Name_____ Period _____ Date _____

Space Gravity   STEM Sims

Lesson 3: You Got Gas?
Rockets that carry astronauts into space operate using a variety of different fuels. The type of fuel is one factor that impacts the thrust provided by the rocket engine. Rocket engineers must design the engine's thrust to meet the lifting needs due to the gravitational attraction of a space object. Can you create a rocket that safely lifts off?

Doing the Science
1. Start the Space Gravity Simulation by clicking on the "Sim" tab.
2. Note and record in Table 1 the ten-letter Location code.
3. Use the Ball Drop (Lesson 1) or Spring Stretch (Lesson 2) experiments to find the gravitational acceleration of the space object.
4. Select a type of fuel to power your rocket. Record the type of fuel in Table 1.
5. Note the Thrust provided by this fuel selection. Record the fuel's thrust in Table 1.
6. Click the Launch" button and record in Table 1 the number of "G's" experienced by the astronauts.
7. Repeat steps 2 – 6 for a total of three different space locations, making sure to select the same type of fuel for all three tests.

Table 1.

Location ID	Gravitational Acceleration (m/s^2)	Fuel Type	Thrust (MN)	Launch "G's" (relative to Earth)

Do You Understand?
1. Which factors remained constant in this experiment?

2. Which factors were related in this experiment? Explain how the factors were related.

3. If a space location had a gravitational acceleration that was two times larger than the largest gravitational acceleration you tested in this laboratory, how would the launch "G's" on this new space location compare to the launch G's" on the location you tested with the largest gravitational acceleration?