Forces and Motion Study Guide

Position: the location of an object

Reference Point: any object that is not moving and can be used to describe the position of another object

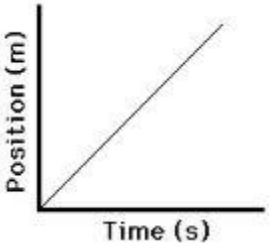
Distance: the length of a line between two points

Motion: a change in an object's position

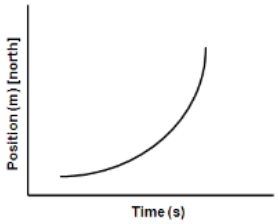
Direction: the path that a moving object follows

Speed: a measure of how far an object moves in a certain amount of time; Distance / Time

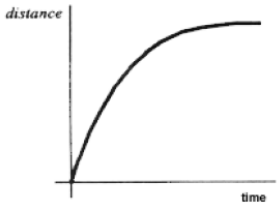
Constant Speed



Increasing Speed



Decreasing Speed



Force: a push or pull on an object

Objects move in the direction of the applied force

A force can change the direction of an object's motion and the speed.

The greater the force, the greater the motion.

The greater the mass, the less the motion. Objects that weigh less can move faster.

Mass: how much matter makes up an object

Matter: anything that has mass and takes up space

Gravity: a force that pulls objects toward each other

The more mass an object has, the greater its pull of gravity

The closer two objects, the stronger the pull of gravity.

Friction: a force that acts against motion; causes objects to move slower and eventually stop moving

Matter and Energy Study Guide

Water Cycle: the movement between Earth's surface and the atmosphere; driven by the sun's energy

Evaporation: liquid water is heated by the sun's energy and changes from a liquid to a gas

Transpiration: water evaporating from the leaves of plants

Condensation: water vapor cools and turns into liquid water, forming a cloud

Precipitation: clouds get too heavy and water falls to the ground as rain, sleet, or snow

Matter: anything that has mass and takes up space

Physical Property: a feature of matter that can be observed or measured

Color	Smell	Taste	Ability to Conduct Heat	Temperature
Texture	Sounds	Magnetic	Ability to Dissolve	State of Matter

Chemical Property: a property of matter that cannot be observed without changing the matter into something else

Ability to Burn Ability to Rust

Physical Change: a change in which no new materials form; happens when one or more physical properties are changed

Cutting Paper Folding Paper Coloring Paper Drawing on Paper

Changing state (solid, liquid, gas)

Mixture: matter made up of two or more materials; objects are mixed, but nothing new forms

Chemical Change: a change in which one or more new types of matter form

Signs of Chemical Change:

New Materials Form Change of Color Gases are Given Off

Heat Energy: the energy of moving particles

Heat Transfer: the movement of heat

Conduction: the transfer of heat through things that are touching

Convection: the transfer of heat through the movement of liquids or gases

Radiation: the transfer of heat by electromagnetic waves (Sun or fire)

Weather Conditions and Patterns Study Guide

Weather: the condition of the atmosphere at a certain time and place

Measuring weather conditions help meteorologists predict future weather.

Temperature: how warm the air is

Rain Gauge: measures precipitation (rain, sleet, snow, hail)

Wind Vane and Anemometer: measure wind speed and direction

Barometer: measures air pressure (the weight of the air)

Clouds: masses of tiny water droplets

Clouds form when water vapor in the air cools and condenses around tiny pieces of dust in the air.

Types of Clouds – used to describe weather and predict weather

Stratus: low, sheetlike gray clouds that bring rain sometimes

Cumulus: puffy, fair-weather clouds

Cumulonimbus: large thunderhead clouds that bring thunderstorms

Cirrus: wispy, high-level clouds that are associated with fair weather and approaching rain

Air Mass: a large body of air with about the same temperature and humidity, or moisture, throughout

Front: where two air masses meet

Cold Front: cold air mass bumps against a warm air mass, bringing strong storms (thunderstorms or snowstorms). Causes a drop in temperature.

Warm Front: a warm air mass meets a colder air mass and rises over it. Often brings rain, stratus clouds, and an increase in temperature.

Stationary Front: two air masses meet and stop moving; brings clouds and precipitation that often lasts several days

Uneven heating of earth's surface causes wind. The greater the difference in temperature and pressure, the more wind there will be.

Prevailing Westerlies: the global winds that affect the United States – blow from West to East

Jet Stream: an air current that flows from west to east

When the jet stream dips south, it brings cold arctic air down into the United States.

When the jet stream bends north, it carries warm air from the south

Gulf Stream: a warm ocean current in the Atlantic Ocean that carries warm waters out across the Atlantic Ocean and toward the north; keeps weather along the coast mild

El Nino: the unusual warming of surface water in the Pacific Ocean

La Nina: the unusual cooling of surface water in the Pacific Ocean

Living Organisms Study Guide

Cells: the basic building blocks of living organisms; cells can carry out all processes necessary for life

Unicellular Organisms: made of only one cell; can carry out all basic life processes (move, find food, grow, reproduce)

Examples: Bacteria, Amoeba, Euglena, Paramecia

Multicellular Organisms: a living thing made of one or more cells; cells have different jobs

Unicellular Organisms can take in materials directly from their environment, while Multicellular Organisms have to have systems for moving materials from cell to cell.

Human Body Systems: groups of body parts that work together to carry out all the body's functions

Respiratory System: takes in oxygen from the air we breathe; involves the nose/mouth, the trachea, the lungs, and the diaphragm.

Digestive System: breaks down food so it can be used by the body; involves the mouth, the esophagus, the stomach, the small intestine, and the large intestine.

Circulatory System: (AKA the cardiovascular system): carries oxygen, food, and wastes throughout the body; involves the heart, blood vessels, and blood

Skeletal System: the basic framework of the body; made of bones

Muscular System: made of the muscles attached to bones that create movement

Nervous System: controls all body systems by transmitting electrical messages from the brain to other parts of the body; involves the brain, the spinal cord, and nerve cells.

Trait: a quality or characteristic of a living thing

Behavior: how a living thing responds to its surroundings

Inherited Trait: a characteristic a living thing gets from its parents (ex: eye color, hair color, dimples, height, etc.)

Acquired (Learned) Trait: a characteristic that a living thing develops after it is born (ex: ability to talk, walk, scars, reading)

Ecosystems Study Guide

Ecosystem: an area made of living and nonliving things

Terrestrial Ecosystems: land ecosystems

Forests, Rainforests, Grasslands, Deserts, Tundra

Aquatic Ecosystems: water-based ecosystems

Lakes (freshwater) Ponds (freshwater)

Oceans (saltwater)

Estuary (brackish water – freshwater and saltwater mix)

Producers: living things that make their own food (ex: plants, grasses, shrubs, trees)

Producers undergo photosynthesis, the process by which the sun's energy is turned into food

Consumers: living things that get energy by eating

Herbivores: consumer that eats only plants

Omnivore: consumer that eats plants and animals

Carnivore: consumer that eats only animals

Decomposers: a living thing that gets energy by breaking down wastes and dead plants and animals

Food Chain: a model that shows the path of energy from one living thing to the next

Producer→Consumer→Consumer→Decomposer

Food Web: several food chains that connect

Energy Pyramid: a model that shows how the amount of energy changes as energy moves through a food chain or food web

Energy decreases as you go through the food chain. Producers have more energy than consumers.

Predator: animals that hunt other animals

Prey: animals that are hunted

Competition: the demand for a resource by two or more organisms