

Science Olympiad: REACH FOR THE STARS
Arizona State Test

School Name: _____
Team #: _____ Team Name: _____

Team Member 1: _____ **Team Member 2:** _____

PART 1: Object Identification (20 points – 1 pt. each correct answer, not necessarily each question)

As the event supervisor points out the constellations, bright stars, and planets fill in the appropriate constellation, star, or object name. **SPELLING COUNTS!** If you do not spell it correctly it will be marked incorrect.

YOU NEED TO STATE THE ASTRONOMICAL NAME FOR THE CONSTELLATION AND EITHER THE ASTRONOMICAL OR COMMON NAME FOR STARS AND OTHER OBJECTS.

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| 1. What is the name of this star? | Polaris or alpha Ursa Minoris |
| 2. What is the name of this asterism? | Big Dipper |
| 3. What is the name of this constellation? | Perseus |
| 4. What is the name of this object? | Venus |
| 5. This object Pleiades is part of which constellation? | Taurus |
| 6. This grouping of stars is known as the Pleiades, what type of Astronomical object is it? | Open cluster |
| 7. What are the names of these two stars? | Castor & Pollux |
| 8. What is the name of this constellation? | Canis Minor |
| 9. The brightest star in this constellation (Canis Major) is called? | Sirius or alpha Canis Majoris |
| 10. In this location there is an astronomical object. To the naked eye on a clear night it looks fuzzy. What object is this? | Orion Nebula (M42) |
| 11. This star (Betelgeuse) is part of what constellation? | Orion |
| 12. In this location there is an astronomical object. To the naked eye, on a really clear night, it looks like a small fuzzy star. What object is this? | Andromeda Galaxy (M31) |

TURN OVER

**ANSWER THE FOLLOWING QUESTIONS
WHEN PROMPTED.**

Circle the best answer:

13. In what direction would you be facing if you are looking straight at this object (Venus)?

- a. North
- b. South
- c. East
- d. West

14. Circle all possible locations on Earth where the stars would appear to move this way:

- a. Equator
- b. U.S.A.
- c. South Pole
- d. North Pole
- e. Australia
- f. Japan

15. Which direction are we moving on Earth?

- a. To a more northern latitude.
- b. To a more eastern longitude.
- b. To a more western longitude.
- c. To a more southern latitude.

16. Where does the sun rise at this location on this day?

- a. In the west.
- b. In the east.
- c. In the north.
- d. In the south.
- e. The sun is not in the sky on this day at this location so it never rises.
- f. The sun is always in the sky on this day at this location so it never rises.

17. Circle all possible locations on Earth where the stars would appear to move this way:

- a. Equator
- b. U.S.A.
- c. South Pole
- d. North Pole
- e. Australia
- f. Japan

PART 2: CONTENT TOPICS

Answer the questions as indicated:

A. Moon Phases

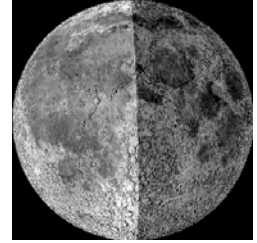
Use the diagram and your understanding of the lunar phases to answer the questions. **WRITE ALL ANSWERS IN THE SPACES PROVIDED.**



A

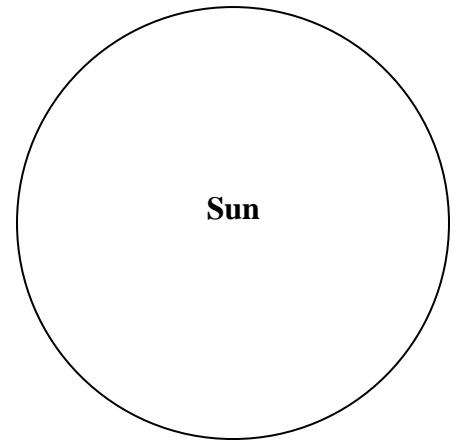
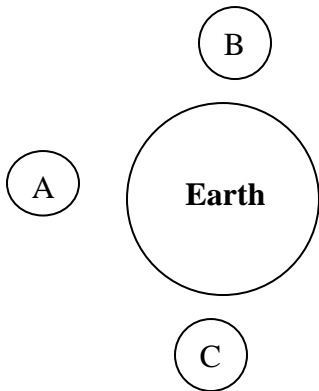


B



C

1. Draw in the positions of the moon for the phases above on the diagram. Label them as A, B, and C. (Note: Diagram is not to scale.)

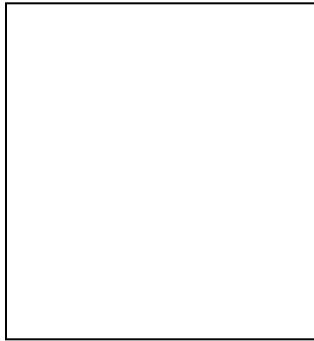


2. Complete the following phrases using correct moon phase terminology.

- a. Image A shows the moon in the Full phase.
- b. Image B shows the moon in the 1st Quarter phase.
- c. Image C shows the moon in the 3rd Quarter phase.

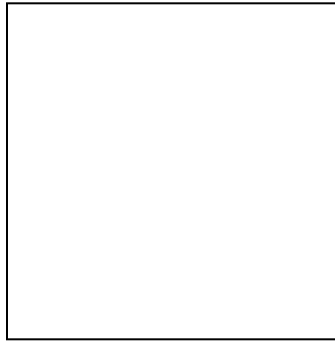
3. Pretend you are on the moon. Draw the “phase of the Earth” and label its phase below your drawing using correct terminology (the same terminology you would use to describe the lunar phases).

