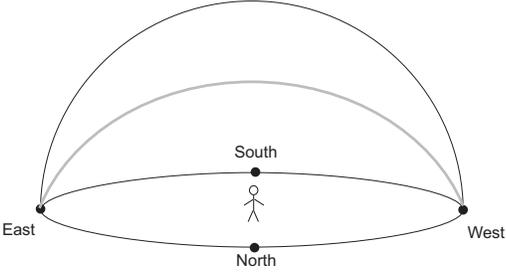
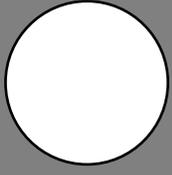
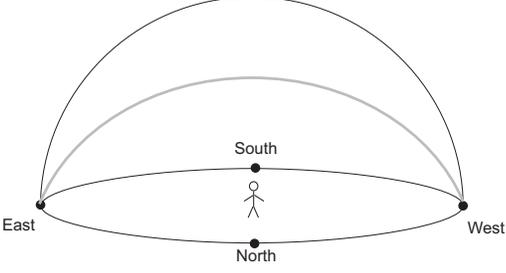
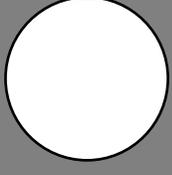
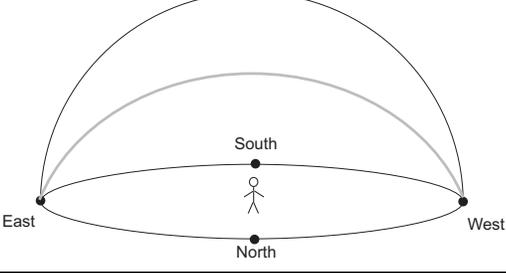
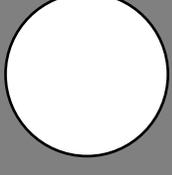
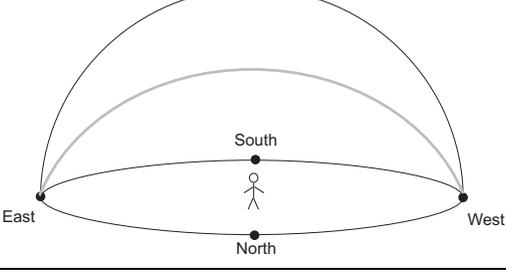
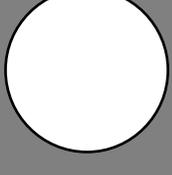
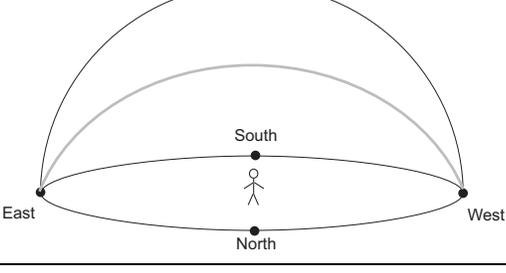
Shade in the portion of the moon you CANNOT see. Leave the visible portion white!

Date	Time of Observation (Include am/pm)	Sketch of Moon	Locations of Moon and a Planet	Angle Between Moon and Planet
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Aug. 9, 2009	5:15 a.m.			100°
				
				
				

