relative motion

forces and motion

9-12

All motion is relative to whatever frame of reference is chosen, for there is no motionless frame from which to judge all motion.

Cyclic change is commonly found when there are feedback effects in a system -- as, for example, when a change in any direction gives rise to forces or influences that oppose the change.

Whenever one thing exerts a force on another, an equal amount of force is exerted back on it.

Any object maintains a constant speed and direction of motion unless an unbalanced outside force acts on it.

In most familiar situations, frictional forces complicate the description of motion, although the basic principles still apply.

The change in motion (direction or speed) of an object is proportional to the applied force and inversely proportional to the mass.

6-8

If a force acts toward a single center, the object's path may curve into an orbit around the center.

The motion of an object is always judged with respect to some other object or point.

An unbalanced force acting on an object changes its speed or direction of motion, or both.

3-5

The greater the force is, the greater the change in motion will be.

Changes in speed or direction of motion are caused by forces.

K-2

Things move in many different ways, such as straight, zigzag, round and round, back and forth, and fast and slow.

The way to change how something is moving is to give it a push or a pull.