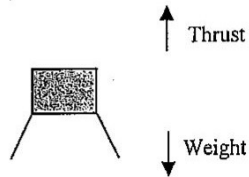


PHY 111

Lunar Lander (Newton's 2nd law)

Since parachutes do not work on the moon, a lunar lander has to use an upward rocket thrust to slow its descent. The acceleration of gravity on the moon is 1.6 m/sec^2 .



A lunar lander has a mass of 2000 kg and is descending toward the surface of the moon with an initial velocity of 40 m/sec.

- a) What is the weight of the lunar lander?
- b) Suppose the upward thrust on the lander is 3200 N.
 - Draw a force diagram. What is the net force on the lander?
 - Draw a motion diagram for the lander.
 - What would be the impact speed of the lander on the surface?
- c) Now let the thrust force be 13,200 N.
 - Draw a force diagram. What is the net force on the lander?
 - Draw a motion diagram for the lander.
 - What is the acceleration?
 - How many meters will it take for the lander to come to a stop?