

DRAFT - New York State P-12 Science Learning Standards – DRAFT

P. Physical Sciences

Students who demonstrate understanding can:

- P-PS1-1.** **Ask questions and use observations to test the claim that different kinds of matter exist as either solid or liquid.**
[Clarification Statement: Emphasis should be on observing and describing similarities and differences between solids and liquids based on their physical properties. Solids and liquids can be compared and categorized (sorted) based on those properties.]
- P-PS2-1.** **Use tools and materials to design and build a device that causes an object to move faster with a push or a pull.***
[Clarification Statement: Emphasis should be on developing an interest in investigating forces (pushes or pulls). Examples of forces could include a string attached to an object being pulled or a ramp to increase the speed of an object.] [Assessment Boundary: Assessment is limited to relative measures of speed (slower, faster)]
- P-PS4-1.** **Plan and conduct investigations to provide evidence that sound is produced by vibrating materials.** [Clarification Statement: Examples of vibrating materials could include percussion instruments (e.g. drum, triangle), string instruments (e.g. guitar, piano), wind instruments (e.g. recorder, whistle), and audio speakers.]

The performance expectations above were developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p>Asking Questions and Defining Problems Asking questions and defining problems in grades PK–2 builds on prior experiences and progresses to simple descriptive questions that can be tested.</p> <ul style="list-style-type: none"> ▪ Ask questions based on observations to find more information about the designed world. (P-PS1-1) <p>Planning and Carrying Out Investigations Planning and carrying out investigations to answer questions or test solutions to problems in PK–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.</p> <ul style="list-style-type: none"> ▪ With guidance, plan and conduct an investigation in collaboration with peers. (P-PS2-1),(P-PS4-1) <p>Analyzing and Interpreting Data Analyzing data in PK–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.</p> <ul style="list-style-type: none"> ▪ Record information (observations, thoughts, and ideas). (P-PS1-1) ▪ Analyze data from tests of an object or tool to determine if it works as intended. (P-PS2-1) <p style="text-align: center;">----- <i>Connections to Nature of Science</i></p> <p>Scientific Investigations Use a Variety of Methods</p> <ul style="list-style-type: none"> ▪ Scientists use different ways to study the world. (P-PS2-1), (P-PS4-1) 	<p>PS1.A: Structure and Properties of Matter</p> <ul style="list-style-type: none"> ▪ (NYSED) Different kinds of matter exist and many of them can be either solid or liquid. Matter can be described, categorized, and sorted by its observable properties. (P-PS1-1) <p>PS2.A: Forces and Motion</p> <ul style="list-style-type: none"> ▪ Pushes and pulls can have different strengths and directions. (P-PS2-1) ▪ Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it. (P-PS2-1) <p>PS3.C: Relationship Between Energy and Forces</p> <ul style="list-style-type: none"> ▪ (NYSED) A push or a pull may cause stationary objects to move, and a stronger push or pull in the same or opposite direction makes an object in motion speed up or slow down more quickly. (<i>secondary to P-PS2-1</i>) <p>PS4.A: Wave Properties</p> <ul style="list-style-type: none"> ▪ Sound can make matter vibrate, and vibrating matter can make sound. (P-PS4-1) <p>ETS1.A: Defining Engineering Problems</p> <ul style="list-style-type: none"> ▪ A situation that people want to change or create can be approached as a problem to be solved through engineering. Such problems may have many acceptable solutions. (P-PS2-1) 	<p>Patterns</p> <ul style="list-style-type: none"> ▪ Patterns in the natural and human designed world can be observed and used as evidence. (P-PS1-1),(P-PS4-1) <p>Cause and Effect</p> <ul style="list-style-type: none"> ▪ Simple tests can be designed to gather evidence to support or refute student ideas about causes. (P-PS2-1),(P-PS4-1)

Connections to other DCIs in prekindergarten: **P.LS1.A** (P-PS2-1); **P.LS1.D** (P-PS4-1)

Articulation of DCIs across grades K-1: **K.PS1.A** (P-PS1-1); **K.PS2.A** (P-PS2-1); **K.PS2.B** (P-PS2-1); **K.PS3.C** (P-PS2-1); **1.PS4.A** (P-PS4-1)

New York State P-12 Common Core Learning Standards Connections:

ELA/Literacy –

- RI.PK.1** With prompting and support, ask and answer questions about details in a text. (P-PS1-1),(P-PS2-1),(P-PS4-1)
- RI.PK.4** Exhibit curiosity and interest in learning new vocabulary (e.g., ask questions about unfamiliar vocabulary). (P-PS1-1),(P-PS2-1),(P-PS4-1)
- RI.PK.10** With prompting and support, actively engage in group reading activities with purpose and understanding. (P-PS1-1),(P-PS2-1),(P-PS4-1)
- W.PK.1** With prompting and support, use a combination of drawing, dictating, or writing to express an opinion about a book or topic (e.g., I like.... because...) (P-PS1-1),(P-PS2-1),(P-PS4-1)
- W.PK.2** With prompting and support, use a combination of drawing, dictating, or writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic. (P-PS1-1),(P-PS2-1),(P-PS4-1)
- W.PK.3** With prompting and support, use a combination of drawing, dictating, or writing to narrate a single event and provide a reaction to what happened. (P-PS1-1),(P-PS2-1),(P-PS4-1)
- W.PK.8** With guidance and support, recall information from experiences or gather information from provided sources to answer a question. (P-PS1-1),(P-PS2-1),(P-PS4-1)
- SL.PK.2** With guidance and support, confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood. (P-PS1-1),(P-PS2-1),(P-PS4-1)
- SL.PK.3** With guidance and support, ask and answer questions in order to seek help, get information, or clarify something that is not understood. (P-PS1-1),(P-PS2-1),(P-PS4-1)
- SL.PK.5** Add drawings or other visual displays to descriptions as desired to provide additional detail. (P-PS1-1),(P-PS2-1),(P-PS4-1)

Mathematics –

- MP.4** Model with mathematics. (P-PS2-1)
- MP.5** Use appropriate tools strategically. (P-PS1-1),(P-PS2-1),(P-PS4-1)
- MP.6** Attend to precision. (P-PS2-1)
- PK.MD.1** Identify measurable attributes of objects, such as length, and weight. Describe them using correct vocabulary (e.g., small, big, short, tall, empty, full, heavy, and light). (P-PS2-1)
- PK.MD.2** Sort objects into categories; count the numbers of objects in each category. 1 (limit category counts to be less than or equal to 10) (P-PS1-1)
- PK.G.3** Analyze, compare, and sort two- and three-dimensional shapes and objects, in different sizes, using informal language to describe their similarities, differences, and other attributes (e.g., color, size, and shape). (P-PS1-1)
- PK.G.4** Create and build shapes from components (e.g., sticks and clay balls). (P-PS2-1)

*The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea. The text in the "Disciplinary Core Ideas" section is reproduced verbatim from *A Framework for K-12 Science Education: Practices, Cross-Cutting Concepts, and Core Ideas* unless it is preceded by (NYSED).