STEM TO STEAM

K-2nd

16 PACK

ART COMPONENT FOR

16 K-2nd

STEM ACTIVITY CHALLENGES

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Art (STEAM) component for the STEM Activity Challenge: "Marble (Noodle) Roller Coaster"

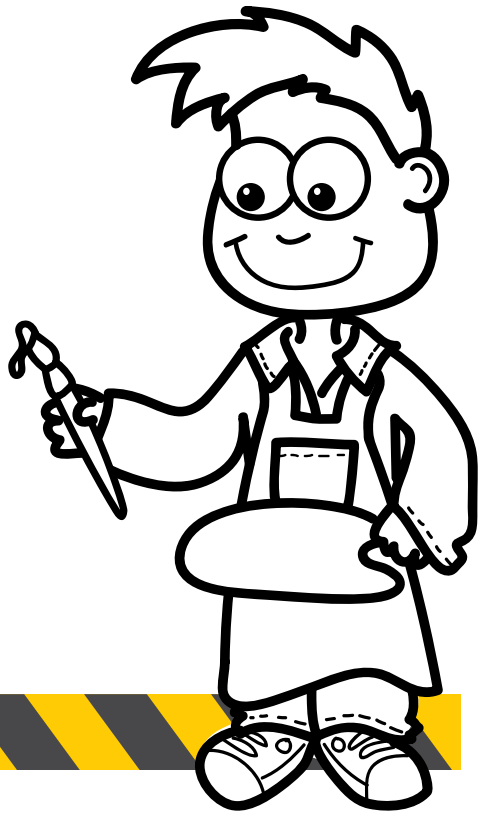
In the companion STEM Activity Challenge, "Marble (Noodle) Roller Coaster" students work in groups to create a roller coaster from foam pool noodles. They will include twists, turns, hills and loops. The goal is to create an exciting "ride" (for the marble) while getting it safely to the ground.

Art Challenge: Roller Coaster Creation

This art challenge is an expansion on question #1 on the STEM worksheet. The students will design and create a drawing of a real roller coaster. The goal is to get kids creatively thinking (and excited) about the real world application of the science concept they are learning in the STEM Activity Challenge.

Materials Needed:

STEM Challenge materials + Pencils, Markers, worksheet (included)



STEAM Art Challenge

Name: _____

Date: _____

Art (STEAM) component for the STEM Activity Challenge: "Marble (Noodle) Roller Coaster"

Draw a picture of your own "real-life" roller coaster:

Name your Roller Coaster: _____

STEAM Art Challenge (K-2nd Grade) Teacher Instructions

Art (STEAM) component for the STEM Activity Challenge: "Marshmallow Catapult"

In the companion STEM Activity Challenge (Marshmallow Catapult), students work in groups to create a catapult from popsicle sticks. They will modify their catapult in order to produce the best launch possible. Kids will have a great time launching mini marshmallows across the room while learning about potential and kinetic energy.

Art Challenge: Decorate it!

Have the students decorate their catapults. The goal is to get kids creatively thinking and engaged in the project.

Materials Needed:

STEM Challenge materials + Markers or other quick-drying decorating materials.

STEAM Art Challenge (K-2nd Grade) Teacher Instructions

Art (STEAM) component for the STEM Activity Challenge: "Hoop Glider"

In the companion STEM Activity Challenge (Hoop Glider), students work in groups to build a glider that will glide as far as possible. Students will cut and tape various hoops to their straw. They will experiment with hoops of different sizes, positioning, and throwing styles.

Art Challenge: Junior Advertisers

Have the students create a pretend hoop glider airline. Students will need to work in their group to come up with a name for their airline and an advertisement poster. You could give them some ideas such as... including a drawing of their glider and their airline name, adding some text telling why their airline is the best, adding smiling customer pictures etc. You could even let them cut pictures out of magazines to glue onto their posters. The purpose of this challenge is to get kids thinking creatively and excited about promoting their airline.

Materials Needed:

STEM Challenge materials + pencils, markers/crayons, paint, poster-board/paper, glue sticks, glitter, kid-friendly magazines, other fun art supplies.

STEAM Art Challenge (K-2nd Grade) Teacher Instructions

Art (STEAM) component for the STEM Activity Challenge: "Oobleck"

In the companion STEM Activity Challenge (Oobleck), students work in groups to explore the properties of Oobleck. They will be testing random objects such as paper clips, toothpicks, marbles, string etc. to determine whether they float or sink. Oobleck has properties unlike most substances we usually encounter.

Art Challenge: Write & Illustrate

Have the students write and illustrate a Dr. Suess inspired short story about their experience with Oobleck. The goal is to get kids creatively thinking and engaged in the project through writing and drawing.

