

Gravity's Pull - Investigating the Effects of Gravity

Teacher Notes and Teacher's Answer Key available upon request.

Activity Extension: "How many Fig Newtons® equal one newton?", a.k.a., "Newtons® in a newton."

Do THIS...

- Visit the official Nabisco® Fig Newtons® website:
<http://www.nabiscoworld.com/newtons/>
- Search for "Nutrition Facts":
Varieties/NEWTONS - COOKIES - FIG NEWTONS 16oz
Nutrition Info



Nutrition Facts:

Serving Size _____ g

Servings per Container _____

THINK ABOUT THIS...

Problem: How Many Fig Newtons® equal one newton?

Solution: Answer the following questions. Show your work, i.e., write the formula for the problem, substitute numbers and units into the formula, and circle your answer.

1. If there are 30 cookies per (16oz) package, then how many cookies are in each serving?

2. Given the serving size in grams (g), calculate the mass of a single cookie, expressed in kilograms (kg).

3. What is the weight of a single cookie, expressed in newtons (N)?
Point of Focus: The weight of an object in newtons (N) is approximately 10 times its mass in kilograms (kg).

4. One newton (1 N) equals the total weight of how many cookies?
Point of Focus: What is the size of a newton relative to a popular cookie?

FOR FURTHER THOUGHT...

- A. Convert your weight from pounds (lb) to newtons (N).

Your Weight: _____ lb

Conversion Factor: 1kg = 2.2 lb

Dimensional Analysis: $\frac{? \text{ lb}}{1} \cdot \frac{1 \text{ kg}}{2.2 \text{ lb}} = \text{_____ kg}; \text{_____ N}$

Point of Focus: The weight of an object in newtons (N) is approximately 10 times its mass in kilograms (kg).

- B. Determine your weight (in pounds & newtons) on the Moon.
(**Note:** Your weight on the Moon is ~1/6 your weight on Earth.)
Point of Focus: Three variables determine the gravitational force of attraction between two objects: The product of the mass of the two objects divided by the distance between the objects—if one or more of the variables are changed, then the weight of an object will be different. Discover the interrelationship among these variables empirically by visiting the [Gravitational Force Calculator](http://www.wsanford.com/~wsanford/gr8ps/04_red/02_gravitys_pull/extras/gravity-calculator.html):
http://www.wsanford.com/~wsanford/gr8ps/04_red/02_gravitys_pull/extras/gravity-calculator.html

_____ lb; _____ N