

# Sample Notes: Science Review

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## Energy, Work, and Power

Energy is the ability to do work. Work happens when a force moves an object through a distance. The SI unit of work and energy is the joule (J).

Power is the rate of doing work. A machine with higher power can do the same work in a shorter time. The SI unit of power is the watt (W), equal to one joule per second.

Kinetic energy is energy of motion. Potential energy is stored energy because of position or condition. A ball held above the ground has gravitational potential energy.

## Force and Motion

A force is a push or pull. Forces can change the speed, direction, or shape of an object. Balanced forces do not change motion, while unbalanced forces cause acceleration.

Newton's First Law says an object at rest stays at rest and an object in motion stays in motion unless acted on by an outside force. This is called inertia.

Newton's Second Law connects force, mass, and acceleration. A greater net force produces greater acceleration when mass stays the same.

## Matter and Mixtures

Matter has mass and occupies space. Pure substances have a fixed composition, while mixtures are physical combinations of substances.

A solution is a homogeneous mixture. Salt water is a solution because the salt is evenly distributed in the water.

Filtration can separate an insoluble solid from a liquid. Evaporation can separate a dissolved solid from a liquid.

## Ecosystems

An ecosystem includes living organisms and the nonliving environment. Producers such as plants make food through photosynthesis.

Consumers get energy by eating plants or other organisms. Decomposers break down dead organisms and return nutrients to the soil.

A food chain shows one path of energy flow. A food web shows many connected food chains in an ecosystem.

## Short glossary

Term	Meaning
Joule	SI unit of work and energy
Watt	SI unit of power
Inertia	Tendency of an object to resist changes in motion
Producer	Organism that makes its own food