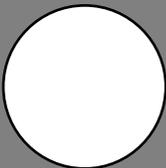
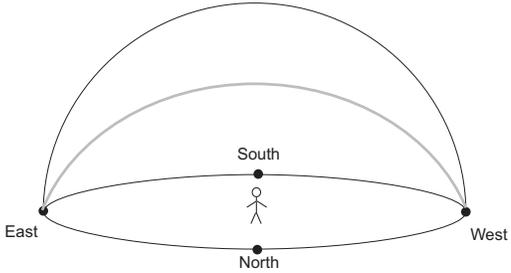
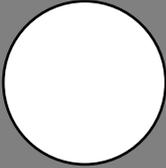
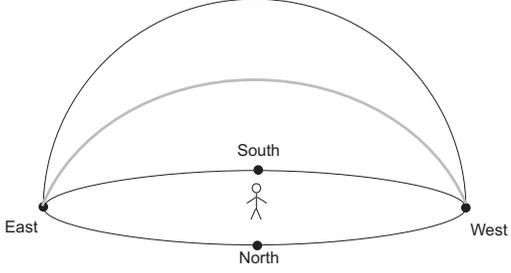
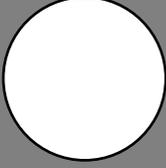
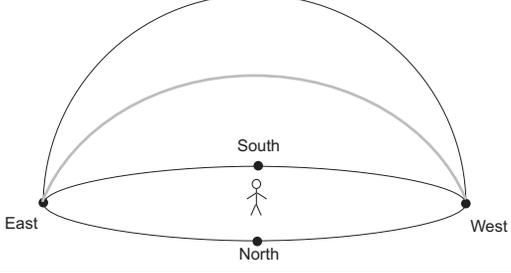
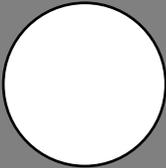
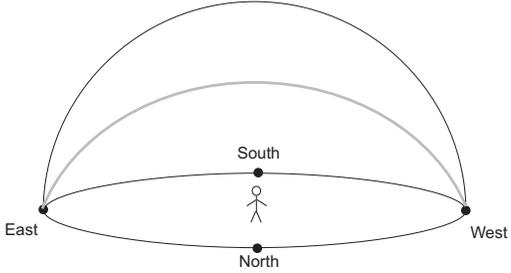
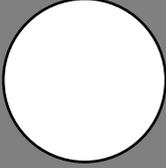
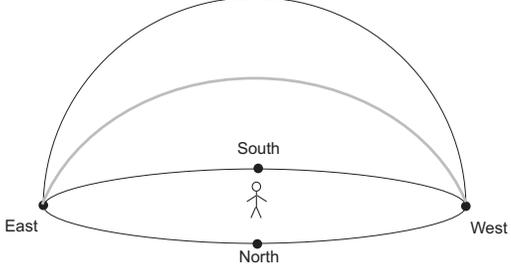
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Date	Time of Observation (Include am/pm)	Sketch of Moon	Locations of Moon and a Planet	Angle Between Moon and Planet
				
				
				
				
				

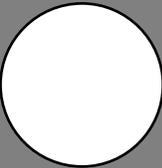
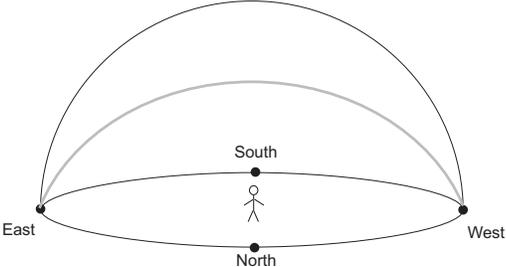
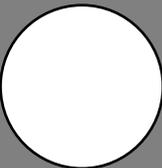
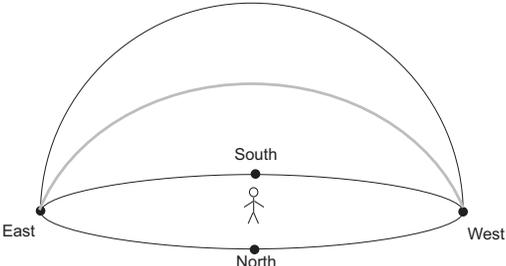
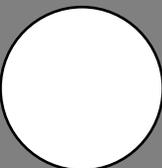
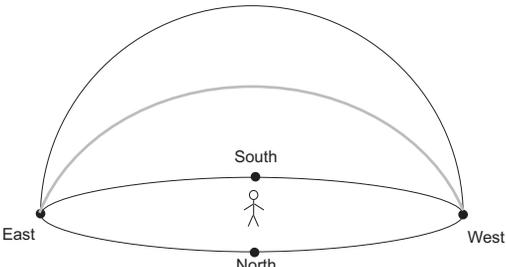
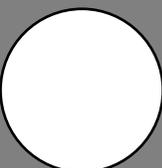
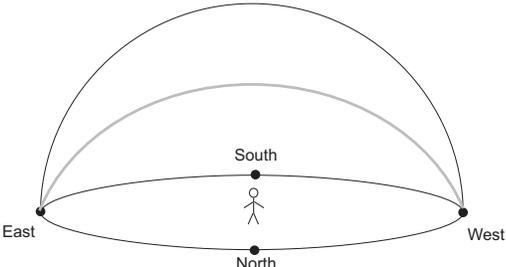
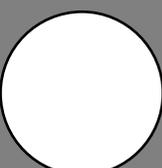
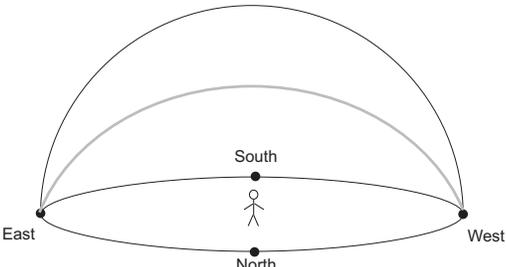
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Date	Time of Observation (Include am/pm)	Sketch of Moon	Locations of Moon and a Planet	Angle Between Moon and Planet
				
				
				
				
				

