Science/5th Grade
Quarter 1
Remote Learning
Practice and Enrichment Packet

Answer Key

Inquiry Activity
Moon Phases

How does the Moon's orbit affect its appearance?

Make a Prediction How does the Moon's apparent shape change during the month? Explain.

Sample answer: The Moon's shape appears to change as it orbits Earth throughout a month because of the amount of the Sun's light that we can see reflecting off of it.

Materials

- pencil
- drawing paper
- small foam ball that is half white and half black
- sharpened pencil
- circle cut from yellow construction paper
- tape

Carry Out an Investigation

BE CAREFUL Always use science materials appropriately.

1. Attach the "Sun" circle to the wall with tape.
2. Carefully insert the sharpened pencil into the foam ball on the dividing line between the white and black sides. The white side represents the half that is lighted by the Sun. The black half represents the dark side.
3. Have a classmate sit and represent Earth while you stand, holding up the pencil and ball that represents the Moon.
4. Beginning directly between the Sun and your partner, hold the Moon so that the white half faces the Sun.
5. Your partner should observe the Moon and draw the shape that represents how much of the Moon's white side is visible.
6. Move in an arc about 45° to your partner's right, making sure that the white side of the Moon is still facing the Sun.
7. Your partner should again observe the Moon and draw the shape that represents how much of the Moon's white side is visible.
8. Continue moving around your partner, stopping every 45° for a drawing until you are back in front of the Sun. Make sure the white side is always pointed toward the Sun.
9. Switch places with your partner, and repeat steps 3-8.

 Name _____ Date _____

Communicate Information

1. Are all of your drawings the same? Explain.

Sample answer: No. They are all different because I saw different amounts of the Moon's white side.

2. Did the amount of sunlight reaching the Moon ever change? Explain.

Sample answer: No. The white half of the ball always faced the Sun.

3. If not, then why are your drawings different?

Sample answer: The only thing that changed was how much of the Moon's white side (lighted half of the Moon) was visible to the person sitting (Earth).

4. **Construct an Explanation** Explain how this activity models the phases of the Moon.

Sample answer: It models the amount of the lighted half of the Moon we see at different points along its orbit around the Earth. It models why the Moon has phases.

5. Compare your drawings to photos of the Moon's phases. How well do your drawings match the photos?

Sample answer: The shape of the Moon in my drawings look similar to the photos.

Inquiry Activity
The Role of Gravity

How does gravity affect the movement of objects in space? You will use a ball and string to simulate the role of gravity between the Sun and Earth.

Materials

- ☐ tennis ball
- ☐ cloth large enough to cover the ball, approximately 25 cm^2
- ☐ 1.5 meters of string

Carry Out an Investigation

1. Wrap the cloth around the ball. Pull the corners of the cloth together and tie them in a knot.
2. Securely tie the string to the cloth at the knot.
3. Stand apart from other students, and slowly spin the ball in a circle.
4. On your teacher's signal, let go of the string. Be sure no students are in the way.

Communicate Information

5. What happened when you let go of the string?

Sample answer: The ball and string flew away in a straight line.

6. What forces caused this to happen? Explain.

Sample answer: Gravity and inertia; when I let go of the string, the inertia pulled the ball in a straight line while gravity pulled it down.

7. While swinging the ball, what did you feel happening between the string and your hand?

Sample answer: I felt the ball pulling on my hand and my hand pulling on the ball.

8. How does this activity model interaction between the Sun and Earth?

Sample answer: Holding the string simulated gravity that pulls Earth toward the Sun. Swinging the string around simulated inertia that pulls Earth away from the Sun.

9. In the left box, draw a diagram of you swinging the ball in a circle. Use arrows to indicate the directions of the two forces involved. In the right box, draw a second diagram of Earth orbiting the Sun. Use arrows to indicate the directions of the two forces involved.

Students should draw a picture of themselves holding the string with the ball attached to the other end. They should include one arrow that shows the direction the ball moved when they let go of the string and another arrow that shows the pull of the string between the student and the ball.	Students should draw the Sun in the center, with Earth orbiting the Sun. Students can use arrows to show the force of gravity between the Sun and Earth and also Earth's inertia that keeps it moving in a straight line. The combination of the two causes Earth's orbit.

What is Gravity?

Read pages 82-83 in the ***Science Handbook.*** Answer the following questions after you have finished reading.

10. When does the force of gravity between two objects decrease?

Sample answer: Gravity between two objects decreases when the total mass of the two objects decreases and when the objects are farther apart.