Materials Needed:

STEM Challenge materials + Cardstock/construction paper (for covers), typing paper (page template provided), stapler, markers/crayons, pencils and pens

STEAM Art Challenge (K-2nd Grade)
Teacher Instructions

Art (STEAM) component for the STEM Activity Challenge: "Jumping Bugs"

In the companion STEM Activity Challenge (Jumping Bugs), students work in groups, putting an effervescent tablet inside a film cannister with a little bit of water. As gas is produced, pressure will build in the film canister causing the cap to pop off. Students will color and tape a bug* of their choice to the bottom of the film cannister and see how high their bug can go!!!
The students can experiment with the amount of tablet and water to see what works best.

Art Challenge: Shape it

Have the students Create a 3-D bug using modeling clay. You can discuss how the extra weight impacts how high the bug "can jump." The goal of this challenge is to get kids thinking creatively while considering how visual design can sometimes impact performance.

Materials Needed:

STEM Challenge materials + Modeling clay

STEAM Art Challenge (K-2nd Grade) Teacher Instructions

Art (STEAM) component for the STEM Activity Challenge: "Popcorn Huff and Puff"

In the companion STEM Activity Challenge (Popcorn Huff and Puff), students will attempt to blow a piece of popcorn into an "empty" 2 liter bottle. To their surprise, they will find that it doesn't work. Students will discuss this phenomenon with their team and attempt to explain it. Students will discover that the bottle is actually full...full of air! They will then brain-storm modifications that may allow the popcorn to be blown into the bottle.

Art Challenge: Junior Graphic Designers

Have the students create a "Full of Air" label for their team's bottle. They would need to write "Full of Air" somewhere on the label and decorate it. The students could also use some of the label space to draw and/or explain what they learned.

Materials Needed:

STEM Challenge materials + Bottle Label templates (provided), markers, crayons etc.

Pop Bottle Label

Decorate, cut along dashed line and glue onto pop bottle.
Note: the label will not wrap all the way around the bottle.

STEAM Art Challenge (K-2nd Grade) Teacher Instructions

Art (STEAM) component for the STEM Activity Challenge: "Pop Can Races"

In the companion STEM Activity Challenge (Pop Can Races), students will work in groups to explore electrostatic forces between a balloon that they charge and a pop can on the floor. After experimenting with different balloons and different methods, teams will race their pop can a distance of ten meters. Students will not be able to touch, push or blow on their pop can. It must be pulled with the static electricity they create.

Art Challenge: Award Creation

Have the students come up with a team name and create a race award certificate for their pop can racer (or you could have each team make an award for a different group). They will choose what they think the Pop Can Racer excels in (ie, speed, style, fun....) and create an award for that skill.

Materials Needed:

STEM Challenge materials + Award label template (provided), drawing / decorating materials

Racing Award Certificate

This Pop Can Racer is really great because:

_____

Presented to team:

_____

STEAM Art Challenge (K-2nd Grade) Teacher Instructions

Art (STEAM) component for the STEM Activity Challenge: "Musical Straws"

In the companion STEM Activity Challenge (Musical Straws), students will explore sound. They will cut a normal straw and turn it into a musical instrument. They will cut the straw to different lengths and analyze how the length changes the pitch.

Art Challenge: Musical Mania

Have the students make up a song with their musical straw and notify you (the teacher) when they are ready to perform it for you. The goal of this challenge is to help the kids make the connection between science and the art of making music.

Materials Needed:

STEM Challenge materials

STEAM Art Challenge (K-2nd Grade) Teacher Instructions

Art (STEAM) component for the STEM Activity Challenge: "Self Inflating Balloons"

In the companion STEM Activity Challenge (Self Inflating Balloons), students will work in groups to load three different balloons with different amounts of baking soda and fill three bottles with vinegar. When the balloons are inverted and the baking soda drops into the vinegar, students will make observations as the balloons self-inflate.

Art Challenge: Expanding Art

Have the students draw a silly face on each balloon before doing the experiment. As the balloon inflates, the students can watch their drawing expand while making observations about the process making the balloon inflate. The art goal here is for students to see how science can be used creatively to make their artwork come to life.

Materials Needed:

STEM Challenge materials + Permanent markers

STEAM Art Challenge (K-2nd Grade) Teacher Instructions

Art (STEAM) component for the STEM Activity Challenge: "Drops on a Penny"

In the companion STEM Activity Challenge (Drops on a Penny), students will work in groups (or individually) to get as many drops as possible to sit on the head of a penny. They will be amazed at how much water will stay on the top of a penny. Not only will students be competing against others, they will be observing surface tension as well.

Art Challenge: Spreading Colors

In the STEM challenge, students explore how drops of water react to landing on a non-porous surface. In the art component, students will explore what happens to drops of colored water when dropped onto a porous surface - paper towel. You can talk about how the texture of the paper towel affects how the color spreads when the water-drops fall onto it. You will need at least 3 eye dropper colors per group (red, blue, yellow) for some fun color mixing. Of course more if you wish! This could be a fun opportunity to talk a little bit about primary and secondary colors.

