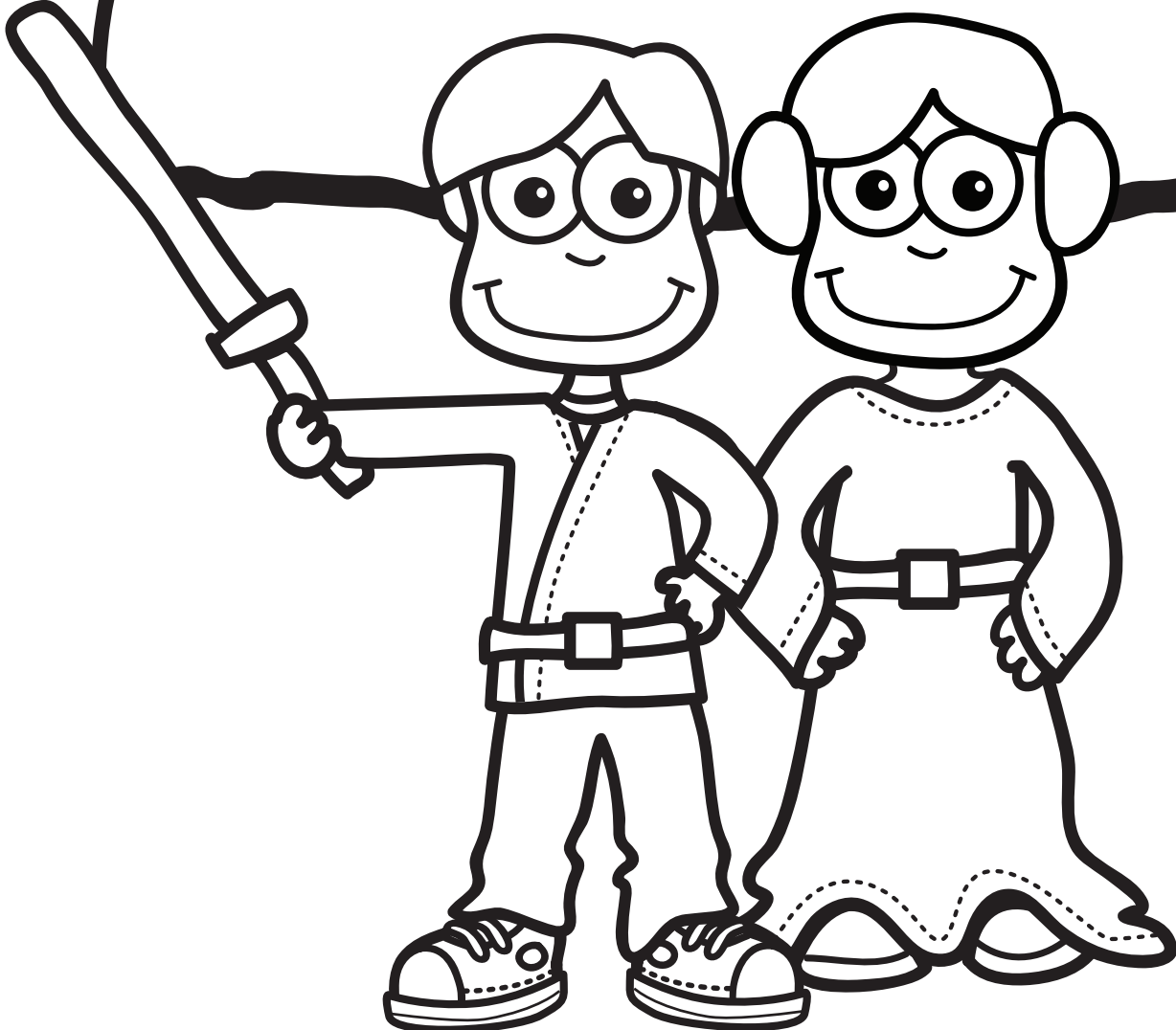


STEM wars

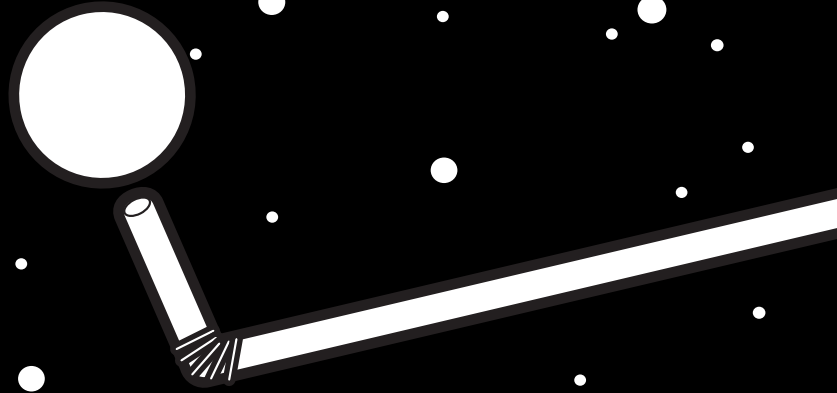
STEM TRAINING

MISSION MANUAL



STORM WARS





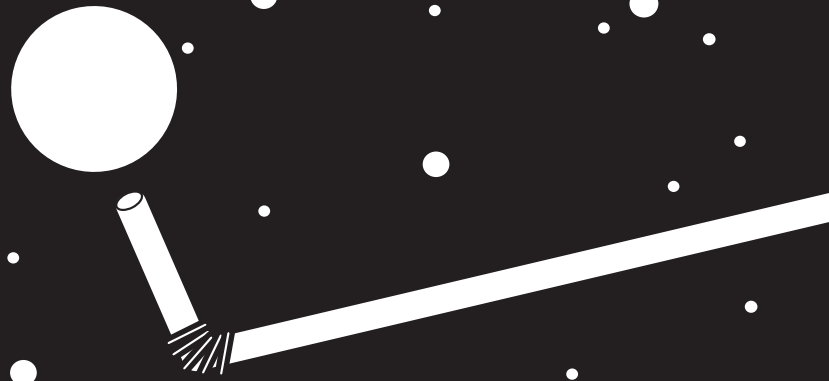
LEVITATE A SPHERE

This fun “STEM WARS” themed STEM Training Mission activity will challenge your student’s ability to use “The Force”. They will use The Force to get their STEM Ball (AKA Ping Pong Ball) to levitate. In doing this, they will discover the phenomenon that occurs when a ping pong ball is placed above a straw and air is blown through the straw. Most people would expect the ping-pong ball to fly up and off to the side—but it doesn't. Due to Bernoulli's Principle, the ball will hover in the air above the straw. This project can end with a demonstration using a shop-vac or hair dryer with a ping-pong ball that will produce the same interesting results.

This activity package includes:

- Student STEM Training Mission Worksheets
- Teacher Instructions
- Teacher Instruction Video
- Student STEM Wars Introduction Videos
(Starring three young and talented STEM Warriors)
- Materials List
- 3 STEM WARS wall posters
(each come in 8.5 x 11 & 11x17 sizes).





LEVITATE A SPHERE

☆ VIDEO LINKS ☆

Student Intro Video:

<https://youtu.be/gG3Go0zYFyE>

Teacher Demonstration Video:

<https://youtu.be/hVtZG3TzUjU>





MATERIALS



STEM TRAINING MISSION

LEVITATE A SPHERE

Materials listed below are per group (typically 3-4 students)

Straws

Ping pong balls (STEM SHPERE)

Student instructions (need to be spread out on different tables)



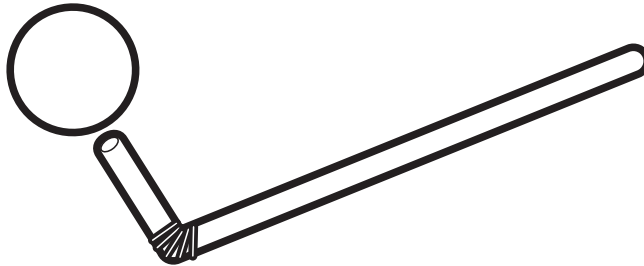
TEACHER



instructions

STEM TRAINING MISSION

LEVITATE A SPHERE



Set out the materials:

- Straws
- ping pong balls (STEM Spheres)
- student instructions

Introduction

You can begin this lesson with the student introduction video. It's cute and will get your students interested in the challenge! After playing the video, ask your class if they are ready for the training mission. Tell the students that you want to see if they have the force needed to levitate the stem sphere and if so, for how long? As you have your students move to their different tables to start working, tell them to follow the student instruction sheet.