Inquiry Activity
Modeling Moon Craters

What factors affect the size of craters that form when speeding objects strike the surface of the Moon?

Make a Prediction How does the size of an object affect the size of the crater it forms when it strikes the Moon?

Sample answer: Bigger objects will create bigger craters because they are heavier.

Materials

- safety goggles
- newspaper
- shallow pan
- sand, flour, or fine dirt
- different sized marbles
- plastic spoon
- ruler

Carry Out an Investigation

BE CAREFUL Wear safety goggles.

1. Cover the floor with newspaper, and place the pan on the newspaper.
2. Fill the pan with sand or flour to about 2 centimeters (cm) deep.
3. Drop each of the marbles from the same height into a different area of the pan.
4. **Record Data** Carefully remove each marble with the plastic spoon and measure the diameter of each crater and record it in the table.

Size of Marble	Diameter of Crater Formed

Communicate Information

Analyze Data Answer the questions based on the data you collected.

1. What did you see at the crater sites? Why did this happen?

Sample answer: Each marble made a crater by pushing the material down and out. The force of the dropped marble caused the craters.

2. How does the size of the crater compare to the size of the marble?

Sample answer: Smaller marbles made smaller craters, and larger marbles made larger craters.

3. How does this model represent what happens when an object hits the surface of the Moon?

Sample answer: It shows how craters are formed when objects hit the surface of the Moon.

Crosscutting Concepts

Cause and Effect

4. Consider how space objects colliding with Earth could lead to impact craters. If our closest neighbor, the Moon, has impact craters, is it likely that Earth has also been hit by space objects? What effects of these collisions might we find?

Sample answer: Earth has been hit by space objects just as the Moon has. We might also find impact craters on Earth's surface.

5. Many of the Moon's craters were created long ago. Since there is no erosion on the Moon to destroy the craters, there is a near perfect record of the impacts. Why aren't craters as visible here on Earth?

Sample answer: They have been eroded and buried or covered by plants.

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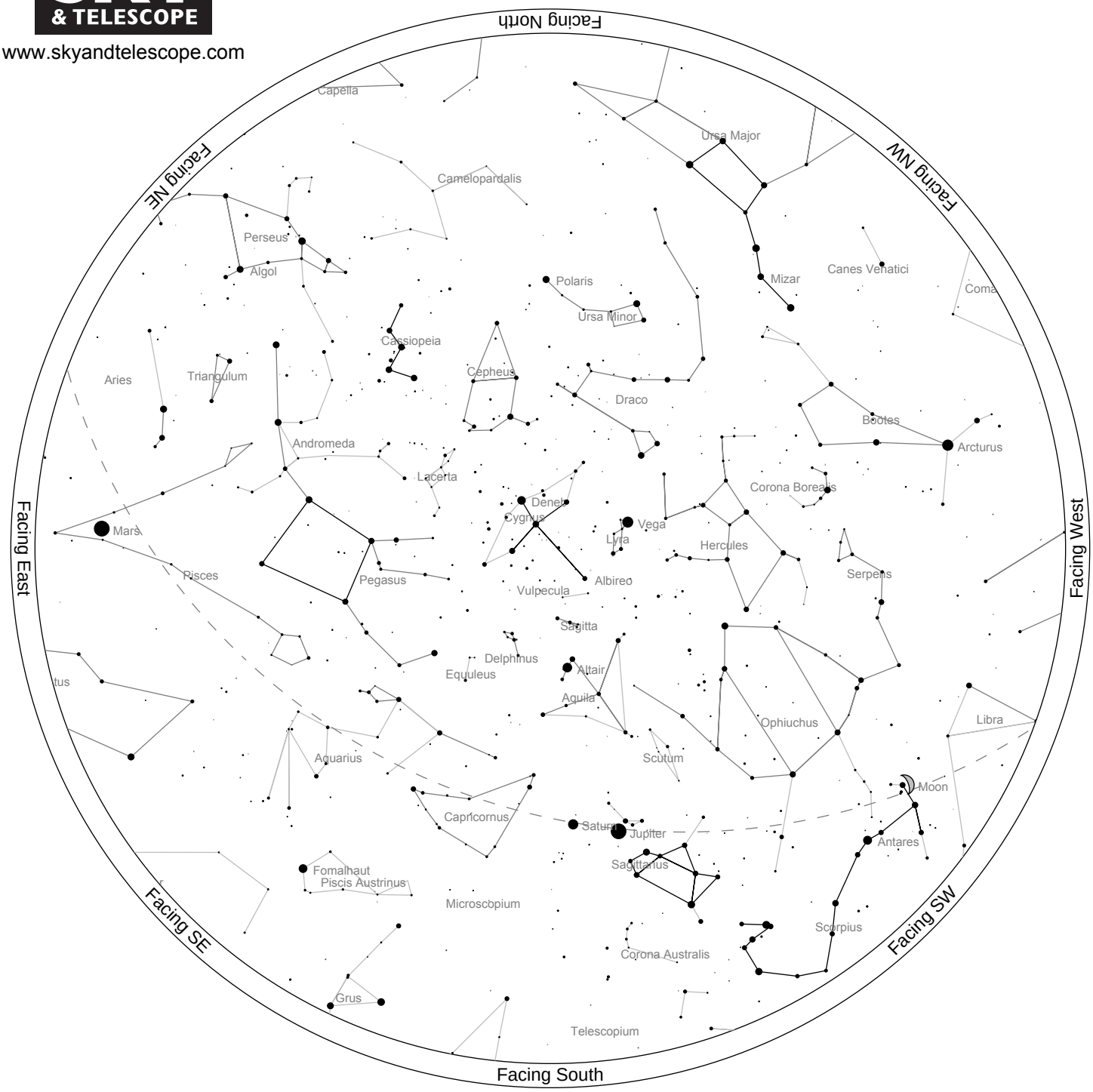
Sky Chart