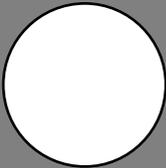
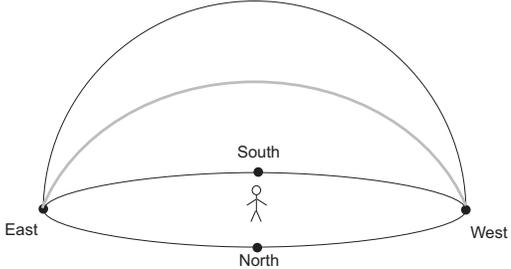
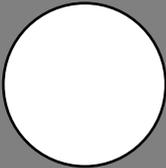
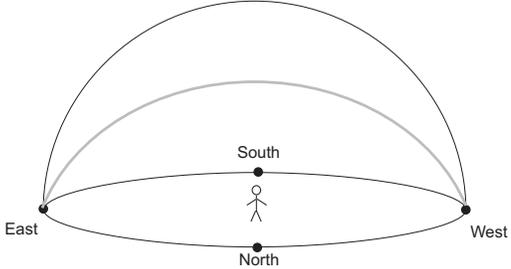
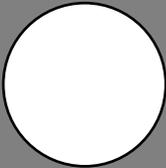
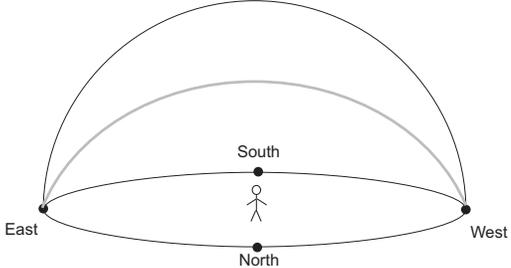
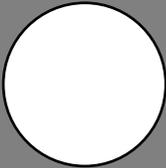
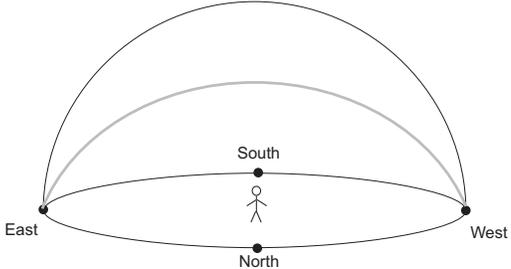
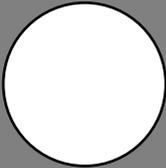
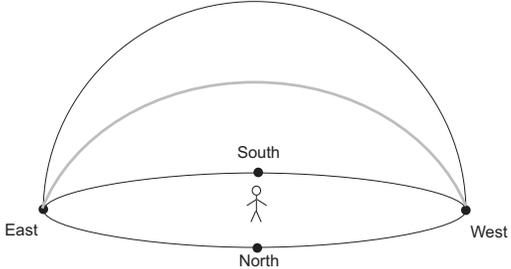
Shade in the portion of the moon you CANNOT see. Leave the visible portion white!