Optional discussion:

Ask them if it's possible to levitate (float in the air). Ask if any of them can levitate (or float). Have any volunteers try :) Then tell them that today we are going to try to get your "STEM Spheres" to levitate. Give them between 3 and 10 minutes (depending on the age of your students) to practice their levitation skills.

Science behind this activity.

This activity occurs because of Bernoulli's Principle. Please see the teacher instruction video for how to discuss this with your students.

Ending activity demo

Bring out your shop vac or hair dryer and show how long you can get the stem sphere to levitate! Exclaim that you must be a Jedi master!

(make sure each student has their own straw)

STEM TRAINING MISSION:

LEVITATE A SPHERE

ASK:

Can you use “the force” to levitate a sphere (ping pong ball)?

IMAGINE:

If you had the ability to cause anything to levitate, what would it be? Share your thoughts with your group!

PLAN:

To master this STEM skill, you must be able to levitate a training sphere for a minimum of 3 seconds... longer as your skills improve.

EXPERIMENT:

After constructing your levitating device, practice levitating your STEM Training Sphere. With your group, keep track of each person’s levitation times (on chart below).

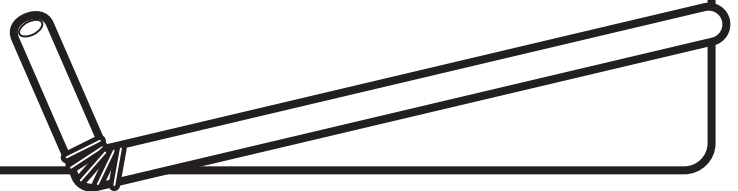
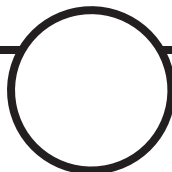
NAME:


SECONDS FOR EACH TRY:

	TRY:1	TRY:2	TRY:3	TRY:4
_____	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
_____	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
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_____	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

IMPROVE:

Is there any way to keep the STEM Training Sphere for an even longer time? Discuss ideas with your group and test them out!






STEM Wars

STEM TRAINING MISSION

LEVITATE A SPHERE



STEAM WARS



STEM TRAINING MISSION

LEVITATE A SPHERE