

Planet Holloway **websheet 7.3**

Cp Physics Rotation and Gravity

You may print this out and write on it or work on your own paper.

Show all work.

1. What is the gravitational force between a 400 kg object and a 70,000 kg object separated by 6 meters? ($G = 6.67 \times 10^{-11} \text{ N}\cdot\text{m}^2/\text{kg}^2$)
2. A young man in physics (65 kg) sits a mere 2 m from a young woman (52 kg). How attracted to her is he? (That would be the gravitational force between them).
3. If Paul weighs 730 N on Earth, how much does he weigh on planet Holloway which is 3 times the mass of Earth, but the same radius?
4. If an iguana has a mass of 12 kg on Earth, what is its mass on planet Holloway which is 3 times the mass of Earth, but the same radius?
5. If a platypus with a weight of 152 N on Earth is brought to another planet to start a colony of space critters. This new planet, planet X, has the same mass as Earth, but is half its radius. What is the weight of the platypus on planet X?
6. If in the problem above, the platypus is brought to planet Q. Planet Q has a mass 4 times that of Earth and a radius 3 times that of Earth. What is the weight of the platypus on planet Q?

Answers:

1. $5.19 \times 10^{-5} \text{ N}$

2. $5.64 \times 10^{-8} \text{ N}$

3. 2190 N

4. 12 kg

5. 608 N

6. 67.6 N