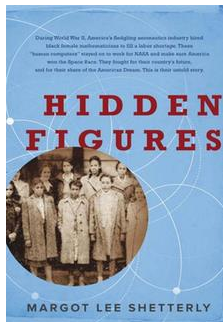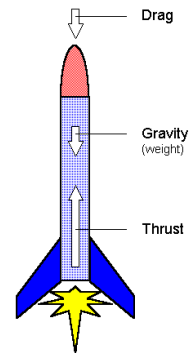# PROPULSION and THRUST (6-8)

KEY CONCEPTS:

- **Propulsion** is the act of driving or pushing (usually forward). This force is called **thrust**.
- **Potential Energy** - energy held by an object because of its position relative to other objects, stresses within itself, its electric charge, etc.
- **Kinetic Energy** - energy that an object possesses due to its motion. It is defined as the work needed to accelerate a body of a given mass from rest to its stated velocity.
- **Trajectory** – the path followed by a projectile (flying object) moving under the action of giving forces.

LITERACY CONNECTION:

Hidden Figures by Margot Lee Shetterly tells the true story of black female mathematicians who worked tirelessly behind the scenes to help America win the space race. Don't have access to a copy? Look in open source libraries for digital versions of this book.

ACTIVITY: STOMP ROCKET
Materials: paper, tape, scissors, empty plastic bottle (any size), ½ inch PVC pipes, caps and joints OR rubber tubing – whatever you have!
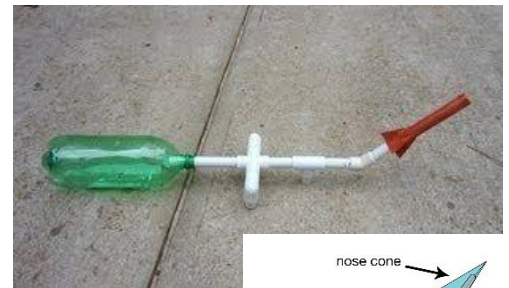
LAUNCHER INSTRUCTIONS
1. Assemble the pieces of PVC to make a "t" shape.
2. Keep one end open for the bottle, and the other end open for the rocket.
3. Put caps over the side arms (this keeps air from escaping!)

ROCKET INSTRUCTIONS
1. Role a tube of paper around the pipe and tape it loosely.
2. Cut a semi-circle out of paper and make a cone to go on top of your rocket. Tape it in place.
TIP: It is easier to make the top of your rocket flat instead of pointed.
3. Cut out triangles to make 'fins' and decorate your rocket (optional)

What is happening? The air in the bottle is "fuel" for the rocket. Stomping on the bottle forces the air through the launcher and pushes the rocket up! The bigger the bottle, the more "fuel."
EXPLORE: Turn the end of the launcher to aim for a target (a bucket or maybe a friend who wants to catch the rocket).

For step-by-step instructions, watch the video at: Stomp Rocket STEM Activity