



**SUMMER
BOREDOM
BUSTER
CHALLENGE**

CREATE

CREATE

MAKE CRYSTALS, POLYMERS, AND MOVIES
IN THIS DAILY CHALLENGE!

DID YOU KNOW?

- The Humpty Dumpty Circus, the first stop motion ever movie was created in 1898
- The Cave of Crystals in Mexico contains some of the largest crystals ever found. These selenite crystals can be as big as 39 feet long!

FUN FACTS

WHAT IS A ROCK'S
FAVORITE CEREAL?

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STEAM FUNNIES

STEAM SNACK

POLYMER JIGGLERS

WHAT'S THE STEAM BEHIND IT?

When you hear the word polymer, you may think of plastic. But polymers can be anything where a large number of similar molecules are connected together in a chain. Gelatin is a naturally found protein polymer. Its polymer chain is shaped like a triple helix (spiral) which allows it to swell when the liquid is added.

INGREDIENTS

- Water or juice if using unflavored gelatin
- Gelatin like Jello or Knox

RECIPE

Grab a box of your favorite gelatin and follow the instructions given to make some polymer jiggers!

QUICK CRYSTALS

QUICK STEAM



WHAT'S THE STEAM BEHIND IT?

A crystal is a solid whose atoms, the building blocks of all things, are arranged in a highly regular pattern. Some of the most common crystals you see in everyday life are table salt, snow, and even the lead of your pencil. The lead contains graphite crystals.

In these quick crystals, you are making a supersaturated solution of epsom salts (magnesium sulfate). This means that there's more salt dissolved into the water than it can hold. The extra salt becomes the crystals.

MATERIALS

- 1/2 cup hot tap water
- 1/2 cup unscented epsom salts
- Measuring cup
- Spoon
- Several glass bowls or cups
- Food coloring
- Small pebbles

INSTRUCTIONS

1. Measure 1/2 cup of hot tap water, the hottest you can get from your faucet.
2. Add 1/2 cup unscented epsom salt to the hot water. Stir for 2 minutes. There may be some undissolved salt in the bottom.
3. Set out the bowls where you will grow the crystals. Add a few drops of food coloring and some of the epsom salt solution and mix. Drop in a pebble as a crystal seed to help them grow.
4. Place the bowls in the freezer for ten minutes and then into the refrigerator overnight. You may see crystals in as quickly as three hours.

TOY ANIMATION



DIFFICULTY: ●●●●

TIME: 30-45 MINUTES

SUPPLIES:

- Phone or tablet
- Stop motion app like Stop Motion or Stop Motion Studio
- Toys
- Props and backdrops like paper, other toys, books, your backyard, or anything else you'd like to use

WHAT'S THE STEAM BEHIND IT?

Explore the art of film with stop motion animation! Stop motion is animation that is capture one frame at a time while objects (like your toys) are moved in between frames. This is the same process used in cartoons except photos are used instead of drawings.

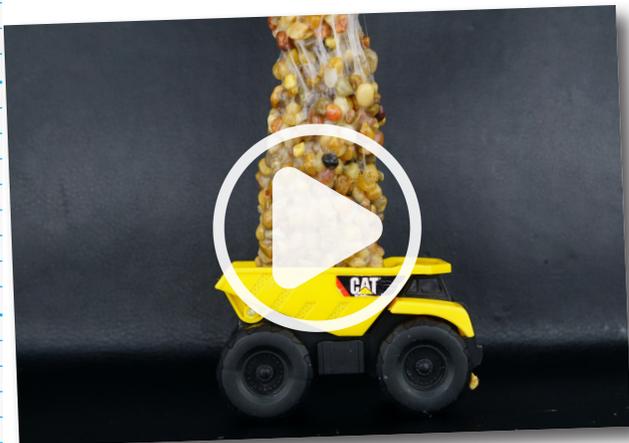
Stop motion animation works due to a phenomenon called persistence of vision. The human eye can only see 10 to 12 images per second and the brain can still be processing after the image disappears. If a new image replaces the first image while the brain is still processing, it will interpret the image as a combination of the two. If your toys make small movements and the movie has lots of pictures, your brain will interpret the movement as continuous.

INSTRUCTIONS:

1. Download your preferred stop motion app onto your phone or tablet.
2. Plan your movie using the planning questions to the right.
3. Find a stable surface and set up your backdrop.
4. Prop up your phone or tablet in a sturdy location in front of the scene. You need to be able to click the take picture button without moving the device around.
5. Set up your toys in the position you want them to start in. Take a picture.
6. Now it's time to start moving them. Move the toys slightly and take another picture. The smaller the movements between photos, the smoother the stop motion movie will be.
7. Continue moving the toys around so they tell the story you want to tell, taking a picture at each small movement.
8. When you're done with all the movements, click the make movie button in the app.

Stop motion movies can take a little practice, so it can help to start with a small one. Make it, watch it, and make adjustments before shooting the whole movie.

See a Toy Animation in Action in this movie!



TOY ANIMATION MOVIE PLAN

PLAN YOUR MOVIE
BY ANSWERING
THE QUESTIONS
BELOW.

WHAT IS THE MOVIE ABOUT?

WHICH TOYS ARE STARRING IN THE MOVIE?

WHAT ARE THE TOYS DOING IN THE MOVIE?

WHERE DOES THE MOVIE TAKE PLACE?

WHAT PROPS ARE NEEDED TO TELL THE STORY?