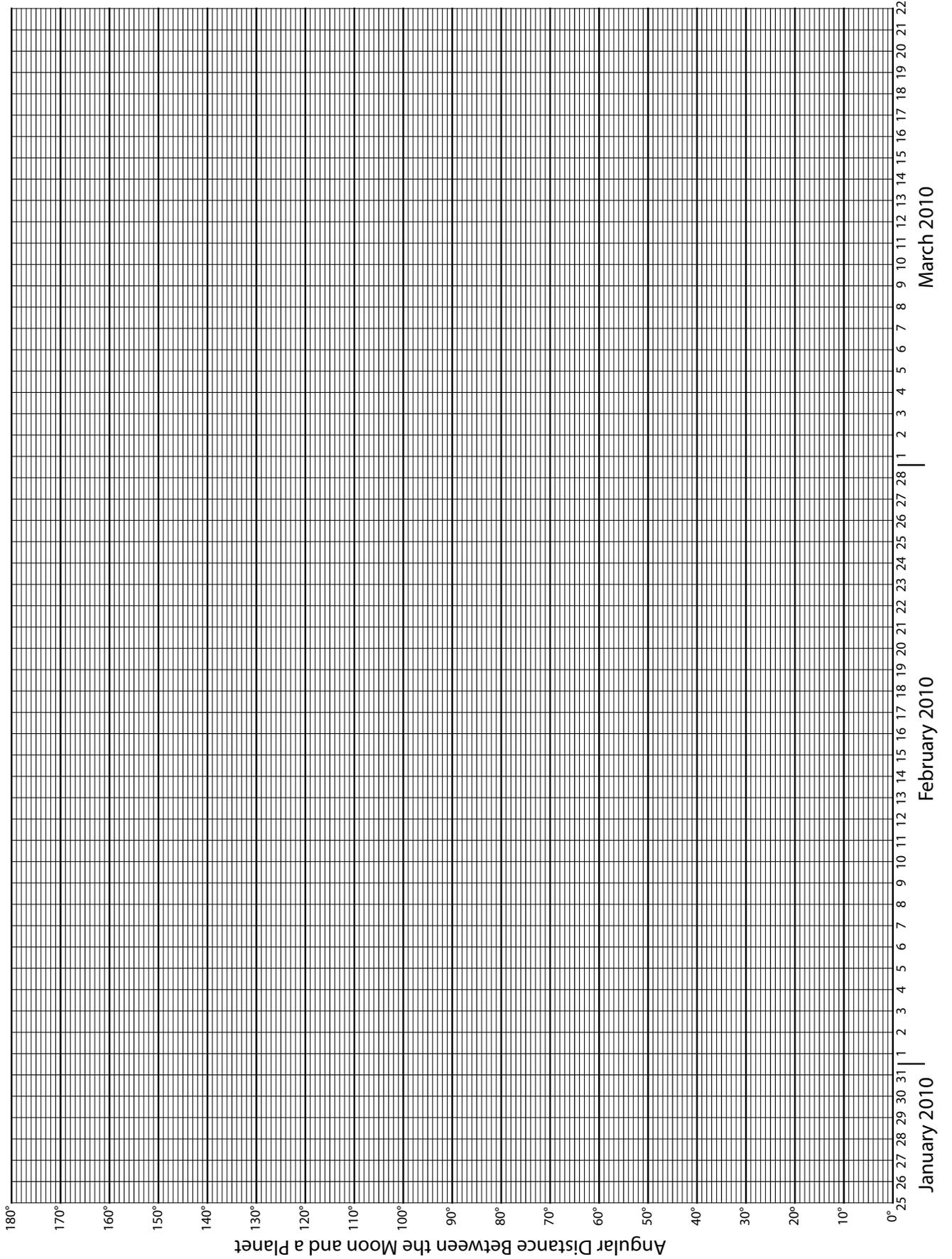
Date	Time of Observation (Include am/pm)	Sketch of Moon	Locations of Moon and a Planet	Angle Between Moon and Planet
				
				
				
				
				

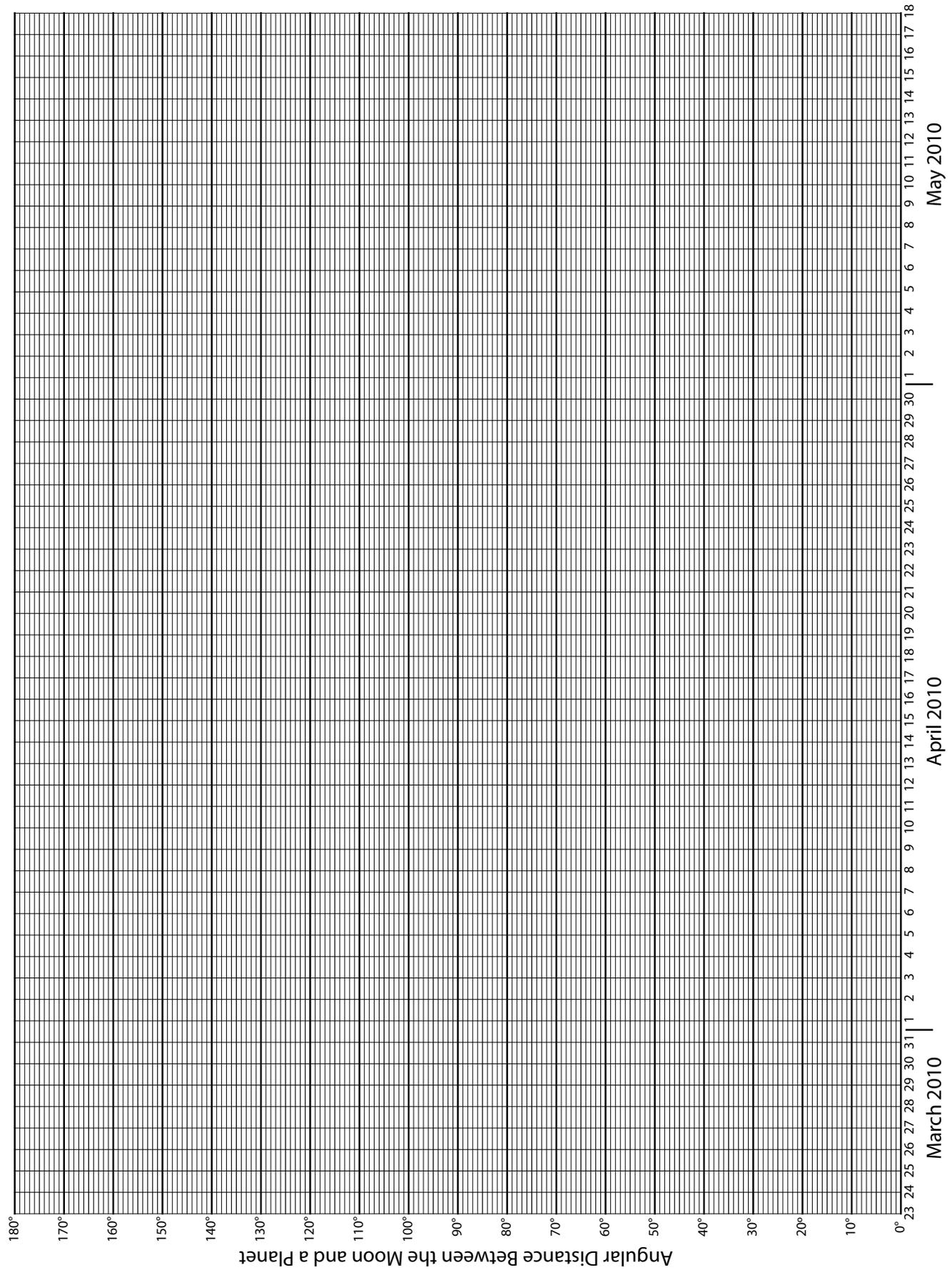
Shade in the portion of the moon you CANNOT see. Leave the visible portion white!

