# Grade K Science
# Unit 1 Physical Science
# Topic 1 Pushes and Pulls - 27 days

**Unit Overview**: In this unit students will connect and expand on their ideas of physical science. **Topic 1** will have students using their basic experiences in science to understand pushes and pulls. Students will investigate and describe the movement of objects; learn about the various types of motion; predict, explore, and describe changes in motion and what caused the changes. Topic 2 is matter. Students will learn their senses to observe and describe matter. Students will progress to learn about different types of matter and that objects are matter. Finally, students will learn about the three states of matter and will recognize objects in these states in the world around them.

**Topic Essential Question**: What happens if you push or pull an object?

**Lessons**

- Topic Launch/Quest Kickoff
- Lesson 1 Pushes and Pulls
- Lesson 2 Change in Movement
- Lesson 3 Change in Movement with Pushes and Pulls
- Topic Close –Assessment, Quest Findings

**NYSSLS Performance Expectations (PE)**

**K-PS2-1. 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. [Clarification 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.]**

**K-PS2-2. 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.* [Clarification 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.]**

**K-2-ETS1-3. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.**

**Higher Order Thinking Skills (HOTS)**

Higher Order Thinking Skills (HOTS) will be identified within each topic plan. Kindergarten HOTS include:

- sequencing
- categorizing
- identifying patterns
- cause and effect
- researching
- brainstorming
- use of scientific method
- inferencing
- academic vocabulary

| | |
|---|---|
| **Topic Opener**<br>**PE:** K-PS2-1; K-PS2-2; K-2-ETS1-3<br>**SEP:** Planning and Carrying Out Investigations*<br>Analyzing and Interpreting Data*<br>**DCI:**<br>**PS2.A** - Forces and Motion<br>● Pushes and pulls can have different strengths and directions.<br>● Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it.<br>**PS3.C** - Relationship Between Energy and Forces<br>● (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.<br>**CCC:** Cause and Effect*<br><br>*Denotes Higher Order Thinking Skill | **Savvas**<br>● *u*Connect Lab – How do things move?*<br>● Quest Kickoff- Wind Makes it Go*<br>● Leveled Readers<br>● STEM Engineering Reader<br>● Science Song – Use Some Force! |
| **Lesson 1- Change in Movement**<br>**PE:** K-PS2-1<br>**SEP:** Planning and Carrying Out Investigations*<br>Analyzing and Interpreting Data*<br>**DCI:**<br>**PS2.A** - Forces and Motion<br>● Pushes and pulls can have different strengths and directions.<br>● Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it.<br>**CCC:** Cause and Effect*<br><br>***Denotes Higher Order Thinking Skill** | **Savvas**<br>**Highlighted labs are important to the understanding of the instructional concepts in this lesson and must be completed during Science instructional time.**<br><br>**Guiding Objective**<br>● Students will observe how objects move.<br>**Vocabulary**<br>● push<br>● pull<br>**Connect**<br>● TE/SB p. 6<br>● Jumpstart Discovery<br>**Investigate**<br>● TE/SB pp. 7-10<br>● *u*Investigate Lab- How can we make objects move?*<br>● Video – Push and Pull<br>● Reading Check - Cause and Effect*<br>**Synthesize**<br>● TE/SB pp. 10-11<br>● Interactivity- Push and Pull*<br>● Quest Connection<br>● Quest Check-In – Shapes of Sails*<br>**Demonstrate**<br>● TE/SB p. 11<br>● Lesson 1 Quiz |

