



Name: _____

Date: _____

Student Exploration: Gravitational Force

Vocabulary: force, gravity, vector

Prior Knowledge Questions (Do these BEFORE using the Gizmo.)

On the night of a Full Moon, Mary decides to do an experiment with **gravity**. At midnight, she climbs into her backyard tree house, leans out the window, and holds an acorn as high as she can. She lets go and is disappointed to see the acorn plummet back down to Earth.

1. Why did the acorn fall to Earth instead of rising up to the Moon? **The force of Gravity**
2. Give two reasons why we feel Earth's gravity more strongly than the Moon's gravity.

We are on Earth so the force will always be stronger and the Earth is bigger than the moon

Gizmo Warm-up

From acorns to apples, gravity causes nearly any object to fall to Earth's surface. Gravity also causes the Moon to orbit Earth and Earth and the other planets to orbit the Sun. The Gravitational Force Gizmo allows you to explore the factors that influence the strength of gravitational force.



To begin, turn on the **Show force vector** checkboxes for objects A and B. The arrows coming from each object are **vectors** that represent gravitational **force**. The length of each vector is proportional to the force on each object.

1. Move object **A** around. As object **A** is moved, what do you notice about the direction of the two force vectors? **They stayed together**
2. How do the lengths of the two vectors compare? **The closer they get the longer they'll get**
3. Drag object **A** closer to object **B**. How does this change the gravitational force between the two objects? **It increases them**



Gravitational Force Gizmo Answers

Karin Nielsen-Saines

A red circular graphic with a gradient, appearing as a semi-circle or a partial circle, located to the right of the author's name.

Gravitational Force Gizmo Answers:

New Scientist ,2007

New Scientist and Science Journal ,2007-10

Gravitational, Magnetic, & Electric Forces

Daniel R. Faust,2020 Why do objects fall toward the ground What makes electric lights go on when we flip a switch How do magnets work The answers to these questions and many more become clear when you understand how electromagnetic force and gravitational force operate This book looks at these forces and presents key concepts in an accessible way Important theories and applications are presented in simple age appropriate language Full color photographs and primary sources provide readers with additional information

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