MeTEOR Performance Task
Fi h Grade

Mathematics
To the Moon and Back

Performance Task Item: To the Moon and Back

Task/Question 1:

***Scenario**:* You might have heard or read the expression "I love you to the moon and back". What do you think that means? Can you really love someone to the moon and back? Let's find out.

A. Write a paragraph explaining what you think the expression "I love you to the moon and back means". Give examples of when you have heard or read the expression.

B. On a notecard write an estimation for how many miles you think it is from earth to the moon and back, explain your estimation.

C. Form a class number line to visually represent the smallest estimated number to the greatest estimated number.

D. Record on the back of your notecard the class estimations from smallest to largest. Record the mean, median and mode using the class estimations.

Task/Question 2:

In pictures the moon appears to be close to Earth, however it is very far away. According to NASA the moon is 238,855 miles or 384,400 km. from Earth.

A. How do you decide which unit of measurement to use (miles or kilometers)?

B. How many miles is it to the moon and back? Show your work.

C. With your math triangle partners compare your estimation form Task 1 with the total number of miles provided by NASA.

D. Using your estimation and the actual miles to the moon and back write a number comparison statement using <, >, =.

Task/Question 3:

Your group task is to make a visual representation to give you an idea of how far apart the moon and earth are. You will need extra space to compete this task. A suggestion would be to go outside or into the gym.

A. Your group task is to make a visual representation to give you an idea of how far apart the moon and earth are. Place a basketball on the ground-this represents **Earth**. Use a measuring tape to find a spot **23 feet 7 inches** away from the middle of the basketball. Place a tennis ball at that spot. The tennis ball is **the moon**. Attending to precision is important when measuring, therefore have another member of the group re-measure to see if they agree or disagree with your measurement.

B. Are the **basketball Earth** and **tennis ball moon** farther apart than you expected? Do you think this scale is accurate? Discuss your mathematical thinking with your group members. Have your teacher take a picture to show others how far apart the moon and Earth are.

Task/Question 4:

A. NASA has started planning for another trip to the moon and further in 2018. Read the following text. http://observer.com/2016/02/nasa-will-return-to-the-moon-in-preparation-for-human-mars-mission/

Develop three questions you have for NASA regarding the upcoming mission to the moon and further:

B. Previous travels to the moon have varied in the amount of time it took to land on the moon:

- The slowest mission to fly to the Moon was actually one of the most advanced technologies to be sent into space. The ESA's *SMART-1* lunar probe was launched on September 27th, 2003 and used a revolutionary ion engine to propel it to the Moon. *SMART-1* slowly spiraled out from the Earth to arrive at its destination **one year, one month and two weeks** later on November 11th, 2004.
- The Apollo missions, which were the only manned Lunar missions, were fairly quick in reaching the Moon. Naturally, it was the Apollo 11 mission, where Neil Armstrong and Buzz Aldrin became the first men to walk on the Moon that made the greatest headlines. This mission began on July 16th, 1969, where a Saturn V multi-stage rocket took the astronauts from Kennedy Space Center into orbit. The famous "One small step for man, one giant leap for mankind" speech would not take place until July 21st, **roughly 109 hours and 42 minutes into the mission**. After dusting off from the Lunar surface, the Lunar Module **spent another 2 days, 22 hours and 56 minutes getting back to Earth**. In addition to being the first manned mission, Apollo 11 was also the fastest trip to the Moon where astronauts were involved.

Analyze the information above. In your own words describe the difference between the travel time to the moon from the SMART-1 and Apollo 11:

C. Calculate the total time it took Apollo 11 to go to the moon and return to Earth:

D. With advancement in space travel the 2018 trip to the moon will take less time than the Apollo 11 mission. Travel time will decrease by 1/10 of the time. What will the travel time be?

Task/Question 5:

Using the information gained from creating a model of the Earth and Moon, the article you read and the facts about the Apollo and SMART-1 mission do you think someone can you really love someone to the moon and back? Provide evidence to support your opinion. Be prepared to share with your classmates.

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