www.skyandtelescope.com



Location: Set from geolocation service
Latitude: 34° 58' N, longitude: 90° 03' W
Time: 2020 September 21, 21:00 (UTC -05:00)

Powered by: Heavens-Above.com

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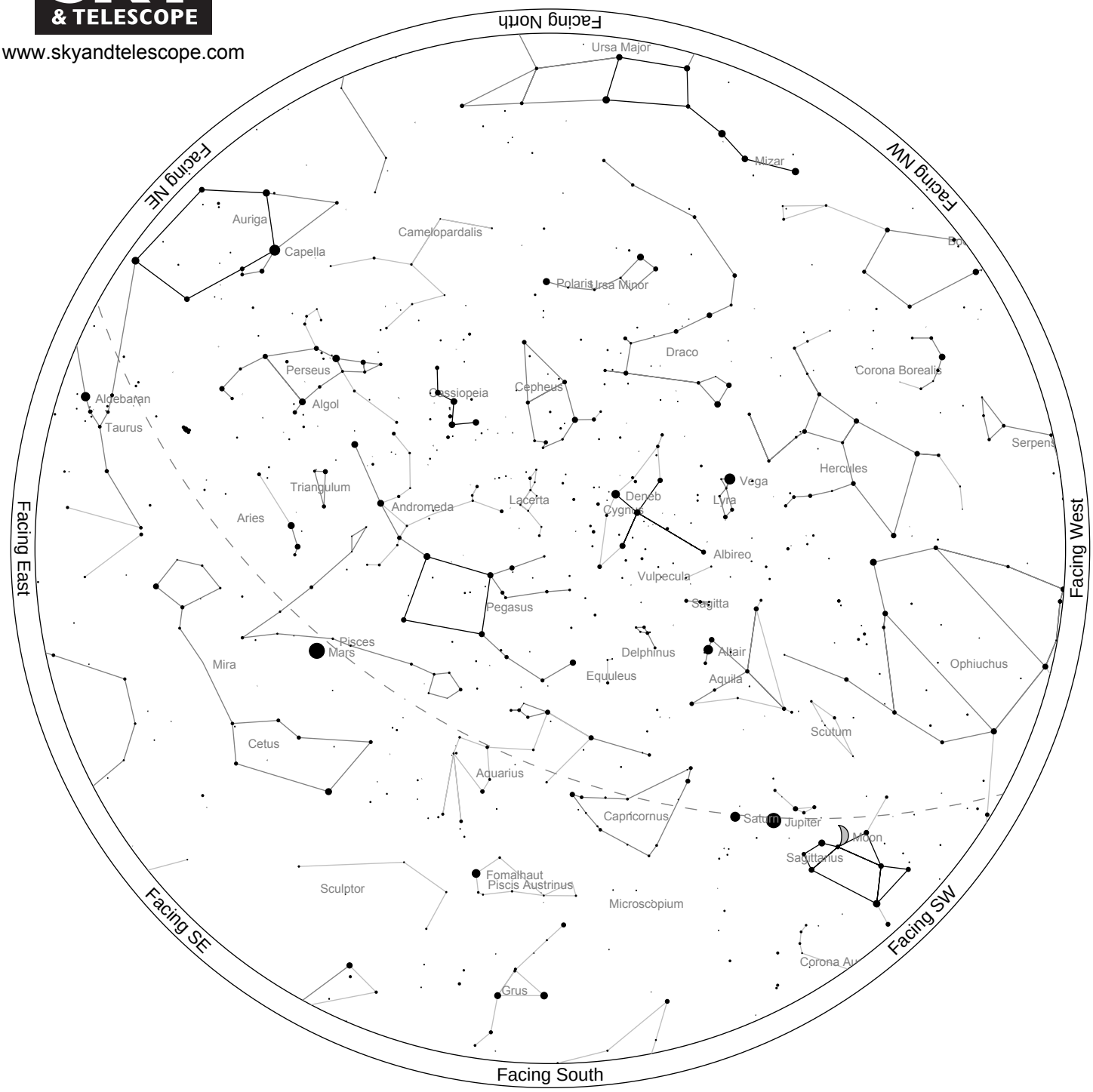