Date	Time of Observation (Include am/pm)	Sketch of Moon	Locations of Moon and a Planet	Angle Between Moon and Planet
				
				
				
				
				

Shade in the portion of the moon you CANNOT see. Leave the visible portion white!

Date	Time of Observation (Include am/pm)	Sketch of Moon	Locations of Moon and a Planet	Angle Between Moon and Planet
				
				
				
				
				





Moon Facts for January, 2010

Date	Day of Week	Time of Sunrise	Time of Sunset	Time of Moonset	Time of Moonrise	Astronomical Place of the moon
1-Jan	Fr.	7:28	4:53	8:17 AM	6:20 PM	Gemini
2-Jan	Sa.	7:28	4:54	8:58 AM	7:39 PM	Cancer
3-Jan	Su.	7:28	4:55	9:31 AM	8:55 PM	Leo
4-Jan	M.	7:28	4:56	10:01 AM	10:08 PM	Leo
5-Jan	Tu.	7:28	4:57	10:29 AM	11:19 PM	Leo
6-Jan	W.	7:28	4:58	10:56 AM	*	Virgo
Date	Day of Week	Time of Sunrise	Time of Sunset	Time of Moonrise	Time of Moonset	Astronomical Place of the moon
7-Jan	Th.	7:28	4:59	12:28 AM	11:24 AM	Virgo 
8-Jan	Fr.	7:28	5:00	1:35 AM	11:55 AM	Virgo
9-Jan	Sa.	7:28	5:01	2:42 AM	12:30 PM	Libra
10-Jan	Su.	7:27	5:02	3:46 AM	1:11 PM	Libra
11-Jan	M.	7:27	5:03	4:46 AM	1:57 PM	Scorpius
12-Jan	Tu.	7:27	5:04	5:40 AM	2:50 PM	Ophiuchus
13-Jan	W.	7:27	5:05	6:27 AM	3:47 PM	Sagittarius
14-Jan	Th.	7:26	5:06	7:07 AM	4:46 PM	Sagittarius
15-Jan	Fr.	7:26	5:07	7:41 AM	5:47 PM	Sagittarius 
16-Jan	Sa.	7:25	5:08	8:10 AM	6:47 PM	Capricornus
17-Jan	Su.	7:25	5:09	8:35 AM	7:46 PM	Aquarius
18-Jan	M.	7:25	5:10	8:59 AM	8:44 PM	Aquarius
19-Jan	Tu.	7:24	5:11	9:21 AM	9:43 PM	Pisces
20-Jan	W.	7:24	5:13	9:43 AM	10:42 PM	Pisces
21-Jan	Th.	7:23	5:14	10:07 AM	11:44 PM	Pisces
22-Jan	Fr.	7:22	5:15	10:33 AM	**	Pisces
Date	Day of Week	Time of Sunrise	Time of Sunset	Time of Moonset	Time of Moonrise	Astronomical Place of the moon
23-Jan	Sa.	7:22	5:16	12:48 AM	11:04 AM	Aries 
24-Jan	Su.	7:21	5:17	1:54 AM	11:41 AM	Aries
25-Jan	M.	7:20	5:18	3:02 AM	12:27 PM	Taurus
26-Jan	Tu.	7:20	5:20	4:08 AM	1:24 PM	Taurus
27-Jan	W.	7:19	5:21	5:10 AM	2:32 PM	Taurus
28-Jan	Th.	7:18	5:22	6:03 AM	3:48 PM	Gemini
29-Jan	Fr.	7:17	5:23	6:48 AM	5:08 PM	Gemini
30-Jan	Sa.	7:16	5:24	7:26 AM	6:27 PM	Cancer 
31-Jan	Su.	7:15	5:25	7:58 AM	7:44 PM	Leo

* The moon does not rise on this date. It rises early the next day.

