# Homework

1. Write a script named compute\_gravitational\_force.m that computes the force of gravity between two objects given their masses and the distance between them.
   1. Newton’s law of universal gravitation states the force of gravity between two objects is proportional to the product of the masses, and inversely proportional to the square of the distance between them: , where is the gravitational constant.
   2. Assume 1 pound on Earth is the same as 4.4537 Newtons of force on Earth.
   3. The script should assume that variables mass1, mass2, and distance already exist in the workspace. That is, **this script does not prompt the user for input.**
   4. The script should store the results of the computations in the variables gravitationalForceNewtons, gravitationalForceLbs.
   5. Your script might be 5 lines of code, not counting comments.
   6. Your script must be commented, including help comments.
2. Write a script named exoweight.m that prompts the user for their weight in pounds on Earth and prints how much they would weigh on each of at least 3 celestial bodies of your choosing, other than Earth.
   1. Use appropriately-named variables to represent the masses and radii of the celestial bodies, as well as the conversion factors.
      1. Constants should be all-caps, e.g. MASS\_OF\_MOON
   2. Assume 1 pound = 0.454 kilograms.
   3. Assume 1 kilogram exerts 9.81 Newtons of force on Earth.
   4. Use compute\_gravitational\_force to compute the gravitational forces.
   5. Test case:
      1. Someone who weighs 132 lbs on Earth would weigh 21.85 lbs on the Moon, which has a mass of 7.34767309e22 kg and a radius of 1737400 m.
   6. Output should be formatted to look like   
      You would weigh 21.85 lbs on the Moon.
   7. Your script might be 21 lines, not counting comments.
   8. Your script must be commented, including help comments.
3. Submit compute\_gravitational\_force.m and exoweight.m to eCampus.