

# NGSS MS-PS2-4

## Curriculum Bundle

### Gravitational Attraction Explained Mass and Distance

- ✓ 1 Lesson, 3 Activities
- ✓ Everything You Need to Teach NGSS MS-PS2-4



# Resources Included

✓ **1 Lesson**

✓ **3 Activities**

- Gravitational Interactions - Mass and Distance – Lesson
- Crash Course Video Worksheet Compilation - GRAVITY
- Crash Course Video Worksheet - The Gravity of the Situation
- Orbit Rope Model Activity

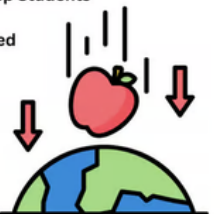
## Gravitational Interactions Mass & Distance Lesson

- ✓ **Comprehensive Content Overview** – Cover what gravity is, the relationship between gravity and mass as well as gravity and distance, the moon and tides, and gravity's role in the solar system.
- ✓ **Student-Friendly Format** – Clear visuals and comparisons support understanding of complex concepts.



## Crash Course KIDS GRAVITY Compilation

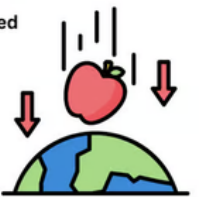
- ✓ **Classroom Ready** - Just Print and Go!
- ✓ **Active Engagement** - Keep Students' Attention
- ✓ **Direct Video Link Included**



Includes Student Copy  
and Answer Keys

## Crash Course Astronomy #7 The Gravity of the Situation

- ✓ **Classroom Ready** - Just Print and Go!
- ✓ **Active Engagement** - Keep Students' Attention
- ✓ **Direct Video Link Included**



Includes Student Copy  
and Answer Keys

# Everything You Need to Teach NGSS MS-PS2-4

## Gravitational Interactions Mass & Distance Lesson

- ✓ **Comprehensive Content Overview** – Cover what gravity is, the relationship between gravity and mass as well as gravity and distance, the moon and tides, and gravity's role in the solar system.
- ✓ **Student-Friendly Format** – Clear visuals and comparisons support understanding of complex concepts.



## Crash Course Astronomy #7 The Gravity of the Situation

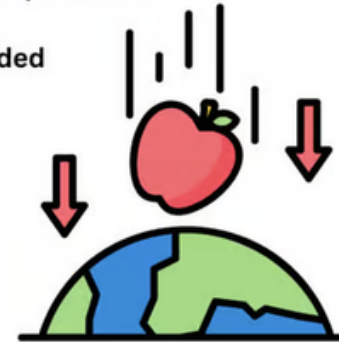
- ✓ **Classroom Ready - Just Print and Go!**
- ✓ **Active Engagement - Keep Students' Attention**
- ✓ **Direct Video Link Included**



**Includes Student Copy  
and Answer Keys**

## Crash Course KIDS GRAVITY Compilation

- ✓ **Classroom Ready - Just Print and Go!**
- ✓ **Active Engagement - Keep Students' Attention**
- ✓ **Direct Video Link Included**



**Includes Student Copy  
and Answer Keys**

### Orbit Rope Model Activity

**Objective:** Model gravitational attraction using a hands-on demonstration to explore how mass and distance affect orbit.

#### Materials (per group):

- A ball of yarn or light rope (~2 meters)
- A heavy object (like a large rubber ball or weight) to represent the Sun
- A smaller object (like a tennis ball) to represent a planet
- Tape or chalk to mark positions

#### Procedure:

1. Place the "Sun" in the center of the room.
2. Tie one end of the string to the "planet" and the other to a fixed point near the "Sun."
3. Walk the planet in a circular path around the Sun to simulate orbit.
4. Try it again with a shorter string (closer orbit) and observe the speed.
5. Discuss what might happen if the planet were lighter or farther away.

#### Discussion Questions:

1. Why does the "planet" move around the "Sun" instead of flying away?
2. What happened when the planet was farther from the Sun?
3. What would happen if gravity disappeared (if the string was cut)?

#### Discussion Questions: KEY

1. Why does the "planet" move around the "Sun" instead of flying away?  
**Answer:** The string represents gravity keeping the planet in orbit.
2. What happened when the planet was farther from the Sun?  
**Answer:** The orbit was wider and slower.
3. What would happen if gravity disappeared (if the string was cut)?  
**Answer:** The planet would fly off in a straight line.

# The Standard is Explained and the Resources it Incorporates are Outlined

## California Preferred Integrated NGSS Course Model – Grade 8 MS PS2 Motion and Stability: Forces and Interactions

**MS PS2-4: Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.**

Examples of evidence for arguments could include data generated from simulations or digital tools; and charts displaying mass, strength of interaction, distance from the Sun, and orbital periods of objects within the solar system.

**Assessment Boundary:** Assessment does not include Newton's Law of Gravitation or Kepler's Laws.

### Resources:

- Gravitational Interactions - Mass and Distance – Lesson
- Crash Course Video Worksheet Compilation - GRAVITY
- Crash Course Video Worksheet - The Gravity of the Situation

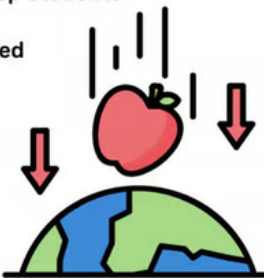
## Gravitational Interactions Mass & Distance Lesson

- ✓ **Comprehensive Content Overview** – Cover what gravity is, the relationship between gravity and mass as well as gravity and distance, the moon and tides, and gravity's role in the solar system.
- ✓ **Student-Friendly Format** – Clear visuals and comparisons support understanding of complex concepts.



## Crash Course KIDS GRAVITY Compilation

- ✓ **Classroom Ready** - Just Print and Go!
- ✓ **Active Engagement** - Keep Students' Attention
- ✓ **Direct Video Link Included**

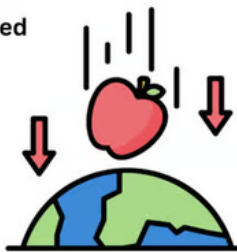


Includes Student Copy  
and Answer Keys



## Crash Course Astronomy #7 The Gravity of the Situation

- ✓ **Classroom Ready** - Just Print and Go!
- ✓ **Active Engagement** - Keep Students' Attention
- ✓ **Direct Video Link Included**



Includes Student Copy  
and Answer Keys



# **Who is this Bundle for?**

---

- **Teachers who teach middle school science and use the NGSS**
- **Teachers who want multiple resources at their fingertips including lessons and a variety of activities, in order to meet the standard**
- **Teachers who don't have time to develop their own resources or organize what to teach and when**