** The moon does not set on this date. It sets early the next day.

Moon Facts for February, 2010

Date	Day of Week	Time of Sunrise	Time of Sunset	Time of Moonset	Time of Moonrise	Astronomical Place of the moon
1-Feb	M.	7:15	5:27	8:28 AM	8:59 PM	Sextans
2-Feb	Tu.	7:14	5:28	8:56 AM	10:11 PM	Virgo
3-Feb	W.	7:13	5:29	9:25 AM	11:22 PM	Virgo
4-Feb	Th.	7:12	5:30	9:56 AM	*	Virgo
Date	Day of Week	Time of Sunrise	Time of Sunset	Time of Moonrise	Time of Moonset	Astronomical Place of the moon
5-Feb	Fr.	7:11	5:31	12:31 AM	10:31 AM	Virgo 
6-Feb	Sa.	7:10	5:33	1:38 AM	11:10 AM	Libra
7-Feb	Su.	7:08	5:34	2:40 AM	11:55 AM	Scorpius
8-Feb	M.	7:07	5:35	3:36 AM	12:45 PM	Ophiuchus
9-Feb	Tu.	7:06	5:36	4:25 AM	1:41 PM	Sagittarius
10-Feb	W.	7:05	5:37	5:07 AM	2:39 PM	Sagittarius
11-Feb	Th.	7:04	5:39	5:43 AM	3:39 PM	Sagittarius
12-Feb	Fr.	7:03	5:40	6:13 AM	4:39 PM	Capricornus
13-Feb	Sa.	7:02	5:41	6:40 AM	5:39 PM	Aquarius 
14-Feb	Su.	7:00	5:42	7:04 AM	6:38 PM	Capricornus
15-Feb	M.	6:59	5:43	7:27 AM	7:36 PM	Aquarius
16-Feb	Tu.	6:58	5:44	7:49 AM	8:36 PM	Pisces
17-Feb	W.	6:56	5:46	8:12 AM	9:36 PM	Pisces
18-Feb	Th.	6:55	5:47	8:37 AM	10:38 PM	Pisces
19-Feb	Fr.	6:54	5:48	9:06 AM	11:43 PM	Pisces
20-Feb	Sa.	6:52	5:49	9:40 AM	**	Aries
Date	Day of Week	Time of Sunrise	Time of Sunset	Time of Moonset	Time of Moonrise	Astronomical Place of the moon
21-Feb	Su.	6:51	5:50	12:48 AM	10:21 AM	Aries 
22-Feb	M.	6:50	5:51	1:53 AM	11:11 AM	Taurus
23-Feb	Tu.	6:48	5:52	2:54 AM	12:12 PM	Taurus
24-Feb	W.	6:47	5:53	3:49 AM	1:21 PM	Gemini
25-Feb	Th.	6:46	5:55	4:37 AM	2:37 PM	Gemini
26-Feb	Fr.	6:44	5:56	5:17 AM	3:55 PM	Cancer
27-Feb	Sa.	6:43	5:57	5:52 AM	5:13 PM	Leo
28-Feb	Su.	6:41	5:58	6:24 AM	6:30 PM	Leo 

* The moon does not rise on this date. It rises early the next day.

