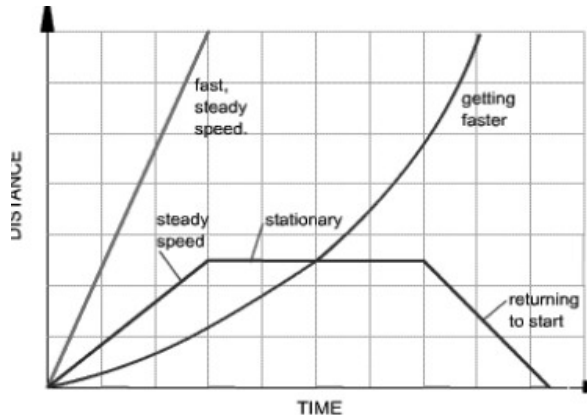


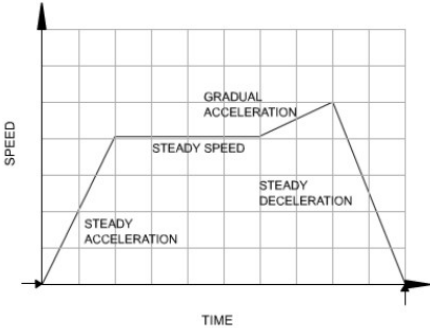
MOTION AND DESIGN VOCAB

<u>Vocabulary Term</u>	<u>Meaning/Definition</u>
acceleration	rate of increase of speed or velocity (example: accelerator pedal on a car)
Action/Reaction	Newton's 3rd Law of Motion. For every action, there is an equal and opposite reaction
balanced force	an object remains in place, no movement occurs
Chemical Change	<p>Transforms or changes one type of matter into another kind, which may have different properties.</p> <p>EXAMPLES:</p> <ul style="list-style-type: none"> metal rusting, baking a cake, bleaching your hair, frying an egg, burning leaves, fireworks exploding
Chemical Properties	<p>Characteristic of matter that can only be observed when one substance changes into a different substance, such as iron into rust</p> <p>EXAMPLES:</p> <ul style="list-style-type: none"> flammability = The ability to burn Ability to rust = Reacts with oxygen to produce rust Reactivity with vinegar = Reacts with vinegar to produce new substances
control	part of an experiment that does not change, serves as the standard to compare other observations
direction	the way the force is applied determines this way an object moves
distance	how far an object travels
Distance/Time Graph	<p>A distance-time graph tells us how far an object has moved with time.</p> <ul style="list-style-type: none"> The steeper the graph, the faster the motion. A horizontal line means the object is not changing its position - it is not moving, it is at rest. A downward sloping line means the object is returning to the start. <p>An Example of a Distance/Time Graph:</p>



DRAG (air resistance)	force of air pushing against the motion of an object
energy	ability to do work
Kinetic Energy	energy of motion (moving ball going down a ramp)
Potential Energy	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
mass	how much matter an object contains
matter	Any substance that has mass and takes up space EXAMPLES: <ul style="list-style-type: none"> • book, chair, person, air, water, soda, soap, jello
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
Motion Graphs	<p>Motion graphs help describe the motion of an object</p> <p>Two types of motion graphs are:</p> <ul style="list-style-type: none"> • Distance/Time Graph • Speed/Time Graph (Also called Velocity/Time graph)
Newton's 1st law of motion	<p>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.</p> <ul style="list-style-type: none"> • 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). <p>also known as the "law of inertia"</p>
Newton's 2nd law of motion	<ul style="list-style-type: none"> • Acceleration is always in the direction of the unbalanced force. • If you want something to accelerate faster, you need to decrease its mass. <p>• <i>Acceleration of an object depends upon two variables—the net force acting upon the object and the mass of the object.</i></p> <p>Force = mass x acceleration or $F = ma$</p>
Newton's 3rd law of motion	<p>For every action, there is an equal and opposite reaction.</p> <ul style="list-style-type: none"> • Explains why forces act in pairs. • 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.
Physical Change	<p>Change in which the identity of the substance does NOT change</p> <p>EXAMPLES:</p> <ul style="list-style-type: none"> • glass breaking, ice melting, water boiling, cutting your hair, hammering wood together, ripping paper, mixing salt and water together

<p>Physical Properties</p>	<p>Characteristics of matter that can be seen through direct observation such as density, melting point, and boiling point</p> <p>EXAMPLES:</p> <ul style="list-style-type: none"> • transparency = The property of letting light pass through something • Boiling point = Temperature at which a substance goes from liquid to gas • Melting point = Temperature at which a substance goes from solid to a liquid • Brittleness = Tendency to crack or break • Ductility = Ability to bend without breaking • Elasticity = Ability to be stretched or compressed then return to original size • Density = Mass per unit volume
<p>propeller</p>	<p>two or more twisted blades that rotate around a central point or shaft (shaft: pipe or tube)</p>
<p>resistance</p>	<p>force pushing against the motion of an object</p>
<p>speed (rate)</p>	<p>distance divided by time (or d/t)</p> <p><i>example: 25 mph</i></p>
<p>Speed/Time Graph</p> <p>(Also called Velocity/Time Graph)</p>	<p>A speed - time graph shows us how the speed of a moving object changes with time.</p> <ul style="list-style-type: none"> • The steeper the graph, the greater the acceleration. • A horizontal line means the object is moving at a constant speed. • A downward sloping line means the object is slowing down. <p>An Example of a Speed/Time or Velocity/Time Graph:</p>  <p>The graph plots Speed on the vertical axis and Time on the horizontal axis. The line starts at the origin (0,0) and rises linearly to a point, labeled 'STEADY ACCELERATION'. From that point, the line becomes horizontal, labeled 'STEADY SPEED'. From the end of the horizontal line, the line rises linearly but with a shallower slope than the first segment, labeled 'GRADUAL ACCELERATION'. Finally, the line falls linearly back to the time axis, labeled 'STEADY DECELERATION'.</p>
<p>Technical Drawing</p>	<p>A drawing or plan, drawn to scale (a drawing done with two views of the object)</p>
<p>unbalanced force</p>	<p>motion occurs; the movement goes in the direction of the greater force</p> <p><i>example: winning a tug-of-war game</i></p>

validity	conducting a fair test
variable	something in an experiment that can be changed
velocity	speed with direction <i>example: 45 mph NW</i>
weight	force of gravity pulling down on an object
work	moving an object over a distance