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)

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. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____

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?**

    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.**

    c. **To a more western longitude.**

    d. **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 its 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**

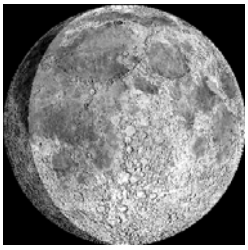
PART 2: CONTENT TOPICS (25 points)

Answer the questions as indicated:

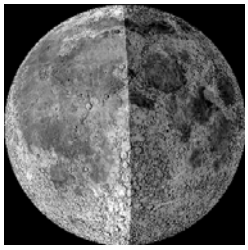
A. Moon Phases

Use the diagram and your understanding of the lunar phases to answer the questions. Spelling will count in the case of ties. WRITE ALL ANSWERS IN THE SPACES PROVIDED.

A

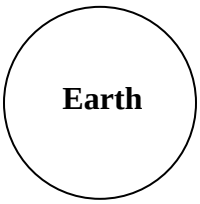


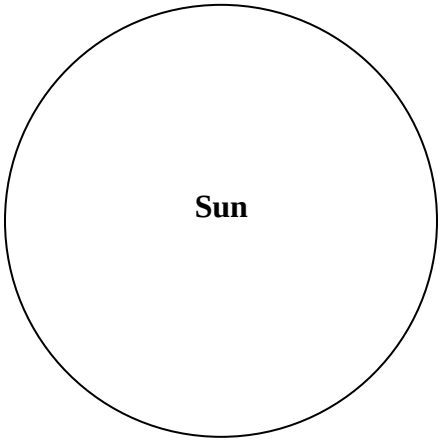
B



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 _____ phase.**

   b. **Image B shows the moon in the _____ phase.**

   c. **Image C shows the moon in the _____ 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*:	**The Earth sees *Image B*, the moon sees *this*:**	**The Earth sees *Image C*, the moon sees *this*:**
Draw Here ⇨			
Label Here ⇨	_____	_____	_____

4. **You are stationed on Moon Base Armstrong on the Moon's equator. The sun has just set. About how long will it be until you see the sun again?**

_____

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?**

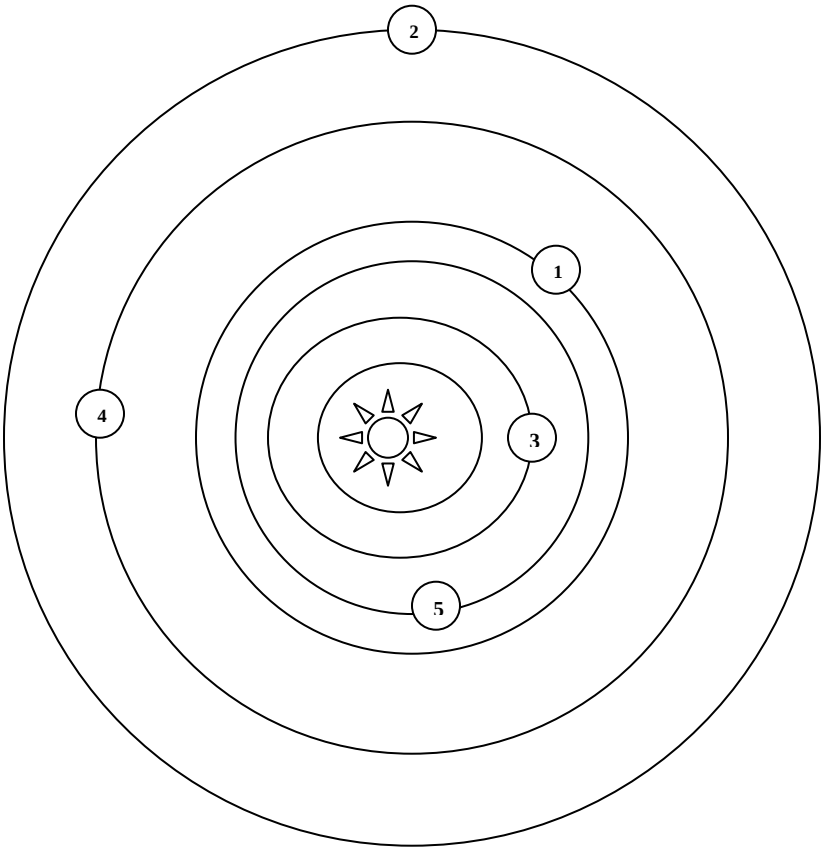
_____

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?**

_____

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
	1 year on planet = 12 years on Earth
	1 year on planet = 2 years on Earth
	1 year on planet = 3/5 year on Earth
	1 year on planet = 30 years on Earth
	1 year on planet = 1 year on Earth
	1 year on planet = ¼ year on Earth

2. *Identify* the names of the numbered planets.

Planet 1 is really _____.

Planet 2 is really _____.

Planet 3 is really _____.

Planet 4 is really _____.

Planet 5 is really _____.

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

_____

_____

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?

_____

_____

_____

_____

_____

_____

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