** The moon does not set on this date. It sets early the next day.

Moon Facts for March, 2010

Date	Day of Week	Time of Sunrise	Time of Sunset	Time of Moonset	Time of Moonrise	Astronomical Place of the moon
1-Mar	M.	6:40	5:59	6:53 AM	7:45 PM	Leo
2-Mar	Tu.	6:38	6:00	7:23 AM	9:00 PM	Virgo
3-Mar	W.	6:37	6:01	7:54 AM	10:12 PM	Virgo
4-Mar	Th.	6:35	6:02	8:28 AM	11:22 PM	Virgo
5-Mar	Fr.	6:34	6:03	9:06 AM	*	Libra
Date	Day of Week	Time of Sunrise	Time of Sunset	Time of Moonrise	Time of Moonset	Astronomical Place of the moon
6-Mar	Sa.	6:32	6:04	12:28 AM	9:50 AM	Scorpius
7-Mar	Su.	6:31	6:05	1:28 AM	10:40 AM	Scorpius 
8-Mar	M.	6:29	6:06	2:21 AM	11:35 AM	Ophiuchus
9-Mar	Tu.	6:27	6:08	3:06 AM	12:33 PM	Sagittarius
10-Mar	W.	6:26	6:09	3:43 AM	1:32 PM	Sagittarius
11-Mar	Th.	6:24	6:10	4:15 AM	2:32 PM	Capricornus
12-Mar	Fr.	6:23	6:11	4:43 AM	3:31 PM	Capricornus
13-Mar	Sa.	6:21	6:12	5:08 AM	4:30 PM	Capricornus
14-Mar	Su.	7:20	7:13	6:32 AM	6:29 PM	Aquarius
15-Mar	M.	7:18	7:14	6:54 AM	7:29 PM	Pisces 
16-Mar	Tu.	7:16	7:15	7:18 AM	8:29 PM	Pisces
17-Mar	W.	7:15	7:16	7:42 AM	9:31 PM	Pisces
18-Mar	Th.	7:13	7:17	8:10 AM	10:35 PM	Pisces
19-Mar	Fr.	7:12	7:18	8:43 AM	11:40 PM	Aries
20-Mar	Sa.	7:10	7:19	9:21 AM	**	Aries
Date	Day of Week	Time of Sunrise	Time of Sunset	Time of Moonset	Time of Moonrise	Astronomical Place of the moon
21-Mar	Su.	7:08	7:20	12:45 AM	10:08 AM	Taurus
22-Mar	M.	7:07	7:21	1:46 AM	11:04 AM	Taurus
23-Mar	Tu.	7:05	7:22	2:42 AM	12:08 PM	Gemini 
24-Mar	W.	7:04	7:23	3:30 AM	1:19 PM	Gemini
25-Mar	Th.	7:02	7:24	4:12 AM	2:33 PM	Cancer
26-Mar	Fr.	7:00	7:25	4:48 AM	3:48 PM	Cancer
27-Mar	Sa.	6:59	7:26	5:20 AM	5:03 PM	Leo
28-Mar	Su.	6:57	7:27	5:50 AM	6:18 PM	Leo
29-Mar	M.	6:56	7:28	6:19 AM	7:32 PM	Virgo 
30-Mar	Tu.	6:54	7:29	6:49 AM	8:46 PM	Virgo
31-Mar	W.	6:52	7:30	7:22 AM	9:59 PM	Virgo

* The moon does not rise on this date. It rises early the next day.

** The moon does not set on this date. It sets early the next day.

Moon Facts for April, 2010

Date	Day of Week	Time of Sunrise	Time of Sunset	Time of Moonset	Time of Moonrise	Astronomical Place of the moon
1-Apr	Th.	6:51	7:31	8:00 AM	11:09 PM	Libra
2-Apr	Fr.	6:49	7:32	8:42 AM	*	Libra
Date	Day of Week	Time of Sunrise	Time of Sunset	Time of Moonrise	Time of Moonset	Astronomical Place of the moon
3-Apr	Sa.	6:48	7:33	12:14 AM	9:31 AM	Ophiuchus
4-Apr	Su.	6:46	7:34	1:11 AM	10:25 AM	Ophiuchus
5-Apr	M.	6:44	7:35	2:00 AM	11:23 AM	Sagittarius
6-Apr	Tu.	6:43	7:36	2:41 AM	12:23 PM	Sagittarius 
7-Apr	W.	6:41	7:37	3:15 AM	1:23 PM	Sagittarius
8-Apr	Th.	6:40	7:38	3:45 AM	2:22 PM	Capricornus
9-Apr	Fr.	6:38	7:39	4:11 AM	3:21 PM	Capricornus
10-Apr	Sa.	6:37	7:40	4:35 AM	4:20 PM	Aquarius
11-Apr	Su.	6:35	7:41	4:58 AM	5:19 PM	Pisces
12-Apr	M.	6:34	7:42	5:21 AM	6:19 PM	Pisces
13-Apr	Tu.	6:32	7:43	5:46 AM	7:21 PM	Pisces
14-Apr	W.	6:31	7:44	6:13 AM	8:26 PM	Pisces 
15-Apr	Th.	6:29	7:45	6:44 AM	9:31 PM	Aries
16-Apr	Fr.	6:28	7:46	7:21 AM	10:37 PM	Aries
17-Apr	Sa.	6:26	7:47	8:06 AM	11:40 PM	Taurus
18-Apr	Su.	6:25	7:48	9:00 AM	**	Taurus
Date	Day of Week	Time of Sunrise	Time of Sunset	Time of Moonset	Time of Moonrise	Astronomical Place of the moon
19-Apr	M.	6:23	7:49	12:37 AM	10:02 AM	Taurus
20-Apr	Tu.	6:22	7:50	1:28 AM	11:10 AM	Gemini
21-Apr	W.	6:20	7:51	2:11 AM	12:21 PM	Gemini 
22-Apr	Th.	6:19	7:52	2:48 AM	1:34 PM	Cancer
23-Apr	Fr.	6:18	7:53	3:20 AM	2:47 PM	Leo
24-Apr	Sa.	6:16	7:54	3:49 AM	3:59 PM	Sextans
25-Apr	Su.	6:15	7:55	4:18 AM	5:11 PM	Leo
26-Apr	M.	6:14	7:56	4:47 AM	6:23 PM	Virgo
27-Apr	Tu.	6:12	7:57	5:18 AM	7:36 PM	Virgo
28-Apr	W.	6:11	7:58	5:53 AM	8:47 PM	Virgo 
29-Apr	Th.	6:10	7:59	6:34 AM	9:55 PM	Libra
30-Apr	Fr.	6:08	8:00	7:20 AM	10:56 PM	Scorpius

