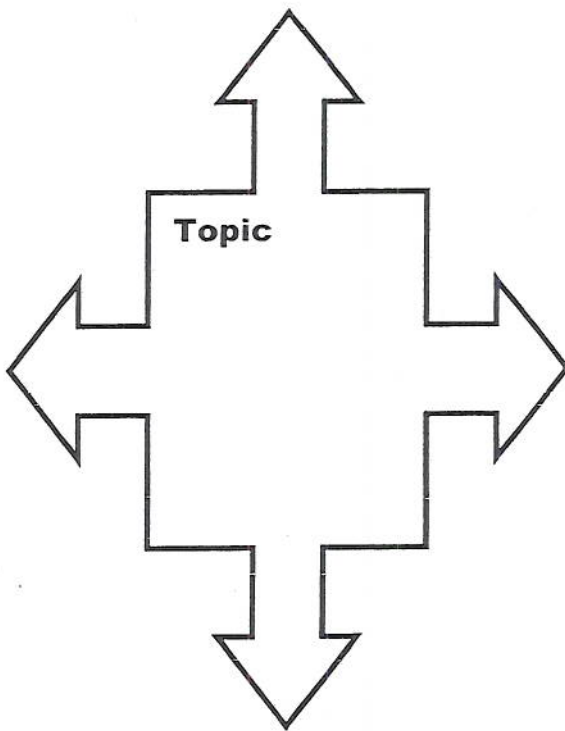




Vocabulary Word & Definition

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Making New Words Your Own-Forces&Motion

CONTEXT

Name _____ Date _____ Period _____

In the following exercises, you will have an opportunity to expand your vocabulary by reading about science method and investigation. Below are ten vocabulary words that will be used in these exercises.

Force Motion Matter Buoyancy Density Accelerate
Reaction Friction Gravity Newton

Exercise One Mapping

Directions. In the item below, a vocabulary word is provided and used in a sentence. Take a guess at the words meaning and write it in the box labeled **Your Guess**. Then look the word up in your dictionary and write the definition in the box labeled **Definition**.

1. **Force** →

What **force** is involved that stops your car when your parent applies the brakes?

Your Guess:

Definition:

2. **Motion**

Play for 15 minutes and then write down all you have observed about the effects of two or more forces on the **motion** of a light ball.

Your Guess:

Your Definition:

3. **Matter**

Explain interactions between force and **matter** and relationships among force, mass and motion.

Your Guess:

Definition:

4. **Buoyancy**

Compare weight density and **buoyancy** forces to determine how to keep a ship floating.

Your Guess:

Definition:

5. **Density**

There is a big difference between the **density** of hydrogen the gas and lead the solid. Lead is much more dense.

Your Guess:

Definition:

6. Acceleration

Acceleration is caused by a force. The **acceleration** of the car is zero. However, this car is traveling at a constant velocity.

Your Guess:

Definition:

7. Reaction

When a cannon is fired, the action force of the explosion shoots a projectile out of the cannon. At the same time, the cannon swiftly recoils backward. The **reaction** force pushes the cannon in the opposite direction from the projectile.

Your Guess:

Definition:

8. Friction

Most tires are designed to increase **friction** for better traction on the road. There is very little **friction** between tires and an icy surface.

Your Guess:

Definition:

9. Gravity

Gravity is the force that keeps the planets in orbit around the Sun. **Gravity** of the Sun, Moon and Earth causes the tides.

Your Guess:

Definition:

10. **Newton**

Billy Bob the ugly Gorila had a frictional force measured at 200 **newtons**.

Your Guess:

Definition:

Exercise Like Meanings and Opposite Meanings

Directions. For each item below, circle the letter of the choice that means the same, or about the same, as the boldface word.

11. **Frictional** force.

- A. Opposite force
- B. fossil fuel
- C. Evidence
- D. Test Tubes

12. **Density**.

