Planet Holloway - **Websheet 7.1**
AP Physics C - Chapter 7
You may print this out and write on it or work on your own paper.
Show all work.

Assume Planet Holloway is different for each problem below. (g_{earth} = 10 m/s/s)

1. An object of mass 1.2 kg is transported to Planet Holloway where its weight is measured to be 18 N. What is the freefall acceleration on Planet Holloway?

2. Planet Holloway has twice the radius of Earth, but the same density. What is the gravitational acceleration at the surface of Planet Holloway?

3. If Planet Holloway has a gravitational acceleration of 5 m/s/s at the surface, what would the weight of a 50 kg astronaut be if they were 6 radii away from the center of Planet Holloway?

4 If Planet Holloway has 0.2 times the mass of Earth and its radius is 0.7 that of Earth, what is the gravitational acceleration at the surface of Planet Holloway. (g = 10 m/s/s)?

5. What is the mass of a penguin that has a weight of 420 N on Planet Holloway, given that Planet Holloway has 1.5 times the mass of Earth and is 40 percent the radius of Earth?

6. A head of broccoli (0.8 kg) is dropped on the surface of Planet Holloway. The acceleration is observed to be 4 m/s/s. If Planet Holloway has half the mass of Earth, what is its radius? ($r_e = 6.4 \times 10^6$ m)

Answers:

1. 15 m/s/s

2. 20 m/s/s

3. 6.94 N

4. 4.08 m/s/s

5. 4.48 kg

6. 7.16×10^6 m