

NEWTON'S THIRD LAW OF MOTION

New-ton's third law of mo-tion:

for every action there is an
equal and opposite reaction

What You Need

- Film canister with top
- Water
- Alka-Seltzer® tablets
or a similar antacid
- Safety goggles (recommended)

Set Up

- Clear a hard surface area where
you can conduct the experiment.
Ask a parent to help choose a spot
because it will be wet and messy.
It's best to be outside.
- Put on safety goggles, as the film
canister will go flying.



Alka-Seltzer (Fizzy) Rocket Launch

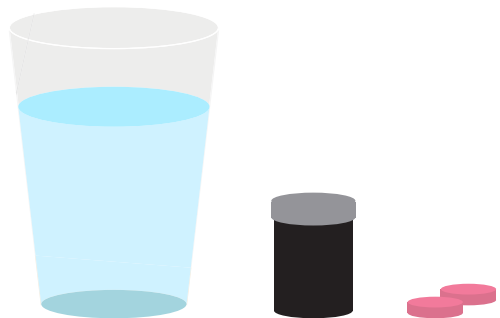
Experiment

(Read instructions completely
before starting.)

- Place the film canister on the surface
and fill one quarter of the way with water.
- Drop in half of antacid tablet.
- Quickly snap the lid onto the canister
tightly, flip it over, and stand back!

NOTE

Do not put your face directly
over the canisters while waiting
for them to launch.

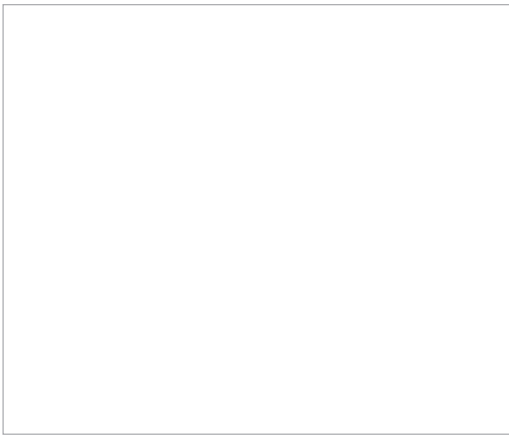


Alka-Seltzer tablets are exclusively for use in this experiment and should not be ingested. Alka-Seltzer is NOT INTENDED FOR CHILDREN'S CONSUMPTION because it contains aspirin. Please review [this drug warning information](#) for more details about this product.

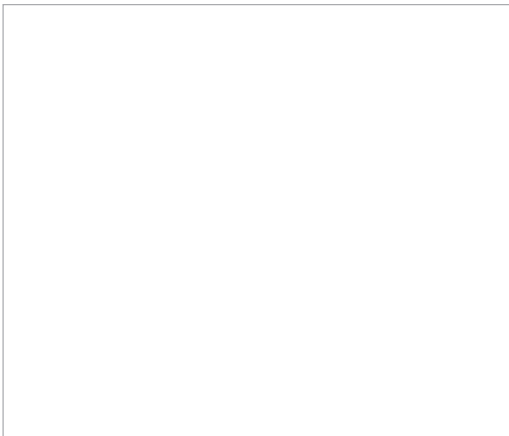
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Record Your Observations

What makes the rocket go?



What direction is the energy and gas going when it comes out of the rocket?
What direction does the rocket go in return?



NEWTON'S THIRD LAW OF MOTION

What's Going On?

Newton's Third Law of Motion says that for every action or force, there is an equal and opposite reaction or force. In this activity, one force is generated down toward the table (expanding gases pushing downward out of the canister) while the opposing reaction pushes the rocket up in the opposite direction. When water is added to the antacid tablet, bubbles of carbon dioxide gas are created.

When the lid is fitted tightly to the canister, this expanding CO₂ gas is contained within an enclosed space. As more gas is created, the pressure inside the canister rises until there is enough force to overcome the seal of the lid. The built-up pressure exerts enough force to shoot the canister into the air, forming the rocket. In an actual rocket, heat from ignition of the rocket fuel causes gases inside to expand rapidly and be forced out of the tail of the rocket, creating the downward force. In opposition, the rocket is forced upwards away from the exhaust of the tail.

CHEMICAL REACTION

chem-i-cal re-ac-tion:

a chemical change that occurs when two or more substances combine to form a new substance

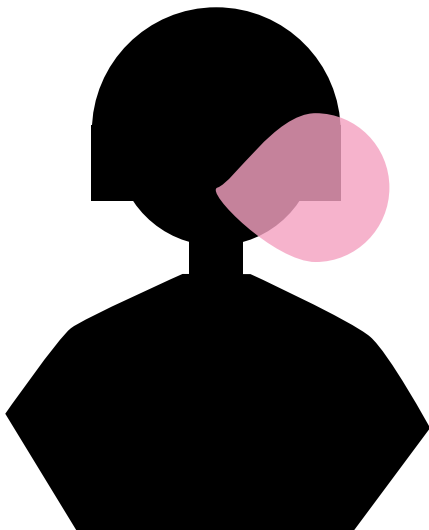
The Amazing Disappearing Gum

What You Need

- 1 piece of Glee Gum
- 1 Hershey's Kiss

Experiment

- Place one piece of Glee Gum in your mouth. Chew for a few minutes until the gum is a good consistency.
- Put the chocolate in your mouth and try to wrap the gum around it, but don't chew. Leave the chocolate wrapped around the gum in your mouth. Notice what happens if you leave the chocolate wrapped around the gum
- Try this experiment again. Put the gum in your mouth and chew and follow it up with a piece of chocolate but this time chew the chocolate too.



Record Your Observations

Why doesn't gum dissolve when you chew it?

What are chocolate and gum made of?

If you try other types of chocolate, what happens?

CHEMICAL REACTION

What's Going On?

Gum is made of rubber polymers, a long chain of carbon and hydrogen molecules. This is what makes gum so gummy. It means that gum likes to dissolve in oil, not water. Since your saliva is made of mostly water, this is why gum doesn't dissolve when you chew it. Chocolate, on the other hand, is full of oil. Put them together they both dissolve.

TIP FOR SUCCESS

Chew the gum for about one minute before adding the chocolate.