- A. Mass/volume
- B. Volume/Mass
- C. Hypothesis
- D. Evidence

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CCG- Use interrelated processes to pose questions and investigate the physical & living world. M.McCauley©2004

Name _____ Period _____ Due _____

SCIENTIFIC BUMPER STICKERS V 1.1
FORCES & MOTION

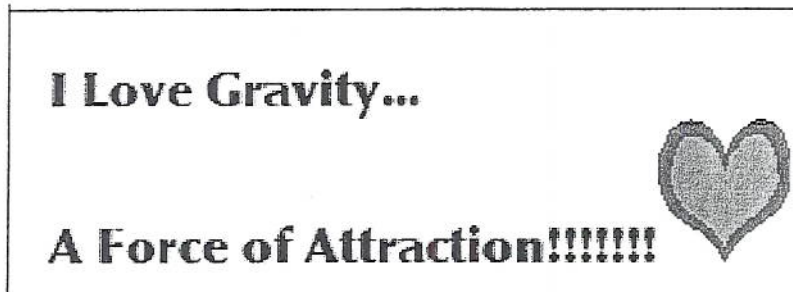
BACKGROUND:

Want to sell a product? Elect a president? Defeat money for schools? How about learn science vocabulary? The answer is bumper stickers! Bumper stickers take complex concepts and distill them into a few words that express what you want to accomplish... Wow! Cool! Lets ...Just do it!

DIRECTIONS:

1. Remember bumper stickers make the complex simple. One or two lines at most.
2. Bumper stickers can be funny but should always be witty or ironic!
3. Create one bumper sticker for each of the science vocabulary words below.
4. Must be colorful! Print Words! Big Letters! Art and beauty Count! (Make it Easy to Read!)
5. Remember **YOUR NAME!**
6. Staple together and turn in to the box.

EXAMPLE:



VOCABULARY WORDS:

Make one bumper sticker for each of the words below: Effort counts!

Gravity, Action/Reaction,
Kinetic Energy, Acceleration,
Speed, Force, Friction

Etiquetas engomadas De parachoques Científicas V 1.1 Fuerzas Y
Antecedentes Del Movimiento: ¿Desea vender un producto? ¿Elija a presidente?
¿Derrote el dinero para las escuelas? ¿Cómo sobre aprenda el vocabulario de la
ciencia? ¡La respuesta es etiquetas engomadas de parachoques! Las etiquetas
engomadas de parachoques toman conceptos complejos y los destilan en
algunas palabras que expreso qué usted desea lograr... ¡Ululación! ¡Fresco!
¡Deja... apenas la hacen! Direcciones: los tickers de parachoques 1. Remember
hacen el complejo simple. Una o dos líneas en la mayoría. 2. ¡Las etiquetas
engomadas de parachoques pueden ser divertidas pero deben siempre ser
ingeniosas o irónicas! 3. Cree una etiqueta engomada de parachoques para cada
uno de las palabras del vocabulario de la ciencia abajo. 4. ¡Debe ser colorido!
¡Imprima Las Palabras! ¡Letras Grandes! ¡Cuenta del arte y de la belleza! (haga
fácil leer!) 5. ¡Recuerde SU NOMBRE! 6. Sujete con grapa junto y dé vuelta
adentro a la caja. Ejemplo: * Palabras Del Vocabulario: Haga una etiqueta
engomada de parachoques para cada uno de las palabras abajo: ¡Cuentas del
esfuerzo! Gravedad, Action/Reaction, Energía Cinética, Aceleración, Velocidad,

Fuerza, Friction

A Average Speed Acceleration Action	B Buoyancy	C Centripetal Force Compression	D Density	E	F Force Friction
G Gravity	H	TOPIC Forces & Motion		I Impact Inertia	J
K Kinetic Energy	L			M Matter Motion Mass	N Newton
O	P	Q	R Reaction	S Speed	T Tension
U	V	W	X	Y	Z

MMcCauley 2003 (Updated 2011)

Action: In physics, **action** is an attribute of the dynamics of a physical system.

Buoyancy: The amount of force a fluid displaces on an object placed in the fluid.

Compression: Squeezing force.

Density: Mass divided by volume.

Impact: Force times duration.

Inertia: The tendency for an object to stay at rest or in motion.

Reaction: An object's response to a force.

Tension: A stretching force

Average Speed: The overall rate at which an object moves. Calculated by distance divided by time.

Acceleration: The rate at which velocity changes. An object accelerates if its direction changes or if its speed changes or both.

Centripetal Force: Acceleration that occurs in a circular motion.

Force: Push or pull. All forces have both size and direction.

