Kindergarten

3.2.K.A Physical Science: Motion and Stability: Forces and Interactions

Students who demonstrate understanding can *analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.*

Clarifying Statement: Examples of problems requiring a solution could include having a marble or other object move a certain distance, follow a particular path, and knock down other objects. Examples of solutions could include tools such as a ramp to increase the speed of the object and a structure that would cause an object such as a marble or ball to turn.

Assessment Boundary: Assessment does not include friction as a mechanism for change in speed.

Science and Engineering Practices (SEP)	Disciplinary Core Ideas (DCI)	Crosscutting Concepts (CCC)
Analyzing and Interpreting Data Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations. • Analyze data from tests of an object or tool to determine if it works as intended.	**Forces and Motion** • Pushes and pulls can have different strengths and directions. • Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it. **Defining Engineering Problems** • A situation that people want to change or create can be approached as a problem to be solved through engineering.	**Cause and Effect** • Simple tests can be designed to gather evidence to support or refute student ideas about causes.

Pennsylvania Context: N/A

PA Career Ready Skills: Engage in reciprocal communication 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.01.02.02.b: Analyze how technology is used in AFNR systems to maximize productivity.
Science, Environmental Literacy and Sustainability (NAAEE)	K-4 Strand 1.E. Organizing and analyzing information: Learners describe data and organize information to search for relationships and patterns concerning the environment and environmental topics.
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.2.1.K.A.3: Apply the concept of magnitude to compare numbers and quantities.

Standard Source	Possible Connections to Other Standard(s) or Practice(s)
PA Standards: Social Studies	8.1.K.B: With guidance and support, differentiate facts from opinions as related to an event. 8.1.K.C: Explain how to locate information in a source.
Educational Technology (ISTE)	1.5. Computational Thinker: Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.
Technology and Engineering (ITEEA)	STEL-7E: Illustrate that there are different solutions to a design and that none are perfect.