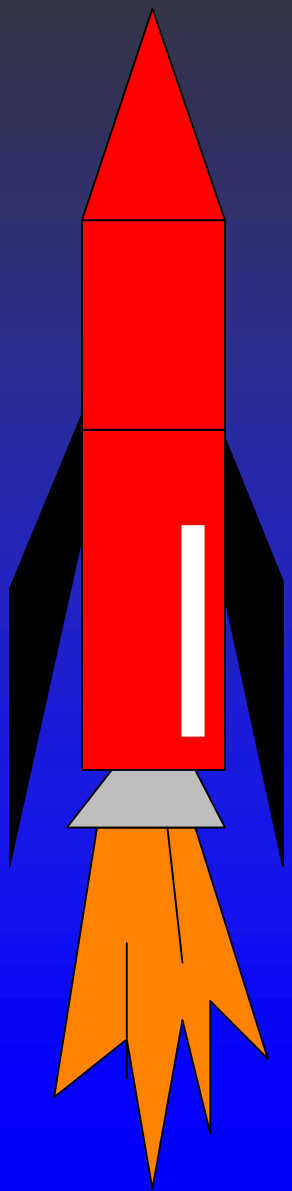
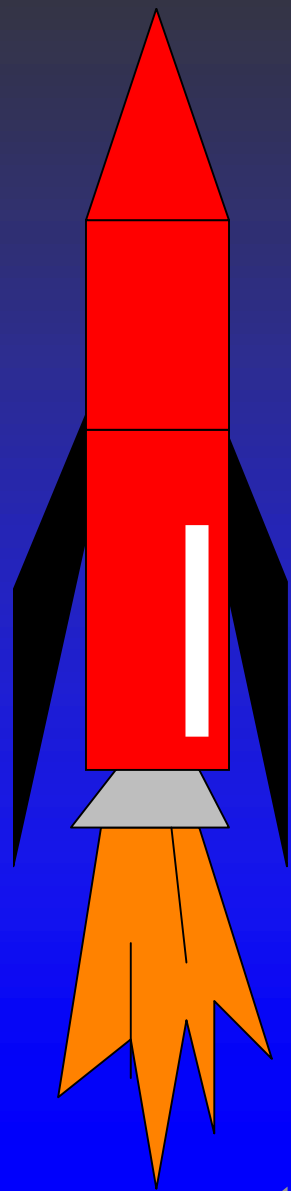


Model Rocketry

7th Grade



Activity Sheet #1A

- **Accelerate:** Speed Up
- **Apogee:** The peak altitude a rocket reaches when it is farthest from the surface of the earth.
- **Decelerate:** Slow Down
- **Delay Element:** Ignites after the propellant burns out and is an aid in tracking the rocket and in providing a time delay during which the rocket coasts to apogee.

Activity Sheet #1A

- **Drag:** The force that resists the forward motion of a object as it moves through the air.
- **Ejection Charge:** Ignited by the delay element and produces expanding gases which activate or eject a recovery device.
- **Gravity:** The force that pulls all objects to the center of the Earth.
- **Igniter:** An electrical device that initiates the combustion of the propellant in a model rocket engine.

Activity Sheet #1A

- **Launch:** The lift off of a model rocket following the ignition of the engine.
- **Propellant:** A mixture of fuel and an oxidizer which is the source of motive energy in a rocket engine.
- **Recovery System:** The device in a model rocket whose purpose is to return the rocket safely by creating excess drag or by creating lift.