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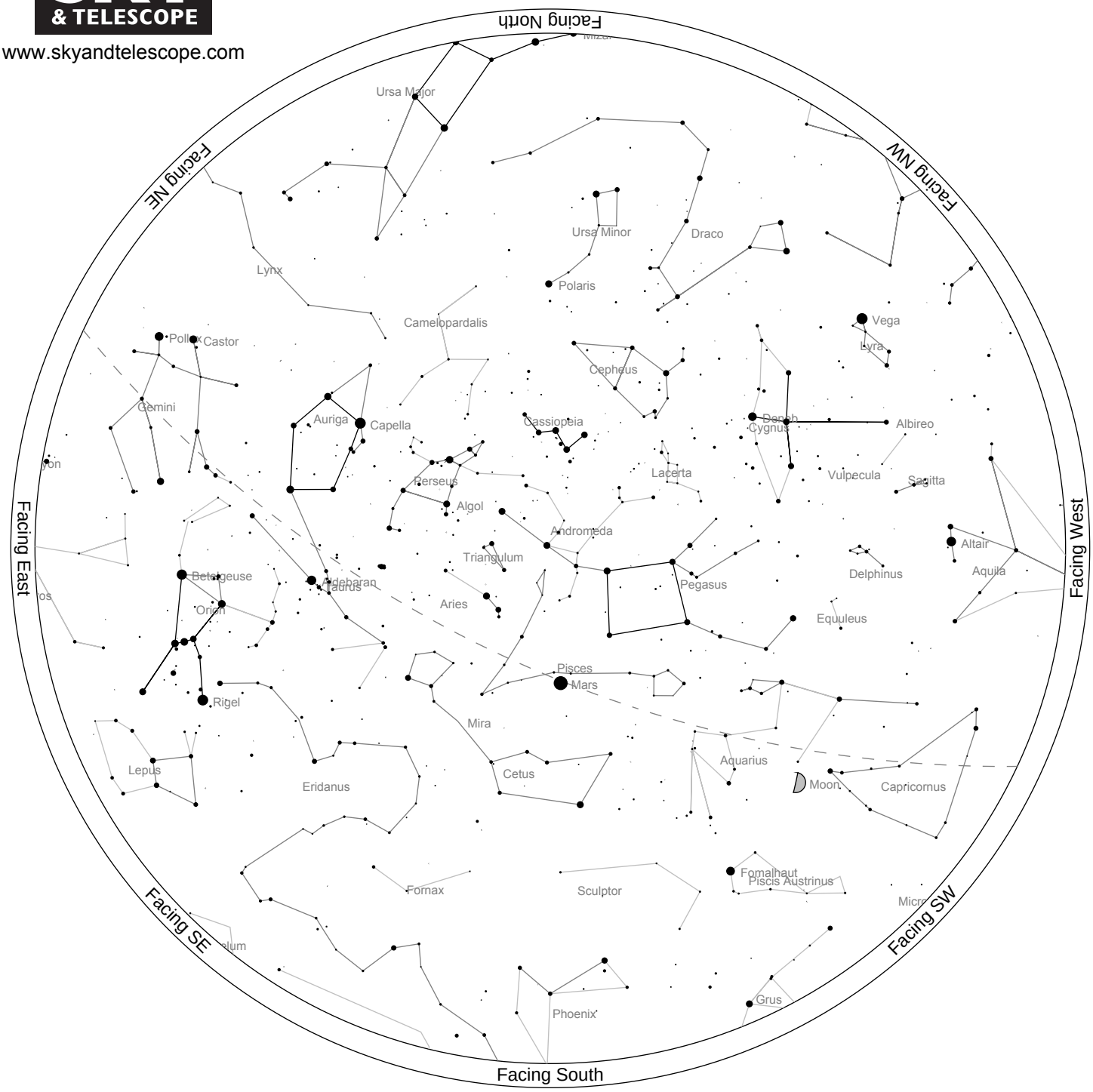

