

Super Slings Physics

*Glue the worksheet on page 22 (FAF Left)
under the PHET page.*

NOTE: The quiz will be moved to MONDAY!

Constraints vs. Criteria

Constraints = Limitations or restraints, such as the amount of available materials, time limits, and human capabilities to design and build a device

Criteria = A test by which something can be judged or what your device is expected to be able to do

Identify each as a criteria (CR) or a constraint (CN).

- CN** How much time you had to build the project
- CR** How high the projectile was when it hit the wall
- CN** The amount of materials you had available
- CN** The way your team designed and built the device
- CN** The number of trials you had to earn points
- CR** The distance the projectile traveled
- CN** The brand of mousetrap you used
- CN** The power had to be from the mousetrap's spring

Newton's First Law

*An object in motion will remain in **MOTION** and an object at **REST** will remain at rest unless acted upon by an unbalanced **FORCE**.*

How did we get the marshmallow to move?

You had to apply a force to make it move.

What two forces makes it stop?

Gravity

*Friction → Fluid (air) and rolling/sliding
(when it contacts the floor)*

ADD TO NOTES

INERTIA →

*An object's
resistance to
changes in its
motion.*

Newton's Second Law

Force = MASS X ACCELERATION

If you increase the force applied, what happens to the speed of the marshmallow?

The more force that is applied, the more the marshmallow will accelerate.

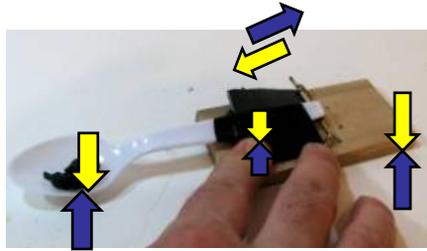
What would you have to do if we used a different projectile that weighed a lot more than a marshmallow?

More force would be needed to move the object at the same rate/distance as the marshmallow.

Newton's Third Law

For every **ACTION**, there is an opposite and equal **REACTION**.
(Forces work in pairs)

What pairs of forces can you identify in a mousetrap catapult?



Identify each example as 1st, 2nd, or 3rd.

A marshmallow will not start moving unless a force is applied to it.

1st

The more force applied to the marshmallow, the faster and farther it will travel.

2nd

Gravity causes the marshmallow to fall to the ground.

1st

Friction will slow down the marshmallow until it stops.

1st

When you apply a force to the mousetrap arm, it also applies a force on your hand.

3rd

A marshmallow will continue to move unless a force is applied to it.

1st

We would have to use more force to launch a projectile that has a higher mass than a marshmallow.

2nd

The floor exerts a force on the mousetrap and it exerts a force on the floor.

3rd

Applying less force to the marshmallow (half pull) will cause it to move a lesser distance.

2nd

Things to do ...

Thurs, 11/15

- Discuss *Super Slingers Physics worksheet* (p. 22 FAF Left) and complete during the class discussion
- Send me your *suggestions for the Super Slingers project*.

Assignments:

- Finish *Super Slingers Review* - use the *Super Slingers Vocabulary* on Quizlet to help you or the *PHET Projectile Lab Notes* on p. 22
- *Legends of Learning* playlists due FRIDAY by 3:30 PM

**What suggestions do you have for next year?
Go to mrstomm.com → Assignments to find the form!**