Motion and Design

Vocabulary Term	Meaning/Definition
acceleration	rate of increase of speed or velocity (example: accelerator pedal on a car)
air resistance (drag)	force of air pushing against the motion of an object
balanced force	an object remains in place, no movement occurs
control	part of an experiment that does not change, serves as the standard to compare other observations
direction	the way the fore is applied determines this way an object moves
energy	ability to do work
energy, kinetic	energy of motion (moving ball going down a ramp)
energy, potential	stored energy (ball positioned at the top of the ramp)
fair test	changing only one variable and keeping the other conditions the same
force	any push or pull on an object
friction	force that resists motion between two touching surfaces, slows things down and can also produce heat, acts in the opposite direction of the force
gravity, gravitational force	force that brings objects toward earth
inertia	the tendency of an object to resist a change in motion or keep doing what it is doing Note: the greater the mass of an object, the greater the inertia
machine	used to make work easier
mass	how much matter an object contains
momentum	force or speed of movement; mass in motion, example: a moving train has much more than a moving soccer ball Note: momentum = mass of an object x velocity (increasing the mass or speed increases the momentum)
motion	an object changing position over time; change in position is measured by distance and time
Newton's 1st law of motion	*An object tends to stay at rest and an object tends to stay in motion with the same speed and in the same direction unless acted on by an unbalanced force. * Objects tend to keep doing what they are doing. * If the forces acting upon an object are balanced, the acceleration of that object will be zero (no motion). *also known as the "law of inertia"
Newton's 2nd law of motion	* Acceleration is always in the direction of the unbalanced force. *If you want something to accelerate faster, you

	need to decrease its mass. * Acceleration of an object depends upon two variables—the net force acting upon the object and the mass of the object. * Force = mass x acceleration or F = ma
Newton's 3rd law of motion	*Explains why forces act in pairs. * For every action, there is an equal and opposite reaction. * When one object exerts a force on a second object, the second object exerts the same amount of force back on the first object (but in the opposite direction). * Equal forces acting in opposite directions create a net force of zero. * Action and reaction forces are equal forces acting in opposite directions. The reason they can't cancel each other out is because they are acting on different objects.
propeller	two or more twisted blades that rotate around a central point or shaft (shaft: pipe or tube)
recursive	consequential steps
resistance	force pushing against the motion of an object
simple machine: inclined plane	example: ramp, slanted road, path up a hill, slide
simple machine: lever	examples: hammer, bottle opener, crowbar
simple machine: pulley	examples: flag poles, clothes lines, sailboat, blinds, mechanical crane can also be used to left heavy objects straight up
simple machine: screw	examples: jar lids, light bulbs, wrenches
simple machine: wedge	used to push objects apart, examples: fork, axe, knife
simple machine: wheel and axle	examples: cars, roller skates, wagons, door knobs, gears (watches, clocks, bicycles)
speed (rate)	distance divided by time (or d/t), example: 25 mph
unbalanced force	motion occurs; the movement goes in the direction of the greater force (example: winning a tug-of-war game)
validity	conducting a fair test
variable	something in an experiment that can be changed
velocity	speed with direction (ex.: 45 mph NW)
weight	force of gravity pulling down on an object
work	moving an object over a distance