Materials Needed:

STEM Challenge materials + Paper towel, eye droppers (3 per group), colored water (food coloring, diluted watercolor or other water-coloring method of your choice)

STEAM Art Challenge (K-2nd Grade) Teacher Instructions

Art (STEAM) component for the STEM Activity Challenge: "Spaghetti Tower"

In the companion STEM Activity Challenge (Spaghetti Tower), students will work in groups to build the tallest structure possible from mini-marshmallows and uncooked spaghetti noodles. Not only will the students learn the importance of working together as a team, but they will discover what shapes they need to make their tower strong.

Art Challenge: Sketch a Tower

Have students sketch out a drawing (plan) of what they want their spaghetti tower to look like BEFORE they build it. Help them to think through what shapes might help their tower to be strong as they makes their plans.

Materials Needed:

STEM Challenge materials + Paper (worksheet provided), pencils, rulers

STEAM Art Challenge

Name: _____

Date: _____

Art (STEAM) component for the STEM Activity Challenge: "Spaghetti Tower"

Make a sketch to plan your spaghetti tower

Name your tower: _____

STEAM Art Challenge (K-2nd Grade) Teacher Instructions

Art (STEAM) component for the STEM Activity Challenge: "Swinging Pendulum"

In the companion STEM Activity Challenge (Swinging Pendulum), students will work in groups to determine which factors (angle, length, or mass) affect the period of a pendulum. Through several different experiments, they will discover that only changes in length affect the period. Near the end of this project, the challenge will be for each group to create a pendulum of period 1 second by using the knowledge they've gained through prior experiments.

Art Challenge: Design a Ride

Have the students draw a picture of an amusement park "pendulum ride" and give it a fun name.

Materials Needed:

STEM Challenge materials + Paper (worksheet included) and drawing materials.

STEAM Art Challenge

Name: _____

Date: _____

Art (STEAM) component for the STEM Activity Challenge: "Swinging Pendulum"

An amusement park wants to build a huge pendulum ride, draw what the ride might look like and come up with a creative name.

Name your ride: _____

STEAM Art Challenge (K-2nd Grade) Teacher Instructions

Art (STEAM) component for the STEM Activity Challenge: "Aluminum Foil Boat"

In the companion STEM Activity Challenge (Aluminum Foil Boat), students will work in groups to design and build a small boat from aluminum foil. They will then see how many pennies it can hold before it sinks. The goal is for each student to work with their group to build and modify their boat to hold as many pennies as possible..

Art Challenge: Boat Poets

Have the students write and illustrate a poem (or short story) about their boat.

Some ideas:
- The boat gets shipwrecked on a deserted island
- The boat goes through a big storm
- It is a pirate boat searching for an island with buried treasure

Materials Needed:

STEM Challenge materials + Paper (worksheet included) and drawing materials.

STEAM Art Challenge

Name: _____

Date: _____

Art (STEAM) component for the STEM Activity Challenge: "Aluminum Foil Boat"

Write a poem about your boat and draw a picture to go with it.

STEAM Art Challenge (K-2nd Grade) Teacher Instructions

Art (STEAM) component for the STEM Activity Challenge: "Levitating Ping Pong Ball"

In the companion STEM Activity Challenge (Levitating Ping Pong Ball), students will work in groups to 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.

Art Challenge: Ping Pong Posture Performance

Have students, while working in their group, come up with three different postures/actions to perform while getting their ball to levitate. Ex: Standing on one foot, blinking, striking a dance pose....etc. Students can then challenge another groups to perform the actions/postures they have created.

Materials Needed:

STEM Challenge materials

STEAM Art Challenge (K-2nd Grade) Teacher Instructions

Art (STEAM) component for the STEM Activity Challenge: "Dancing Raisins"

In the companion STEM Activity Challenge (Dancing Raisins), students will work in groups while dropping raisins into a clear carbonated drink (7-up or Sprite) and make observations about their dancing raisins. Students will brainstorm why they appear to be dancing, rising, and sinking.

Art Challenge: Dancing Raisin Dance-off

Have the students create and perform (for you or the class) a "dancing raisin dance".

Materials Needed:

STEM Challenge materials

STEAM Art Challenge (K-2nd Grade) Teacher Instructions

Art (STEAM) component for the STEM Activity Challenge: "Exploding Sandwich Bag"

In the companion STEM Activity Challenge (Dancing Raisins), Students will work in groups to prepare their ziploc bag for a mini-explosion (pop) :) To get the vinegar and baking soda sealed in the bag without allowing the chemicals to mix first will test their groups ability to work together. Once the chemicals are mixed, students will observe the chemical reaction and celebrate the volume of their bag's pop.

Art Challenge: Comic Strip

Have the students work individually or in groups to create a comic strip about a sandwich bag exploding in the lunchroom.

Materials Needed:

Paper (worksheet provided), drawing and writing materials

STEAM Art Challenge

Name: _____

Date: _____

Art (STEAM) component for the STEM Activity Challenge: "Exploding Sandwich Bag"

Create a comic strip about a sandwich bag exploding in the lunch room