FORCES & MOTION

UNIT 6

4

I can design and conduct an experiment that supports the relationship between force, mass, and motion.

3

I can:

- Identify familiar forces that cause objects to move. (Low Complexity Level)
- Describe through investigation, how changing the amount of force applied, changes the effect on the motion of an object. (Medium Complexity Level)
- Describe through investigation, how the mass of an object determines the effect a given force will have on the object's motion. (Medium Complexity Level)
- Explain through investigation, how balanced forces affect motion. (High Complexity Level)

2

I know these words:

- balanced force, unbalanced force, mass, motion

I can:

- Recognize that not all forces are equal.
- Recognize that the effect of a force is related to an object's mass.

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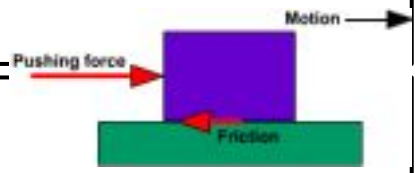
I need help explaining the interconnectedness between force and motion.

STANDARDS:

SC.5.P.13.1 Identify familiar forces that cause objects to move, such as pushes or pulls, including gravity acting on falling objects. (L)
SC.5.P.13.2 Investigate and describe that the greater the force applied to it, the greater the change in motion of a given object. (M)
SC.5.P.13.3 Investigate and describe that the more mass an object has, the less effect a given force will have on the object's motion. (M)
SC.5.P.13.4 Investigate and explain that when a force is applied to an object but it does not move, it is because another opposing force is being applied by something in the environment so that the forces are balanced. (H)
SC.5.N.1.1 Define a problem, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types such as: systematic observations, experiments requiring the identification of variables, collecting and organizing data, interpreting data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions. (H)
SC.5.N.1.3 Recognize and explain the need for repeated experimental trials. (M)
SC.5.N.1.4 Identify a control group and explain its importance in an experiment. (M)
SC.5.N.1.5 Recognize and explain that authentic scientific investigation frequently does not parallel the steps of "the scientific method." (M)
SC.5.N.2.1 Recognize and explain that science is grounded in empirical observations that are testable; explanation must always be linked with evidence. (M)
SC.5.N.2.2 Recognize and explain that when scientific investigations are carried out, the evidence produced by those investigations should be replicable by others. (M)



Force and Motion Vocabulary

force- a push or a pull that acts on an object with or without direct contact, p. 262
friction- a contact force that acts against movement when two objects touch each other; makes it harder for one surface to move past another, p. 266
unbalanced forces- forces that are unequal in size and and may or may not be opposite in direction; causes movement (a change in motion); like friction, push, pull, gravity
balanced forces- forces on an object that are equal in size and opposite in direction; they cancel each other out and there is no movement, p. 285
attraction- an electric or magnetic force that acts between oppositely charged objects, or to describe the gravitational force that draws objects toward each other
repel-to force something to move away; to push back or away by a force
speed- the distance an object travels in a particular amount of time, such as a minute or an hour
distance- the measurement of how far apart objects are
time- the duration in which all things happen; is what a clock reads
gravity- a force that acts between any two objects that pulls them toward one another, p. 264