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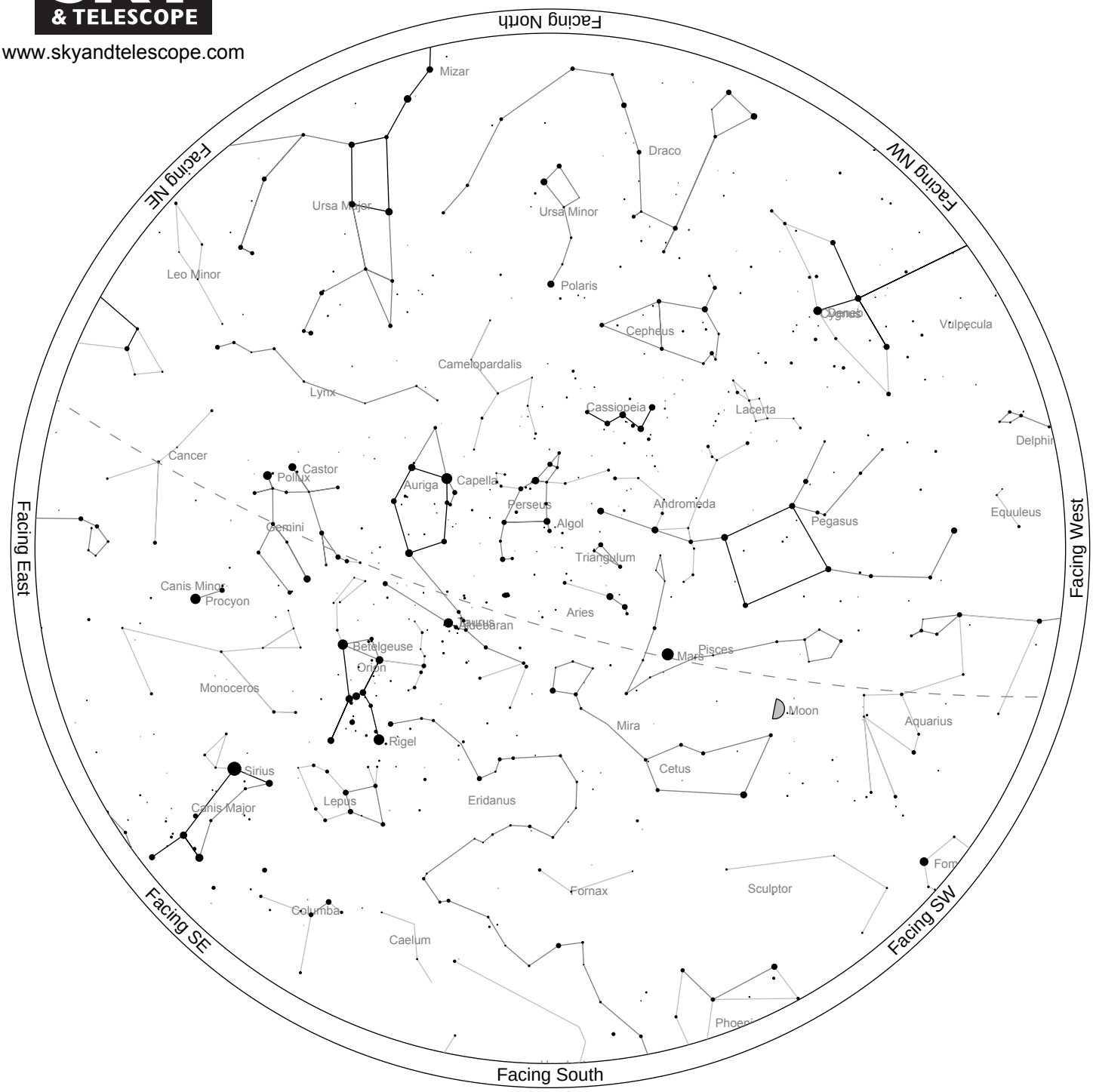

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