| | |
|---|---|
| **Lesson 2 Change in Movement**<br>**PE:** K-PS2-1<br>**SEP:** Planning and Carrying Out Investigations*<br>Analyzing and Interpreting Data*<br>**DCI:**<br>**PS2.A** - Forces and Motion<br>● Pushes and pulls can have different strengths and directions.<br>● Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it.<br>**PS3.C** - Relationship Between Energy and Forces<br>● (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.<br>**CCC:** Cause and Effect*<br><br>***Denotes Higher Order Thinking Skill** | **Savvas**<br>**Guiding Objective**<br>● Students will observe different ways objects can move. Students will understand why objects move.<br>**Vocabulary**<br>● speed<br>● direction<br>**Connect**<br>● TE/SB p.12<br>● Jumpstart Discovery<br>**Investigate**<br>● TE/SB pp. 13-14<br>● Video - Changes in Movement<br>● *u*Investigate Lab - How do objects move?*<br>● Literacy Toolbox - Draw Conclusions<br>**Synthesize**<br>● TE/SB pp. 14-15<br>● Interactivity - How objects move?*<br>● Quest Connection<br>**Demonstrate**<br>● TE/SB pp.15-16<br>● Lesson 2 Quiz<br>● Quest Check-In - How can you build your sail car?* |
| **Lesson 3 Change Movements with Pushes and Pulls**<br>**PE:** K-PS2-2, K-2-ETS1-3<br>**SEP:** Constructing Explanations and Designing Solutions*<br>**DCI:**<br>**PS2.A** - Forces and Motion<br>● Pushes and pulls can have different strengths and directions.<br>● Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it.<br>**PS. 2B** - Types of Interactions<br>● When objects touch or collide, they push on one another and can change motion.<br>**PS3.C** - Relationship Between Energy and Forces<br>● (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.<br>**CCC:** Cause and Effect*<br><br>***Denotes Higher Order Thinking Skill** | **Savvas**<br>**Guiding Objectives**<br>● Students will investigate how objects move.<br>**Vocabulary**<br>● communicate<br>**Connect**<br>● TE/SB p. 20<br>● Jumpstart Discovery<br>**Investigate**<br>● TE/SB pp. 21-25<br>● Video – Changing Movements with Pushes and Pulls<br>● *u*Investigate Lab – How do you roll?*<br>**Synthesize**<br>● TE/SB p. 22<br>● Interactivity – Motion and direction*<br>**Demonstrate**<br>● TE/SB pp.25-26<br>● Quest Check-in – How does wind move my sail car?*<br>● Lesson 3 Quiz |

| **Topic Close** | **Topic 1 Enrichment** |
|---|---|
| • Assessment and Remediation TE/SE pp.30-33<br>• Quest Finding p.28 | **Topic 1- Lesson 1 Enrichment -** TE p.10- This activity extends student understanding of the lesson by encouraging them to read text about pushes and pulls on a playground.<br>**Enrichment Skill- Cause and Effect**<br><br>**Topic 1- Lesson 2 Enrichment -** TE p. 15-This activity extends student understanding of the lesson by reading how ice skaters perform on the ice.<br>**Enrichment Skill- Sequencing**<br><br>**Topic 1- Lesson 3 Enrichment -** TE p. 27-This activity extends student understanding of the lesson reinforcing counting numbers from 1 to 10. |

| **English Language Learners (ELL) Enhancements**<br><br>To access hyperlinked material, you must be logged into your BPS Google Drive | **Listening**<br>• **Cross- Linguistic Practices:** Gives students opportunities to make connections between what they hear and their home language (For example, allow students to listen to a passage and identify cognates.)<br>• **Activating Prior Knowledge** Activating prior knowledge means both eliciting from students what they already know and building initial knowledge that they need in order to access upcoming content<br>• **Activating Prior Knowledge**<br>• **Visuals** - GIFs, pictures- will assist students in understanding what they are listening to. Use **visual thinking strategies** to set the lens for learning.<br>• Video to review or introduce a topic – use **closed captioning** to help students see the words and pronunciations while they listen to the content.<br>• **Word stretching / Vowel stretching** when instructing allows student to listen closely to the pronunciation of the word<br>• **Performance Level Descriptors** this document provides teachers with a description of what output they can expect from students based on earned NYSESLAT levels in the modality of listening Scroll for grade K. |
|---|---|
| | **Speaking**<br>• **Sentence Stems/Frames** - to begin a sentence - such as *Evolution is…* or *I think that evolution is…*<br>• **Academic Conversation Starters:** Have a visual of a list of academic sentence starters that students can refer to in a discussion.<br>• **Choral Reading** - To build fluency, self-confidence and motivation with reading/speaking<br>• Create **movement** to go with the word. Movement can be a motivating factor, as well as a kinesthetic tool for conceptualizing the rhythm and flow of fluent reading while triggering brain function for optimal learning<br>• **Performance Level Descriptors** This document provides teachers with a description of what output they can expect from students based on earned NYSESLAT levels in the modality of speaking. Scroll for grade K. |
| | **Reading**<br>• Supplementary Text to help reinforce concepts.<br>• **Visual Aids** - Pictures or models to support vocabulary words and concepts<br>• Video to review or introduce a topic - use **closed captioning** to help students read along while they listen to the content.<br>• **4 Square / Frayer models** to help students gain a deeper understanding of vocabulary.<br>• **Highlighting** important text to assist students in answering questions after the reading.<br>• **Chunking**-Break reading of text into chunks or paragraphs |

