ABRHS PHYSICS NAME: _____

Mass & Weight Problems

$g_{earth} = 10\ m/s^2$ $g_{moon} = 1.6\ m/s^2$ $g_{mars} = 3.7\ m/s^2$ $g_{Jupiter} = 24.8\ m/s^2$

1. What is the force of gravity on a person of mass 55 kg on the earth?

2. How much does a 75 kg person weigh on the earth?

3. How much would a 75 kg person weigh on the moon?

4. What is the mass of a person who weighs 950 N on the earth?

5. What is the mass of a person who weighs 140 N on the moon?

6. Object A weighs 100 N on the earth while Object B weighs 100 N on the moon.
   a. Which has more mass?

   b. Which would be more difficult to pick up and hold? Why?

   c. Which would be more difficult to push sideways? Why?

7. How much would a container of milk that weighs 20 N on the earth weigh on Jupiter?

8. If a person weighs 1500 N on Jupiter, how much would they weigh on Mars?

9. An astronaut on a far away planet drops a 50 kg backpack from a height of 1.5 meters. It falls for 2.2 seconds. How much does the backpack weigh on that planet?

Answers:` 1) 550 N 2) 750 N 3) 120 N 4) 95 kg 5) 87.5 kg
6. a) B b) same; same weight c) B; more mass
7) 49.6 N 8) 224 N 9) 31 N ($g = 0.62\ m/s^2$)