

# Forces and Motion Study Guide

**Position:** the location of an object

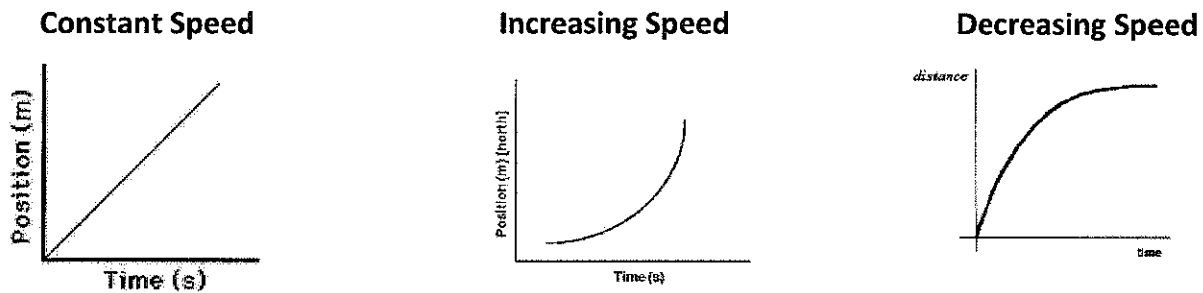
**Reference Point:** any object that is not moving and can be used to describe the position of another object

**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



**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
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**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
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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
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**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