Suggested Team Building Process:

- All information necessary for this exercise is in the Tessmann Planetarium Student Reference pamphlet or can be calculated from its data.
- Select five questions from those suggested on this Teacher's handout or make up you own from the Student Reference.
- Copy the Tessmann Planetarium Student Reference and the Astronomy Trivia Contest.
- Break the class into teams of no more than five students each.
- Have each team pick one spokesperson.
- Using the Student Reference pamphlet, give the student teams 15 or 20 minutes to come to a consensus on answers to the questions.
- Have each spokesperson answer the questions for their teams a question at a time.
- Discuss right and wrong answers and why digging through data is often necessary to unlocked the secrets of our universe.

Astronomy Trivia Contest Answers

1. How many moons have been discovered in our Solar System as reported in the Student Reference? (Hint: some addition is necessary.)
ANSWER #1: 179 moons.

2. Which planet has the most rings, arcs, ringlets, divisions, and gaps?
ANSWER #2: Saturn with 33.

3. How many times farther away from the Sun is Neptune than the Earth?
ANSWER #3: 30.10 times.

4. What is an Astronomical Unit (AU)?
ANSWER #4: The mean distance from the Sun to the Earth or 149,598,261 kilometers or 92,956,021 miles.

5. Are kilometers always a larger number or a smaller number than miles?
ANSWER #5: Larger since you multiple kilometers by 0.621371 to get miles.

6. Who discovered Pluto? ***ANSWER #6: Clyde Tombaugh in 1930.***

7. How many moons does Jupiter have?
ANSWER #7: 64 moons.

8. How many Earths, based on volume, could our Sun hold?
ANSWER #8: 1,295,240 Earths.

9. What is Newton's 3rd Law of Motion? (Hint: *For every action…*)
ANSWER #9: For every action, there is an equal and opposite reaction.

10. How long does it take Makemake to make one orbit of the Sun? (Hint: Answer in years.)
ANSWER #10: 309.88 years.

11. Bonus for upper grades: See the "Why do the change?" section in your Student Reference. You will see that the positions from the Sun of one planet (Neptune) and two dwarf planets (Pluto and Eris) change over time. Can you figure out why? Explain and discuss.
Explanation: Neptune has a more circular orbit than either Pluto or Eris, which have elliptical orbits. At their closest approaches to the Sun, Pluto or Eris are closer to the Sun than Neptune placing Neptune into ninth position from the Sun from its current eighth position. Pluto is inside Neptune's orbit for 20 years out of every 248 years. Pluto was the eighth planet from February 7, 1979 to February 11, 1999. Eris will be in the eighth position about 800 years.

Tessmann Planetarium

Teacher's Handout

**Santa Ana College
Rancho Santiago Community
College District**

Astronomy Trivia Contest

Objectives of this Exercise

This exercise is intended to enhance students' analytical abilities as they extract information from the Tessmann Student Reference pamphlet and use that information to answer questions. This exercise is also designed to:

- Promote working together in teams to reach consensus.
- Develop an understanding of answering questions through careful investigation of data.
- Augment and strengthen the K-12 State of California Science Content Standards.
- Analyze data to develop logical conclusions.
- Appreciate that as we discover more about our universe, we always have a lot more to learn.
- Learn a little astronomy and have fun with it through a team building experience.

Tessmann Planetarium Astronomy Trivia Contest

(Recommended for 3rd Grade and up.)

Team: _____

Team Spokesperson: _____

Astronomy Questions:

1. How many moons have been discovered in our Solar System as reported in the Student Reference? (Hint: some addition is necessary.) ANSWER #1: _____

2. Which planet has the most rings, arcs, ringlets, divisions, and gaps? ANSWER #2: _____

3. How many times farther away from the Sun is Neptune than the Earth? ANSWER #3: _____

4. What is an Astronomical Unit (AU)? ANSWER #4: _____

5. Are kilometers always a larger number or a smaller number than miles? ANSWER #5:_____

6. Who discovered Pluto? ANSWER #6: _____

7. How many moons does Jupiter have? ANSWER #7: _____

8. How many Earths, based on volume, could our Sun hold? ANSWER #8: _____

9. What is Newton's 3rd Law of Motion? (Hint: *For every action…*)

   ANSWER #9: _____

10. How long does it take Makemake to make one orbit of the Sun? (Hint: Answer in years.)

    ANSWER #10: _____

11. Bonus for upper grades: See the "Why do the change?" section in your Student Reference. You will see that the positions from the Sun of one planet (Neptune) and two dwarf planets (Pluto and Eris) change over time. Can you figure out why? Explain and discuss.