Friction: A force that opposes motion.

Gravity: A force of attraction between objects based on their mass and distance.

Kinetic Energy: Energy of motion.

Matter: Anything with mass and volume.

Motion: An objects change of position over time.

Mass: The amount of matter.

Newton: SI unit of force.

Speed: Rate at which an object moves.

Average Speed: Velocidad promedio, la velocidad general a que se mueve un objeto; la velocidad promedio puede calcularse dividiendo la distancia total por el tiempo total.

Acceleration: La tarifa en la cual la velocidad cambia. Un objeto acelera si sus cambios de dirección o si los it?s apresuran cambios o ambos.

Centripetal Force: Aceleración que ocurre en un movimiento circular.

Force: Empuje o tirón. Todas las fuerzas tienen tamaño y dirección.

Friction: Una fuerza que opone el movimiento.

Gravity: Una fuerza de la atracción entre los objetos basados en su masa y la distancia.

Kinetic Energy: Energía del movimiento.

Matter: Cualquier cosa con la masa y el volumen.

Motion: Un cambio de los objetos en un cierto plazo la posición.

Mass: La cantidad de materia.

Newton: Unidad del SI de la fuerza.

Speed: Tarifa en la cual un objeto se mueve.

Newton's First Law of Motion - also known as the law of inertia says that an object at rest or an object in motion stays at rest or in motion until acted on by an outside force.

Gravity is the force that attracts any mass to any other mass. The force of gravity on earth is 9.8 m/s^2 . Gravity is independent of mass! A feather and a rock will fall at the same acceleration in a vacuum. From the roof of a building, the rock will accelerate faster because the feather is more affected by air resistance.

Stable Orbit - a stable orbit is created around any planetary object when the force of gravity is exactly balanced by the forward velocity of the satellite or moon. There is no weight in orbit because all of the forces acting on your body are in balance. The velocity of the satellite is balanced by gravity. There is plenty of gravity in orbit!

Motion - Force = mass x acceleration, $F=ma$. A balanced force is present when an object is at rest, like the block of concrete being pulled down by gravity and the table it is sitting on pushing up with equal force. A balanced force is also present with an object is moving at a constant velocity, the force pushing it forward is balanced by the force of air resistance, friction or gravity. An unbalanced force is present when an object is accelerating, that is, speeding up, slowing down or changing direction.

A moving car or cart will keep moving until a force acts on it to stop it. Friction, going up hill, putting on the brakes, hitting something else all exert a force in opposition to the force of the car or cart.

Velocity is the rate of change in position or distance divided by time, m/s, miles per hour, furlongs per fortnight. Average speed or velocity is total distance divided by total time. **Acceleration** is the rate of change in velocity. Units are in distance divided by time squared, like m/s^2 .

Automobiles - Friction is the force that stops a car, the friction of the brake pads on rotors and the tires on the road. The force of the engine accelerated the car. The car reaches a constant velocity when the force of the engine is balanced by the opposing forces of air resistance and friction of the tires on the road.

At 65 miles per hour, a car is travelling about 100 feet per second. To be safe, you should keep a distance equal to 2 seconds of travel time between you and the car in front of you. If you are 50 feet from the car in front of you at 65 mph, you are $\frac{1}{2}$ second away, and a good reaction time is $\frac{1}{2}$ second. At this distance and speed, a serious accident is inevitable if the first car slams on the brakes.

Newton's Second Law of Motion - The acceleration of an object increases as the force applied to the object increases, or $F = ma$.

Momentum is the product of mass x velocity. ($p = mv$). A car moving at 100 kph with a mass of 2000 kg (200,000 mv) has more momentum and therefore took a greater amount of force to accelerate than a 3000 kg elephant rampaging through the jungle at 50 kph (150,000 mv), even though the elephant has more mass.

Newton's Third Law of Motion - For every force causing an action, there is an equal and opposite force causing a reaction.

Pop Bottle Rocket - When we launched the pop bottle rocket, the force of compressed air caused water to shoot out the mouth of the bottle. This force was enough to overcome gravity keeping the pop

bottle on the launch pad. As a result, the bottle accelerated into the air until it ran out of water and the opposing forces of gravity and air resistance stopped it and pulled it back to the ground.