MISSION ANALYSIS

To:	Mission Director
From:	_____, Planetary Science Analyst *Name*
Subject:	Mission Planning for _____ *Planet/Moon*
Purpose:	As a planetary scientist at NASA, our team will multiply and divide large numbers using scientific notation to calculate vital information—such as travel distance, diameter comparisons, and weight—for our mission.

Travel Distance

In preparation for our mission, we found the straight-line distance from Earth to our selected planet/moon (in kilometers). Our spacecraft will make 3 round trips to that destination, so we multiplied our found distance by 6, since 3 round trips means that we traveled that distance a total of 6 times, to get our total distance (in kilometers).

	Straight-Line Distance from Earth (km)	**Number of Round Trips (× 2)**	**Total Travel Distance (km) (Show Your Work)**
Example	1.34×10^6	$3 \cdot 2$	$1.34 \times 10^6 \cdot 6$ $= 8.04 \times 10^6$
Your Selected Planet/Moon		$3 \cdot 2$	

Applying Initial Finding

We used the information from our initial findings from our Mission Report to perform the following calculations. All our final results are written in scientific notation and rounded to 2 decimal places.

Diameter Ratios

To compare the diameters, we found the ratio of our selected planet/moon to that of the Earth. In other words, we divided the diameter of our selected planet/moon by the diameter of the Earth (1.27×10^4 km).

	Planet/Moon's Diameter (km)	Earth's Diameter (km)	Ratio (Show Your Work)
Example	2.15×10^5	1.27×10^4	$\frac{2.15\times10^5}{1.27\times10^4} = 1.69\times10^1$
Your Selected Planet/Moon		1.27×10^4	

Weight Comparison

Our astronaut who will pilot our spacecraft has a mass of 8.1×10^1 kilograms. We know our pilot will have a weight dependent on our planet/moon's surface gravity. So, we calculated this weight in Newtons (N) by multiplying our pilot's mass by the surface gravity (m/s^2).

	Pilot's Mass (kg)	Surface Gravity (m/s^2)	Weight (N) (Show Your Work)
Example	8.1×10^1	2.3×10^0	$\left(8.1\times10^1\right)\left(2.3\times10^0\right) = 1.86\times10^2$
Your Selected Planet/Moon	8.1×10^1		