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Activities

Your Weight On Jupiter

Name: _____ Date: _____

With gravity a fraction of Earth's, the Moon would be a fun place to dunk a basketball or jump on a trampoline. You'd also weigh a fraction of your Earth-weight. It's a different story on massive Jupiter (or a neutron star!). You'll find out more in this Planet Diary activity.

Directions

- Go to Your Weight on Other Worlds. Read *To Do and Notice*.
- Calculate your metric weight (1 pound = 2.2 kilograms) and record it for Workspace question 1a. Enter your weight (kilograms) in the *Enter Your Weight Here* box, then click *Calculate*. Scroll to see your weight on the Moon and Jupiter. Record these numbers for questions 1a and 1b.
- Scroll to *What Is Going On?* Read *Mass and Weight*, then answer questions 2 and 3.
- You've seen how weight depends, at least in part, on a planet's mass. Check out this Planet Mass Comparison. Select Earth on the left side of the scale and Jupiter on the right. Click *Compare*. To balance the scales, add Earths by clicking *Add* until the mass numbers are equal. (Hint: You'll need more than 300 Earths!) Answer question 4.
- If weight only depended on a planet's mass you would weigh over 300 times your Earth-weight on Jupiter. But you don't. Return to Your Weight on Other Worlds to understand why. Read *Relationship of Gravity, Mass, and Distance*, then answer question 5.
- Now let's get really heavy. Re-enter your weight in the calculator. Scroll to find your weight on a neutron star. Then answer the last question.

Workspace

1. Your weight on:
   a. Earth: _____ kilograms
   b. Moon: _____ kilograms
   c. Jupiter: _____ kilograms

2. What's the difference between mass and weight?

3. Explain why you're "weightless" in outer space despite having the same mass as on Earth.

4. How much more massive is Jupiter than Earth?

5. Explain why your weight on Jupiter isn't 300 times greater than your Earth weight.

6. Why does a neutron star make you so incredibly heavy?

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