



## Kindergarten

### 3.2.K.B Physical Science: Motion and Stability: Forces and Interactions

**Students who demonstrate understanding can** *plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.*

**Clarifying Statement:** Examples of pushes or pulls could include a string attached to an object being pulled, a person pushing an object, a person stopping a rolling ball, and two objects colliding and pushing on each other.

**Assessment Boundary:** Assessment is limited to different relative strengths or different directions, but not both at the same time. Assessment does not include non-contact pushes or pulls such as those produced by magnets.

Science and Engineering Practices (SEP)	Disciplinary Core Ideas (DCI)	Crosscutting Concepts (CCC)
<p><b>Planning and Carrying Out Investigations</b></p> <p>Planning and carrying out investigations to answer questions or test solutions to problems in K–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"> <li>With guidance, plan and conduct an investigation in collaboration with peers.</li> </ul>	<p><b>Forces and Motion</b></p> <ul style="list-style-type: none"> <li>Pushes and pulls can have different strengths and directions.</li> <li>Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it.</li> </ul> <p><b>Types of Interactions</b></p> <ul style="list-style-type: none"> <li>When objects touch or collide, they push on one another and can change motion.</li> </ul> <p><b>Relationship Between Energy and Forces</b></p> <ul style="list-style-type: none"> <li>A bigger push or pull makes things speed up or slow down more quickly.</li> </ul>	<p><b>Cause and Effect</b></p> <ul style="list-style-type: none"> <li>Simple tests can be designed to gather evidence to support or refute student ideas about causes.</li> </ul>
<p><b>Connections to Nature of Science</b></p> <p><b>Scientific Investigations Use a Variety of Methods</b></p> <ul style="list-style-type: none"> <li>Scientists use different ways to study the world.</li> </ul>		

**Pennsylvania Context:** N/A

**PA Career Ready Skills:** Interact in pro-social ways (e.g., reciprocal conversation, turn taking, sharing) with peers and adults.

### Connections to Other Standards Content and Practices

Standard Source	Possible Connections to Other Standard(s) or Practice(s)
Agriculture (AFNR)	CS.01.02.01.a: Research technologies used in AFNR systems.



Standard Source	Possible Connections to Other Standard(s) or Practice(s)
Science, Environmental Literacy and Sustainability (NAAEE)	K-4 Strand 1.B. Designing investigations: Learners design simple environmental investigations.
PA Core Standards: ELA	CC.1.5.K.A: Participate in collaborative conversations with peers and adults in small and larger groups.
PA Core Standards and Practices: Math	MP.2: Reason abstractly and quantitatively. CC.2.4.K.A.1: Describe and compare attributes of length, area, weight, and capacity of everyday objects.
PA Standards: Social Studies	5.4.K.B: Identify how students can work together.
Educational Technology (ISTE)	1.4. Innovative Designer: Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.
Technology and Engineering (ITEEA)	STEL-2D: Develop a plan in order to complete a task.