Push-Pull – Stage 1

Physical World Strand

Term	1	2	3	4	Weeks	1	2	3	4	5	6	7	8	9	10	11

Outcome	Lesson Sequence – Overview	Resources	Word Wall
ST1-9PW-S investigates how forces and energy are used in products • describe pushes and pulls that make toys move or change shape • observe and describe ways of moving toys • contribute to the development of a class tab ST1-1WS-S observes, questions and collects data to communicate and compare ideas • contribute to discussions about pushes and pulls in our daily lives • understand the purpose and features of a table • use a table to record observations about pushes and pulls.	**Lesson 1** Moving toys – Lesson focus p9 • To capture students' interest and find out what they think about how a push or a pull affects how an object moves or changes shape. • To elicit students' questions about how toys move. Students: • *work in teams to explore how toys move* • *share questions about how toys move or change shape* • *use arrows to show pushes and pulls* • *create a list of push and pull words to develop a word wall.*	For the class • class science journal • word wall • 1 large toy with wheels • 1 large sheet of paper or cardboard for the 'Making things move' table (see 'Preparation') For each team • role wristbands or badges for Manager and Speaker • toys that demonstrate different types of push and pull movement on the ground, in water and in air (eg, marbles, car, wagon, ball, boat, rubber duck, paper airplane, balloon, pinwheel, playdough) • 2 pieces of paper approximately 10 cm x 15 cm (eg, an A4 sheet of paper cut into quarters) • 2 copies of 'Push and pull pictures' (Resource sheet 1)	air bend big bounce change explain energy float force gravity heavy journal jump lift light
ST1-9PW-S investigates how forces and energy are used in products	**Lesson 2** Investigating pushes and pulls at home (optional) – Lesson focus p15 • To provide students with hands-on, shared experiences of pushes and pulls around the home.	Session 1 For the class • 1 enlarged copy of 'Push-pull pursuit' (Resource sheet 2)	

• describe pushes and pulls that make objects move or change shape • investigate ways to move objects and record their ideas. ST1-1WS-S observes, questions and collects data to communicate and compare ideas • use oral, written and visual language to report observations and reflect on experiences of pushes and pulls in their daily lives at home • record information in a table • retrieve information from a table.	Session 1 Push-pull pursuit <u>Students:</u> • *review the pushes and pulls investigated in Lesson 1* • *investigate pushes and pulls at home* Session 2 Guessing game <u>Students:</u> • *play a guessing game about pushes and pulls found at home.*	For each student • 1 copy of 'Push-pull pursuit' (Resource sheet 2) Session 2 For each student • the completed table 'Push-pull pursuit' (Resource sheet 2) from Session 1	move pull push move observe open rock roll science sink small spin toy water wheels
ST1-9PW-S investigates how forces and energy are used in products • identify that gravity pulls down on objects • explain that water can push up on objects in water • discuss how scientific knowledge of pushes and pulls in water can be useful in their daily lives ST1-1WS-S	Lesson 3 <u>Water, water everywhere – Lesson focus p20</u> • To provide students with hands-on, shared experiences of the push of water on floating objects. <u>Students:</u> • *discuss and reflect on experiences with water* • *push air-filled objects (balls) under water to experience the push of water* • *feel the difference between a heavy object suspended in air and then in water* • *create a labelled force-arrow diagram to indicate push or pull forces*	For the class • class science journal • word wall • paper towels to dry hands and mop up spills • range of different sized balls (eg, table tennis balls, small rubber balls, basketballs). For each team • role wristbands or badges for Manager and Speaker • each team member's science journal • 1 bucket or medium-sized container filled with water	

observes, questions and collects data to communicate and compare ideas • contribute to discussions about why objects sink or float • create force-arrow diagrams to indicate push and pull forces.		• a heavy object with thick string tied around it (eg, 1L plastic bottle filled with water) • paper towel for mopping up spills.	
ST1-9PW-S investigates how forces and energy are used in products • make observations about objects that sink or float in water and record their findings • identify ways to change an object that sinks into one that floats • recognise that the shape of an object influences whether it will sink or float ST1-1WS-S observes, questions and collects data to communicate and compare ideas • contribute to discussions about the push of water and how to change an object that sinks into one that floats	Lesson 4 What sinks? What floats? (optional) – Lesson focus p25 • To provide students with hands-on, shared experiences of how to change an object that sinks into one that floats. <u>Students:</u> • *work in teams to investigate objects that sink or float in water* • *investigate how to change an object that sinks into one that floats.*	For the class • class science journal • word wall • paper towels to dry hands and mop up spills • 1 enlarged copy of 'What sinks? What floats?' (Resource sheet 3) • an object that floats (eg, an empty plastic bottle) • a large, clear plastic tub filled with water For each team • role wristbands or badges for Manager and Speaker • each team member's science journal • 1 bucket or medium-sized container filled with water • 2 copies of 'What sinks? What floats?' (Resource sheet 3) • 1 ball of plasticine • 3 objects that sink or float from the following range: - big and light (eg, polystyrene tray, air-filled ball, empty plastic bottle)	

