

Correlation of Resources to National Science Standards

Use the chart below to discover how selected Science A–Z resources in the Force and Motion unit support certain Next Generation Science Standards* (NGSS). While a single reading resource, science activity, comprehension support, or lesson cannot satisfy an entire Performance Expectation, using these resources together can help students develop the understandings and abilities they will need in order to satisfy each standard listed below. Most standards cited align with the grade level of this Science A–Z unit. For a reverse correlation tool that connects the standards to resources, visit our NGSS correlations page: www.sciencea-z.com/main/NextGenerationScienceStandards.



Check the Performance Expectations Key below this chart for the complete text of the standards cited for each resource.

Resource Type	Resource Title	Performance Expectations
Unit Nonfiction Book	<i>Force and Motion</i> (3 reading levels)	3-PS2-1; 3-PS2-2; 4-PS3-1; 4-PS3-3; 5-PS2-1; MS-PS2-1; MS-PS2-2; MS-PS2-4; MS-PS3-1
Project-Based Learning Pack	<i>Design Your Own Amusement Park Ride</i>	3-PS2-1; 3-PS2-2; 4-PS3-1; 4-PS3-3; 3-5-ETS1-1; 3-5-ETS1-2; 3-5-ETS1-3; MS-PS2-2; MS-PS3-1; MS-ETS1-1; MS-ETS1-2; MS-ETS1-3; MS-ETS1-4
Interactive Science Lesson	<i>Force, Mass, and Acceleration</i> Part 1: What Is Mass?	MS-PS2-2; MS-PS3-1
Interactive Science Lesson	<i>Force, Mass, and Acceleration</i> Part 2: What Is Acceleration?	3-PS2-1; 4-PS3-3; MS-PS2-2
Interactive Science Lesson	<i>Force, Mass, and Acceleration</i> Part 3: Connecting Force, Mass, and Acceleration	3-PS2-1; 4-PS3-1; MS-PS2-2; MS-PS3-1
Interactive Science Lesson	<i>Force, Mass, and Acceleration</i> Part 4: How Does Force Affect Acceleration?	3-PS2-1; MS-PS2-2; MS-PS3-1
Interactive Science Lesson	<i>Force, Mass, and Acceleration</i> Part 5: Force, Mass, and Acceleration	3-PS2-1; 4-PS3-1; MS-PS2-2; MS-PS3-1
Process Activity	<i>Rubber Band Forces: Energy and Mass</i>	3-PS2-1; MS-PS2-2; MS-PS2-4; MS-PS3-1; MS-PS3-2; MS-PS3-5
FOCUS Book	<i>Soccer</i>	3-PS2-2; 4-PS3-1; 4-PS3-3; MS-PS2-1; MS-PS2-2
FOCUS Book	<i>Gravity in the Solar System</i>	5-PS2-1; MS-PS2-4; MS-PS2-5; MS-ESS1-2
FOCUS Book	<i>Racecars</i>	3-PS2-2; 4-PS3-1; 3-5-ETS1-2; 3-5-ETS1-3; MS-PS3-1; MS-ETS1-1; MS-ETS1-2; MS-ETS1-4

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Resource Type	Resource Title	Performance Expectations
FOCUS Book	<i>Roller Coasters</i>	3-PS2-2; 4-PS3-1; 5-PS2-1; 3-5-ETS1-1; 3-5-ETS1-2; 3-5-ETS1-3; MS-PS2-2; MS-PS3-2; MS-PS3-5; MS-ETS1-1; MS-ETS1-2; MS-ETS1-4
FOCUS Book	<i>Perpetual Motion: Fact or Fiction?</i>	3-5-ETS1-3; MS-PS2-2; MS-PS3-2; MS-PS3-5; MS-ETS1-2
Investigation Pack	<u>Topic:</u> Friction <u>L. Files:</u> <i>Bowling; Hockey; Swimming; Skiing</i> <u>Mystery File:</u> <i>Diving</i>	4-PS3-1; 4-PS3-3; 4-PS3-4; MS-PS2-1; MS-PS2-2; MS-PS3-1; MS-PS3-2
Debate	<i>A Sprinting Start</i>	4-PS3-1
Science Video	<i>Braking and Friction</i>	4-PS3-4; MS-PS2-1; MS-PS2-2
Science Video	<i>Effects of Friction</i>	4-PS3-4; MS-PS2-1; MS-PS2-2
Science Video	<i>FlipperBot</i>	MS-PS2-2; MS-ETS1-1; MS-ETS1-2; MS-ETS1-3; MS-ETS1-4
Science Video	<i>Force and Motion in Kickball</i>	5-PS2-1; MS-PS2-1; MS-PS2-2
Science Video	<i>Gravity, the Moon, and Tides</i>	5-PS2-1; MS-PS2-4; MS-PS2-5; MS-ESS1-2
Science Video	<i>Slow-Motion Popcorn</i> (no audio)	MS-PS2-2; MS-PS3-5
Science Video	<i>The Science of Skis</i>	4-PS3-4; MS-PS2-1; MS-PS2-2
Career Files	<i>Aeronautical Engineer; Professional Athlete; Reduced- Gravity Aircraft Pilot</i>	5-PS2-1; MS-PS2-1; MS-PS2-2
Quick Read	<i>Motion in Sports</i> (3 reading levels)	3-PS2-2; 4-PS3-1; 5-PS2-1; MS-PS2-1
Quick Read	<i>Weightless</i> (3 reading levels)	5-PS2-1; MS-PS2-2; MS-PS2-4; MS-PS2-5
Science Diagram	<i>Direction of Gravity's Pull on Earth</i>	5-PS2-1
Science Diagram	<i>Force x Distance = Work</i>	3-PS2-1; 4-PS3-1; MS-PS3-2
Science Diagram	<i>Magnets Attract and Repel</i>	MS-PS2-3; MS-PS2-5
Science Diagram	<i>Mass, Distance, and Gravity</i>	MS-PS2-2; MS-PS2-4

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Performance Expectations Key

- 3-PS2-1.** Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.
- 3-PS2-2.** Make observations and/or measurements of an object’s motion to provide evidence that a pattern can be used to predict future motion.
- 4-PS3-1.** Use evidence to construct an explanation relating the speed of an object to the energy of that object.
- 4-PS3-3.** Ask questions and predict outcomes about the changes in energy that occur when objects collide.
- 4-PS3-4.** Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.
- 5-PS2-1.** Support an argument that the gravitational force exerted by Earth on objects is directed down.
- 3-5-ETS1-1.** Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
- 3-5-ETS1-2.** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
- 3-5-ETS1-3.** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.
- MS-PS2-1.** Apply Newton’s Third Law to design a solution to a problem involving the motion of two colliding objects.
- MS-PS2-2.** Plan an investigation to provide evidence that the change in an object’s motion depends on the sum of the forces on the object and the mass of the object.
- MS-PS2-3.** Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.
- 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.
- MS-PS2-5.** Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.
- MS-PS3-1.** Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.
- MS-PS3-2.** Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.
- MS-PS3-5.** Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.
- MS-ESS1-2.** Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.
- MS-ETS1-1.** Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
- MS-ETS1-2.** Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
- MS-ETS1-3.** Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.
- MS-ETS1-4.** Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.