The Earth sees Image A,
the moon sees *this*:



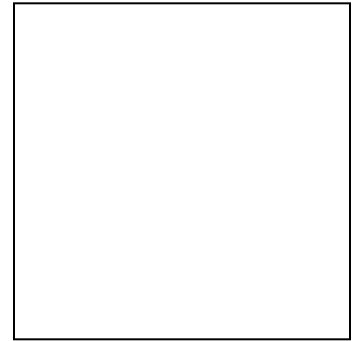
New

The Earth sees Image B,
the moon sees *this*:



3rd Quarter

The Earth sees Image C,
the moon sees *this*:



1st Quarter

4. How long does nighttime last on the Moon?

About 15 days (half of 29.5 days)

5. If we see a full moon in Tucson at 8:00 pm tonight, what phase of the moon does a student in Brazil see at 8:00 pm her time?

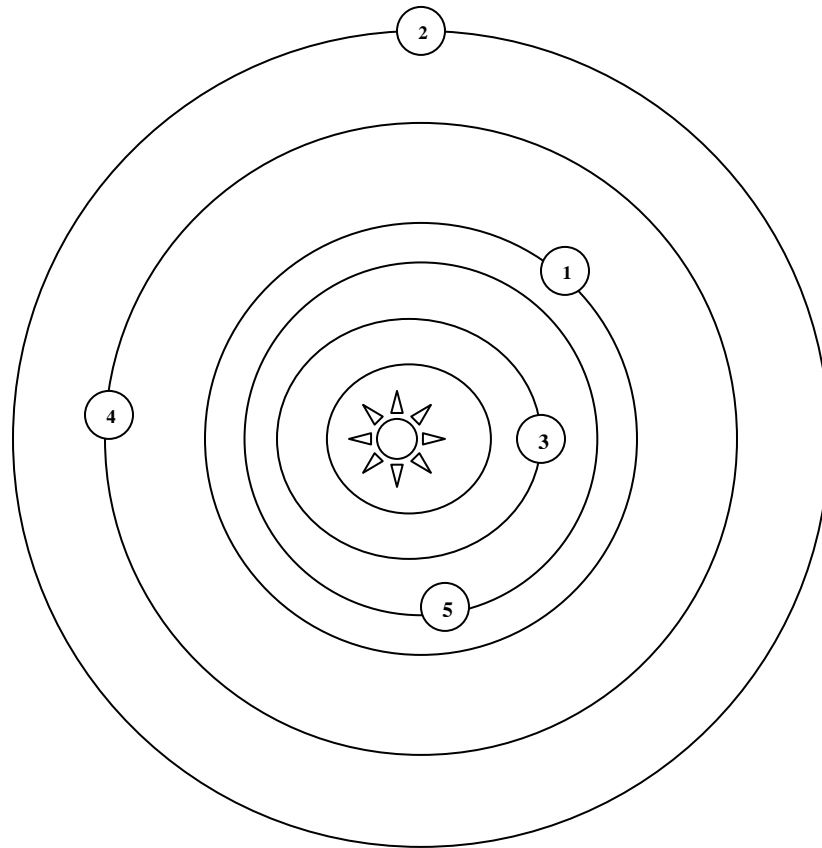
Full phase

6. If we see a full moon in Tucson at 8:00 pm tonight, what phase of the moon does a student in India see at 8:00 pm his time?

Full phase

B. The Solar System

Use the following diagram of part of the Solar System to answer the questions. *Diagram is not to scale.* **WRITE ALL ANSWERS IN THE SPACES PROVIDED, NOT ON THE DIAGRAM. ANSWERS WRITTEN ON THE DIAGRAM WILL NOT BE ACCEPTED AND WILL BE MARKED INCORRECT, however, you can sketch on the diagram.**



1. Match the planet number from the diagram above with how long it takes to orbit the sun. Write your answers in the table below. (Note: One space will be left blank.)

Planet Number from Diagram	Length of Year
4	1 year on planet = 12 years on Earth
1	1 year on planet = 2 years on Earth
3	1 year on planet = $\frac{3}{5}$ year on Earth
2	1 year on planet = 30 years on Earth
5	1 year on planet = 1 year on Earth
	1 year on planet = $\frac{1}{4}$ year on Earth

2. Identify the names of the numbered planets.

Planet 1 is really Mars.

Planet 2 is really Saturn.

Planet 3 is really Venus.

Planet 4 is really Jupiter.

Planet 5 is really Earth.

3. Which of these planets are terrestrial (list by name or by number from the diagram)?

Venus, Earth, Mars OR 1, 3, 5

4. You are on Planet 1 and are going outside to take a picture of the night sky since Planet 4 is visible. This is really cool because your friend Worf is on Planet 4 and you plan to e-mail him the digital photo when you go back inside. So you take a digital photo of the sky that includes Planet 4. It looks just like how you see it with your own eyes.

Worf, who is on Planet 4, does the same thing! He takes a picture of HIS night sky that has YOUR planet in the view! A few days later you receive his picture by e-mail. You put your picture of the night sky with Planet 4 in view next to Worf's picture of the night sky with Planet 1 (your planet) in view.

a. How does Planet 4 in your picture compare with the stars in your picture?

Planet 4 will look brighter/bigger than the stars.

b. How is the way Planet 4 looks in your picture different than the way Planet 1 looks in Worf's picture?

Planet 1 will look red. Planet 4 will look bigger/brighter than Planet 1.