Answer the following and submit to your instructor.

Use the diagram to the right and the description below to answer questions 1-5.

Two asteroids with masses m1 and m2 are separated by a distance of 240 meters and feel an attractive force of 820 Newtons.

1. What would the force between the asteroids be if the distance were cut in half, to 120 meters?
   1. 205 N
   2. 410 N
   3. 820 N
   4. 1,640 N
   5. 3280 N
2. What would the force be between the asteroids if m2 were doubled?
   1. 410 N
   2. 820 N
   3. 1,230 N
   4. 1640 N
   5. 3,280 N
3. What would the force be between the asteroids if m1 were decreased to 1/3 its original value?
   1. 91.1 N
   2. 273 N
   3. 410 N
   4. 1640 N
   5. 2460 N
4. At what distance would the force be decreased to 32.8 N?
   1. 9.6 m
   2. 48 m
   3. 480 m
   4. 1,200 m
   5. 6000 m
5. What is the gravitational force on a 1 kg mass on the surface of Pluto, which has a mass of 1.32 × 1022 kg and a radius of 1.15 × 106 m? Show your work.
6. Mars’ moon Phobos has a mass of about 9.6 × 1015 kg and its orbit is 9.4 × 106 m above the center of Mars. If the mass of Mars is 6.4 × 1023 kg, what is the magnitude of the gravitational force between the two bodies?
7. In addition to Phobos, a moon called Deimos also orbits Mars. Deimos orbits with an average speed of 1.35 km/s, while Phobos orbits at an average speed of 2.14 km/s. Which of the two moons is in a higher orbit above Mars? Support your answer.