• use language and visual representations to record their ideas about sinking and floating • use a table to record predictions, observations and explanations.		- small and light (eg, paper clip, elastic band, cork, bottle top or lid) - big and heavy (eg, metal tools, a rock, a plastic bottle filled with water) - small and heavy (eg, a sinker, nuts and bolts, a ball of plasticine)	
ST1-9PW-S investigates how forces and energy are used in products • identify that air is a substance that takes up space • explain that air pushes up against falling objects • explain that gravity pulls things down • recognise that the shape and orientation of an object can influence how it falls • identify things to keep the same in a fair test. ST1-1WS-S observes, questions and collects data to communicate and compare ideas • contribute to discussions about how air can push	# Lesson 5 Floating on air – Lesson focus p31 • To provide students with hands-on, shared experiences of the push of air. Students: • *explore where air can be found* • *observe and discuss the result of placing a glass containing a tissue upside down in a container of water* • *observe and discuss the differences in the fall of a crumpled sheet of paper and a flat sheet.*	For the class • class science journal • word wall • 2 sheets of A4 paper • 1 transparent plastic container • 1 transparent cup • 1 tissue For each team • role wristbands or badges for Manager and Speaker • each team member's science journal • 2 plastic bags • 2 sheets of A4 paper	

• create a force-arrow diagram to record their ideas about how air can push on a falling object.			
ST1-9PW-S investigates how forces and energy are used in products • describe their understanding of 'push', 'pull', 'float' and 'sink' • understand that the upward push of water or air on objects causes them to float in water or air • understand that the downward pull of gravity on objects causes them to sink or fall to the ground. ST1-1WS-S observes, questions and collects data to communicate and compare ideas • contribute to discussions about forces • create force-arrow diagrams to indicate push-pull forces • complete a cloze activity using the terms 'force' and 'gravity'	# Lesson 6 <u>Push meets pull – Lesson focus p35</u> • To support students to represent and explain their understanding of how a push or pull affects how toys move or change shape, and to introduce current scientific views. <u>Students:</u> • *reflect on their observations and experiences of pushes and pulls* • *discuss the terms 'force' and 'gravity'* • *represent push and pull forces using force-arrow diagrams.*	For the class • class science journal • word wall • 1 enlarged copy of 'Fantastic forces' (Resource sheet 4) • factual texts about forces including gravity (see PrimaryConnections website for suggestions) For each student • science journal • 1 copy of 'Fantastic forces' (Resource sheet 4)	

• use subject-specific vocabulary appropriately in their writing.			
ST1-9PW-S investigates how forces and energy are used in products • identify and describe the effects of push and pull forces in different situations in their daily lives • explain that air and water push against objects • explain that gravity pulls objects to the ground. ST1-1WS-S observes, questions and collects data to communicate and compare ideas • contribute to discussions about push and pull forces	Lesson 7 <u>Pulling it together – Lesson focus p47</u> • To provide opportunities for students to represent what they know about how a push or a pull affects how an object moves or changes shape, and to reflect on their learning about pushes and pulls. <u>Students:</u> • *review this unit by using the class science journal, word wall, and 'Making things move' class table* • *repeat 'Push and pull pictures' assessment task (Resource sheet 1)* • *reflect on their learning during the unit.*	For the class • class science journal • word wall • 'Making things move' class table • 1 enlarged copy of 'Push and pull pictures' (Resource sheet 1) • 1 enlarged copy of each of the 6 images on 'Push and pull pictures' (Resource sheet 1) For each student • science journal • 1 copy of 'Push and pull pictures' (Resource sheet 1) • completed 'Push and pull pictures' (Resource sheet 1) collected from students in Lesson 1	

• represent push and pull forces using labelled force-arrow diagrams • use oral, written and visual language to clarify understanding, describe the effects of push and pull forces, and reflect on their own learning.			