5-PS2-1 Motion and Stability- Forces and Interactions

5-PS2-1. Support an argument that the gravitational force exerted by Earth on objects is directed down. [Clarification Statement: "Down" is a local description of the direction that points toward the center of the spherical Earth.] [Assessment Boundary: Assessment does not include mathematical representation of gravitational force.]

Literacy or Informative Text	Lab Investigations	Assessments
Scott Foresman text pages:B56-71) **The Science Penguin** **Science and Literacy** **Delta Reader-Forces and Motion** **Newton's law of Motion (School Discoveryeducation.com)** **Sir isaac Newton (readworks.com)** **Force and Motion (A2) Forces and Motion Activities (Lakeshore learning.com)**	**Law of Motion#1** • **Coin Magic Trick (godleyisd.net)** • **Wacky Washers (sciencespot.net)** • **Newton Gravity beads (sickscience.com)** **Law of Motion #2** • **Marble Drop (Inspiration laboratories.com)** • **The Rolling Car(k12.wa.us)** **Law of Motion #3** • **Balloon Lab (Balloon Lab Newton's 3rd Law Elizabeth Serva)** • **Balloon Rockets Lab-text pgs:69-71** • **Lego Balloon Car (groovylabinabox.com)**	• **Warm Up Activities** • **Investigations** • **Scientific Method Documentation** • **Graphic Organizers** • **Lab Matrixes/written observations** • **Written Connection Summary** • **Foldables/Lab Interactive Notebooks** • **Performance Indicator Assessments** • **Teacher Observations/Student Participation**

Technology:

Law#1- Newton's First law of Motion (Smart Learning for All) (Make me Genius)
Science for NFL- National Science Foundation
Law #2-Newton's Second Law of Motion- (smart learning for All) (make me genius)
(nationalsciencefoundation)
Demonstration (newwaverly7)
Law #3-Newton's 3rd Law (Smart learning)
Bill Nye and Newton's 3rd Law (George Buford)
Newton's 3rd Law by Professor mac (Learning with mac)
Newton's 3rd (makemegenius)
All three Laws
Laws of motion (physics4kids.com)
Newton's Law of Motion(brainpop.com
" " (hardwick.assu.org)

Observable features of the student performance by the end of the grade:

1. Supported claims a Students identify a given claim to be supported about a phenomenon. The claim includes the idea that the gravitational force exerted by Earth on objects is directed down toward the center of Earth.

2. Identifying scientific evidence a Students identify and describe* the given evidence, data, and/or models that support the claim, including:
i. Multiple lines of evidence that indicate that the Earth's shape is spherical (e.g., observation of ships sailing beyond the horizon, the shape of the Earth's shadow on the moon during an eclipse, the changing height of the North Star above the horizon as people travel north and south).
ii. That objects dropped appear to fall straight down.
iii. That people live all around the spherical Earth, and they all observe that objects appear to fall straight down.

3. Evaluation and critique a Students evaluate the evidence to determine whether it is sufficient and relevant to supporting the claim. b Students describe* whether any additional evidence is needed to support the claim. 4 Reasoning and synthesis a Students use reasoning to connect the relevant and appropriate evidence to support the claim with argumentation. Students describe* a chain of reasoning that includes:
i. If Earth is spherical, and all observers see objects near them falling directly "down" to the Earth's surface, then all observers would agree that objects fall toward the Earth's center.
ii. Since an object that is initially stationary when held moves downward when it is released, there must be a force (gravity) acting on the object that pulls the object toward the center of Earth.