Seattle Public Schools Science Standards

Balls and Ramps

(Insights)

Grade 1

PHYSICAL SCIENCE

EARL #1 The student understands and uses scientific concepts and principles.

Component	Benchmarks	Lesson #s
1.1 – Use properties to identify, describe, and categorize substances, materials, and objects.	***Properties of substances*** • use physical properties to estimate and describe materials • use tools such as rulers ***Motion of objects*** • describe the relative position and motion of objects (i.e., higher, lower, behind, front, fast, slow)	1 – 2 4
1.2 – Recognize the components, structure, and organization of systems and the interconnections within and among them.	***System*** • recognize that a system is a group of related objects that make up a whole (e.g., build a ramp system that demonstrates how balls interact on various incline planes) ***Energy transfer and transformation*** • experiment with systems that demonstrate how energy is transferred from one object to another (e.g., when one marble hits a stationary marble, some of the energy of motion of the first marble is transferred to the second marble)	10 - 14 3 – 7
1.3 – Understand how interactions within and among systems cause changes in matter and energy.	***Nature of forces*** • demonstrate that a push or a pull is a force on object by whatever is touching it and acts in a particular direction • observe how objects stretch, bend, and/or change their motion as a result of forces acting on them ***Forces to explain motion*** • investigate factors that determine the effects of a push or pull on the motion of objects	4 4, 6, 7, 10 – 14

SCIENCE SKILLS/ PROCESSES

EARL #2 The student understands the skills and processes of science and technology.

2.1 – Develop the abilities necessary to do scientific inquiry.	***Questioning*** • ask questions about objects, organisms, and events in the environment ***Designing and conducting investigations*** • plan and conduct simple investigations, using appropriate tools, measures, and safety rules	All lessons 4, 6, 7, 11 – 13

	Evidence and explanation • use data (observations) to construct reasonable explanations ***Modeling*** • model systems, events, or processes by representing them with concrete objects ***Communication*** • record and report observations through oral language, numbers, pictures, and sentences	4, 7, 9, 11 – 14 8 – 10, 14 All lessons
2.2 – Apply science knowledge/skills to solve problems, meet challenges.	***Identifying problems*** • begin to identify problems in which science and technology can be used to find solutions ***Designing and testing solutions*** • propose, design, and test a solution to a problem ***Evaluating potential solutions*** • evaluate how well a design or a product solves a problem (e.g., ramp systems)	5 – 7, 14 5 – 9, 14 4 – 9

SCIENTIFIC THINKING

EARL #3 The student understands the nature and contexts of science and technology.		
3.1 – Understand the nature of scientific inquiry	***Intellectual honesty*** • begin to understand that all scientific observations should be reported accurately even when they contradict expectations ***Dealing with inconsistencies*** • observe and discuss why similar investigations may not produce similar results	1 – 7, 11, 12 4 – 7, 11, 12