Activity Sheet #1A

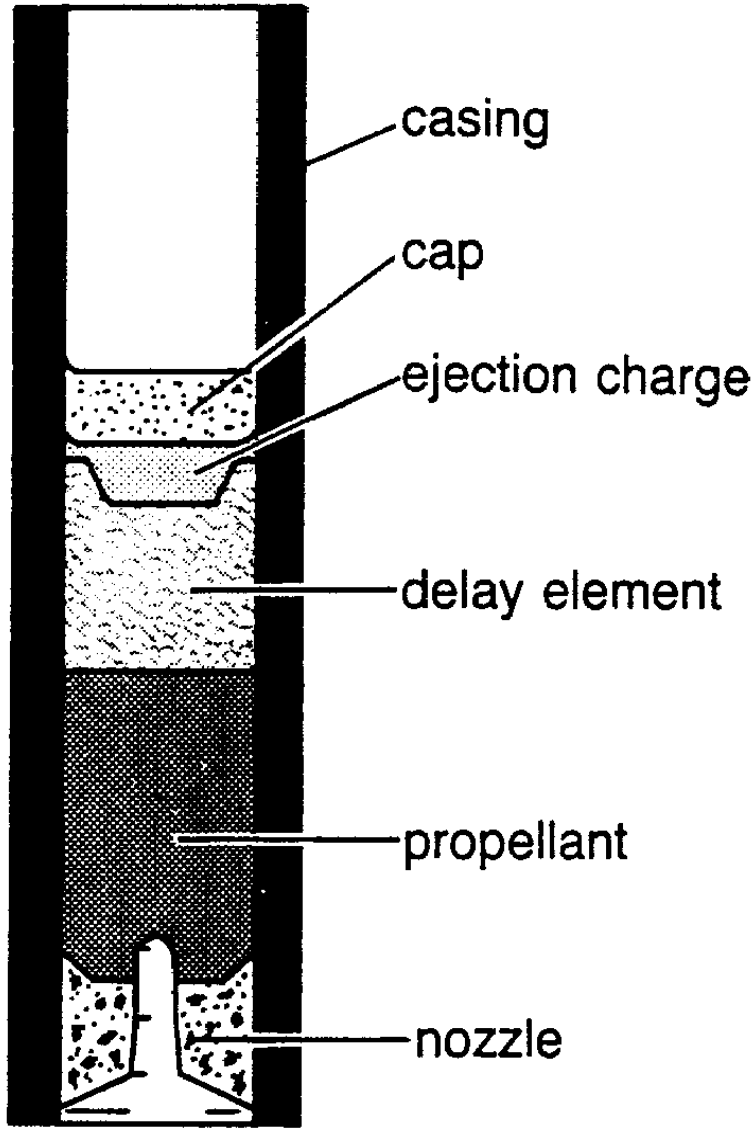
- **Thrust:** The force that makes the rocket accelerate upward as the propellant is burning.

