Motion & Design Vocabulary 2015

***Directions:*** *Read and learn these terms and definitions. Think about how they apply to everyday events and how you can explain using them in everyday events.*

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| **technical drawing** | a diagram that shows top, side, and front views |
| **force** | a push or pull on an object |
| **motion** | an object changing position over time;  change in position is measured by the relationship of distance and time |
| **speed/rate** | a comparison of distance traveled and time; for example 25 mph (miles per hour) |
| **acceleration** | rate of increase of speed or velocity; (might relate this term to the accelerator pedal on a car) |
| **mass** | how much matter an object contains; mass is the amount of material in an object while *weight* is the amount of force gravity exerts on an object’s mass. For example, people *weigh* ⅙ as much on Earth, but their *mass* is the same. |
| **friction** | force that resists motion between two touching surfaces, slows things down, can also produce heat, acts in the opposite direction of the force. |
| **inertia** | the tendency of an object to resist change in motion or to keep doing what it is doing; NOTE: the greater the mass of an object, the greater the inertia. |
| **momentum** | force or speed of movement; mass in motion - for example, a moving train has much more momentum than a moving soccer ball |
| **technological design** | using engineering ideas to create a model |
| **test** | to determine if an idea works |
| **velocity** | speed with direction; for example, 45 mph northeast |
| **kinetic energy** | energy of motion (such as a moving ball going down a ramp) |
| **potential energy** | stored energy (such as a ball positioned at the top of a ramp) |
| **tension** | the act of stretching or straining *(in the rubber band powered vehicle investigation, how tight the rubber bands are)* |
| **revolutions** | *as related to rubber band powered vehicle investigation:* the number of turns of the rubber band around the axle |
| **distance** | how far an object travels |
| **physical change** | a change in the size, shape, or state of matter (gas, solid, liquid); caused by pressure, motion, or temperature |
| **chemical change** | substances are altered because their molecule change; a change that is irreversible; chemical changes are often identified by the production of as gas (bubbles, fizzing), the appearance of light and/or heat, and a change in color. |
| **Laws of Motion** | three rules, formulated by Isaac Newton, that describe how objects move in relation to the forces acting on them |
| **Newton’s First Law****(inertia)** | (in student-friendly terms): an object at rest tends to stay at rest while an object in motion tends to stay in motion with the same direction and speed |
| **Newton’s Second Law****(acceleration)** | (in student-friendly terms):It takes more force to accelerate a more massive object |
| **Newton’s Third Law****(action and reaction)** | (in student-friendly terms): forces are found in pairs: for every action (force), there is an opposite and equal reaction (force). |
| **economical** | keeping cost low |
| **trade-off** | a compromise; in this investigation, a compromise in design in order to keep cost low |
| **propeller** | two or more twisted blades that rotate around a central point |
| **air resistance (drag)** | force of air pushing against the motion of an object |