* The moon does not rise on this date. It rises early the next day.

** The moon does not set on this date. It sets early the next day.

Moon Facts for May, 2010

Date	Day of Week	Time of Sunrise	Time of Sunset	Time of Moonset	Time of Moonrise	Astronomical Place of the moon
1-May	Sa.	6:07	8:01	8:13 AM	11:50 PM	Ophiuchus
2-May	Su.	6:06	8:02	9:10 AM	*	Sagittarius
Date	Day of Week	Time of Sunrise	Time of Sunset	Time of Moonrise	Time of Moonset	Astronomical Place of the moon
3-May	M.	6:05	8:03	12:35 AM	10:10 AM	Sagittarius
4-May	Tu.	6:04	8:04	1:13 AM	11:11 AM	Sagittarius
5-May	W.	6:02	8:05	1:44 AM	12:11 PM	Capricornus
6-May	Th.	6:01	8:06	2:12 AM	1:11 PM	Aquarius 
7-May	Fr.	6:00	8:07	2:37 AM	2:09 PM	Aquarius
8-May	Sa.	5:59	8:08	3:00 AM	3:08 PM	Aquarius
9-May	Su.	5:58	8:09	3:23 AM	4:07 PM	Pisces
10-May	M.	5:57	8:10	3:47 AM	5:08 PM	Pisces
11-May	Tu.	5:56	8:11	4:13 AM	6:12 PM	Pisces
12-May	W.	5:55	8:12	4:43 AM	7:17 PM	Aries
13-May	Th.	5:54	8:13	5:19 AM	8:24 PM	Aries 
14-May	Fr.	5:53	8:14	6:01 AM	9:30 PM	Taurus
15-May	Sa.	5:52	8:15	6:53 AM	10:31 PM	Taurus
16-May	Su.	5:51	8:16	7:54 AM	11:24 PM	Taurus
17-May	M.	5:50	8:17	9:01 AM	**	Gemini
Date	Day of Week	Time of Sunrise	Time of Sunset	Time of Moonset	Time of Moonrise	Astronomical Place of the moon
18-May	Tu.	5:49	8:17	12:10 AM	10:13 AM	Gemini
19-May	W.	5:49	8:18	12:49 AM	11:25 AM	Cancer
20-May	Th.	5:48	8:19	1:22 AM	12:38 PM	Leo
21-May	Fr.	5:47	8:20	1:52 AM	1:49 PM	Sextans 
22-May	Sa.	5:46	8:21	2:20 AM	2:59 PM	Leo
23-May	Su.	5:46	8:22	2:48 AM	4:09 PM	Virgo
24-May	M.	5:45	8:23	3:18 AM	5:20 PM	Virgo
25-May	Tu.	5:44	8:23	3:50 AM	6:30 PM	Virgo
26-May	W.	5:44	8:24	4:28 AM	7:38 PM	Libra
27-May	Th.	5:43	8:25	5:11 AM	8:42 PM	Libra 
28-May	Fr.	5:43	8:26	6:01 AM	9:39 PM	Ophiuchus
29-May	Sa.	5:42	8:27	6:57 AM	10:28 PM	Ophiuchus
30-May	Su.	5:42	8:27	7:57 AM	11:09 PM	Sagittarius
31-May	M.	5:41	8:28	8:58 AM	11:43 PM	Sagittarius

* The moon does not rise on this date. It rises early the next day.

** The moon does not set on this date. It sets early the next day.