| | |
|---|---|
| | • **Performance Level Descriptors** this document provides teachers with a description of what output they can expect from students based on earned NYSESLAT levels in the modality of reading. Scroll for grade K.<br>• **Vocabulary Morphology**- Morphology relates to the segmenting of words into affixes (prefixes and suffixes) and roots or base words, and the origins of words. Understanding that words connected by meaning can be connected by spelling can be critical to expanding a student's vocabulary |
| | **Instructional Accommodations (depending on the student's needs)**<br>• **Extended time** for tests in class, projects and assignments<br>• **Directions read.** Broken down as necessary<br>• **Model** how to complete the activity in the lesson<br>• **Oral simplification** of directions or questions<br>• **Translated version** of test when available. Student may have both version English and native language version<br>• Use of **approved bilingual glossaries** from NYS in each subject |

| | |
|---|---|
| **Special Education Modifications**<br>Special Education students must have accommodations as per Individual Educational Plan (IEP) | **Instructional**<br>• **Pre-teach** vocabulary<br>• Use **picture vocabulary**<br>• Scaffold **Depth of Knowledge** questions<br>• Provide copy of notes/**notes in "cloze"** form<br>• Use of **Think, Pair, and Share** strategy to help process information<br>• **Scaffold** written assignments with the use of **graphic organizers**<br>• Allow for **multiple ways to respond** (verbal, written, response board)<br>• Provide **model of performance task**<br>• **Modify informational text** to fit the needs of the students<br>• Provide a digital or paper i**nteractive notebook**<br>• Present complex **tasks in multiple ways**<br>• Provide **mnemonic strategies** for scientific concepts |
| | **Technology:**<br>• **Audio** reading of text<br>• **Text to type** functions<br>• **Videos** to clarify/visualize science concepts<br>• **Record class lecture/discussions** and make accessible to student<br>• **Nearpod**- interactive presentations of notes |
| | **In Class Assessments**<br>• Provide **multiple options** for projects<br>• **Use of timer** in class<br>• Break all complex tasks into chunks |
| **Step Up to Writing**<br>Step Up to Writing materials can be found in BPS Science K-12 Schoology Folder - K Resources K Curriculum Materials SUTW materials | • Easy Two-Column Notes<br>• Breaking Down Definitions<br>• Paragraph Frame- What I Learned<br>• **Performance Level Descriptors** this document provides teachers with a description of what output they can expect from students based on earned NYSESLAT levels in the modality of writing. Scroll for grade K. |

| | |
|---|---|
| **Culturally and Linguistically Responsive Teaching (CLRT) in the Science Classroom** | ● Materials, resources, and/or discussions address diverse cultural backgrounds and real-world applications<br>● Artifacts (posters, charts, etc.) in the science classroom are representative of the cultures of the student population<br>● All students are given an opportunity to engage in science discourse<br>● Teacher demonstrates high expectations for all students |