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National Content Standards (Grades K–4)

The position and motion of objects can be changed by pushing or pulling. The size of the change is related to the strength of the push or pull.

National Content Standards (Grades 5–8)

A. The motion of an object can be described by its position, direction of motion, and speed. That motion can be measured and represented on a graph.

B. An object that is not being subjected to a force will continue to move at a constant speed and in a straight line.

C. If more than one force acts on an object along a straight line, then the forces will reinforce or cancel one another, depending on their direction and magnitude. Unbalanced forces will cause changes in the speed or direction of an object's motion.

The Big Ideas & Lab Activities

Big Idea #2. When a force is applied to air, it can be compressed into a smaller space. When the force compressing the air is reduced or removed, the air tends to expand.

Big Idea #3. Cold air is more dense than hot air and will sink relative to hot air. Conversely, warm air is less dense than cold air and will rise relative to cold air.

Big Idea #4. Air pressure changes all the time and can be measured. Differences in air pressure can create forces in all directions.

Big Idea #5. We are completely surrounded by air and this air exerts pressure on all things. It can exert a force on matter and push it out of the way or sometimes change the shape or position of object.

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Big Idea #9. Newton's First Law. An object at rest, or in equilibrium, will remain in that state unless a force acts on that object to change its speed, shape, or direction of movement.

Big Idea #10. Force equals mass times acceleration. Or, the bigger it is and the faster it goes, the more it hurts when it hits.