Activity Sheet #1B

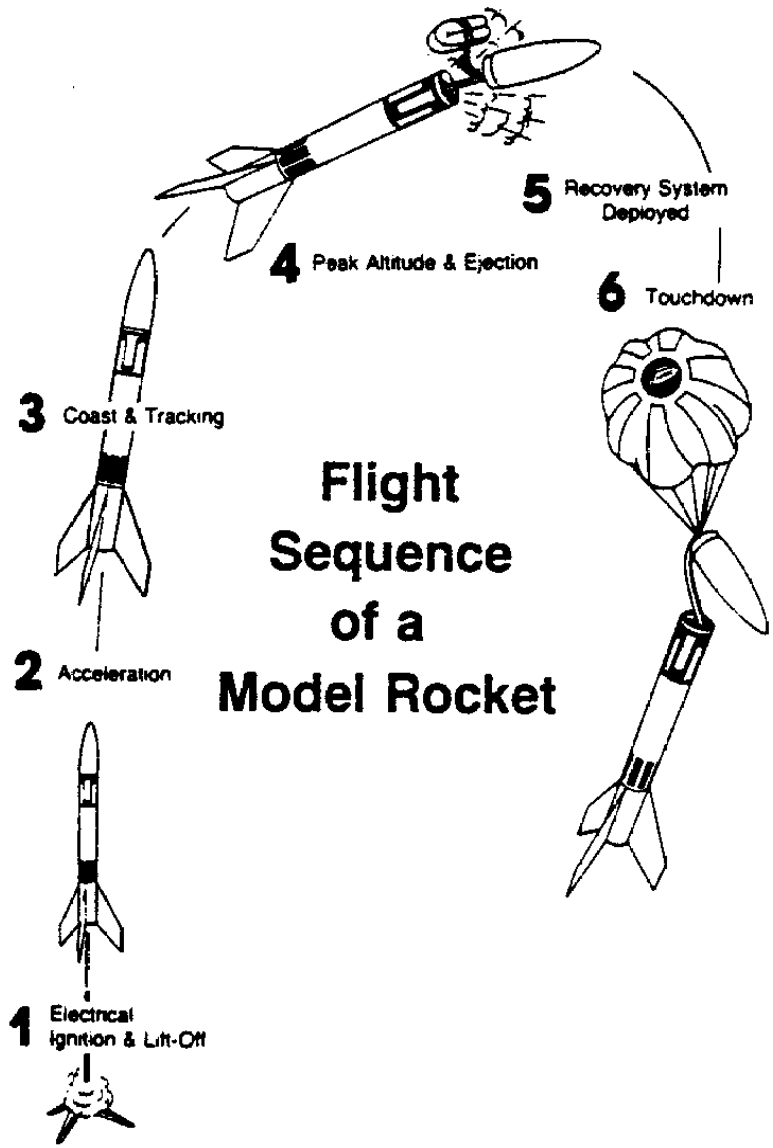
- **Action/Reaction:** Newton's Third Law of Motion.
- **Aerodynamic Stability:** Tendency of a rocket to maintain a straight course along the axis of its thrust.
- **Balance Point:** The center of gravity.
- **Fins:** Provide guidance for the model rocket.
- **Launch Rod:** Supports and guides a model rocket in a vertical path until the rocket has reached a speed at which the fins stabilize it.

Activity Sheet #1B

- **Launch Lug:** Slipped over the launch rod and guides the rocket in a stable path until stabilizing velocity is reached.
- **Velocity:** Rate of motion in a given direction measured in terms of distance moved per unit of time.
- **Shock Cord:** Elastic cord used to attach the recovery system (parachute or streamer) to a model rocket's fuselage.



Rocket Engine



Flight Sequence of a Model Rocket

Activity Sheet #1C

- **Acceleration:** The rate of *change* in the speed of an object.
- **Featherweight Recovery:** Rocket recovery system which involves a very light model which flutters to the ground.
- **Force:** Causes acceleration of a body which can cause movement.

Activity Sheet #1C

- **Glide Recovery:** Rocket recovery system in which the engine's ejection charge causes it to convert into a glider and which creates lift as it flies through the air.
- **Helicopter Recovery:** Rocket recovery system in which vanes on the rocket are activated by the engine's ejection charge and air hits these vanes and is deflected causing the side of the rocket to rotate away in the opposite direction.

Activity Sheet #1C

- **Mass:** Amount of matter an object contains. On Earth, this is measured as weight which is the amount of the force of gravity acting on the mass.
- **Motion:** Moving, change of position in relation to surroundings.
- **Parachute Recovery:** Rocket recovery system in which a parachute is attached to the nose of the rocket and is ejected from the rocket by the engine's ejection charge.

Activity Sheet #1C

- **Recovery Wadding:** Flame resistant tissues that are packed between the model rocket engine and the streamer or parachute to protect the recovery device from the hot gases of the ejection charge.
- **Rest:** Not moving, without motion.
- **Shroud Line:** String or cord used to attach a parachute to a shock cord or nose cone.

Activity Sheet #1C

- **Streamer Recovery:** Rocket recovery system in which a streamer is attached to the nose of the rocket and ejected by the engine's ejection charge to whip around in the air.
- **Tumble Recovery:** Rocket recovery system in which the force of the engine's ejection charge pushes the engine backwards and this moves the balance point of the rocket to the rear causing the rocket to be unstable so that it tumbles end over end.

Activity Sheet #1C

- **Unbalanced Force:** Causes an object at rest to move or an object in motion to slow or stop.