



'S

STEM

CHALLENGE

JOURNAL

HOW TO GET STARTED

Quick and fun 5 day STEM challenge for kids!

Print and cut out individual **STEM Challenges** to give to each kid or group of kids. They may work individually or in small groups to accomplish each STEM challenge.

Use the included **STEM Design Process: Steps To Success** printable to help guide your kids through the design process from start to finish.

Give your kids the blank **STEM Journal** pages to broaden the activity for varied age groups.

Check out our list of cheap **STEM Supplies** to always keep on hand. Start filling your bins with great items for your upcoming challenges!

Learn more about NGSS and STEM by clicking [here](#).

STEM CHALLENGES

Marshmallow and Toothpick Tower

How high can you go!

Using 100 marshmallows build the tallest tower possible!

Supplies: Mini Marshmallows, toothpicks, and measuring tape

Tips: Have kids count out 100 marshmallows. Draw out a plan to get started.

Egg Drop Challenge

Protect a raw egg from harm! Using a variety of materials or supplies on hand, design, build, and test a contraption that will protect an egg from breaking when dropped from a specific height.

Supplies: Raw Eggs, recycle bin items, and any other simple supplies on hand like bubble wrap, tissue paper, or straws.

Tips: Start by choosing a specific height to drop the egg from and use the same height each time. To reduce mess, incorporate zip top bags into the design process.

Catapult Design Challenge

How far can you launch something with a homemade popsicle stick catapult. Which items fly the farthest? Plan, design, and build a working catapult.

Supplies: Popsicle sticks, rubber bands, bottle cap, glue or sticky dots, spoons, tubes, items to launch.

Hint: Use our easy [popsicle stick catapult design](#) or let the kids get creative with [LEGO](#), [pencils](#), [spoons and cardboard tubes](#)!

STEM CHALLENGES

Build An Unsinkable Boat

Build a boat that floats and can't be sunk! Using recycled items and supplies from around the house or classroom, build boats that will float in a tub of water. Take it a step further and build a boat that will hold a specific object such as a soup can!

Supplies: Tub with water, supplies to build boats, items to test flotation

Tips: Make sure to choose an item to test flotation that you have enough or that all weigh the same and are the same size! Think rolls of pennies, soup cans, large wooden blocks, small wooden cubes, etc.

Hint: You can also challenge kids to build tin foil boats with only a 12" square of aluminum foil!

Build A Paper Bridge

Span that gap with a bridge building challenge! Set up two stacks of books and challenge the kids to build a bridge that spans the gap out of paper! Test the bridge with the weight of pennies!

Supplies: Computer paper (dig out the recycling bin), tape, pennies, and two stacks of books the same height..

Tips: Create a gap using two stacks of books that the bridge will need to span. Test the strength of the paper bridges by adding pennies to it. You can also compare other bridge building materials such as tin foil, wax paper, construction paper, or card stock!

STEM Steps To Success



OBSERVE/ ASK

- What is the problem?
- How have others solved the problem?
- What are the limitations/guidelines?
- Who can help me solve this problem?



COLLECT

- What information will I need to solve this problem?
- What resources do I have/need to solve this problem?



IMAGINE

- How can I solve the problem?
- Have I found an "out of the box" solution?
- Do I have more than one solution?



PLAN

- What materials do I have/need?
- What steps will I take to solve the problem?
- What could go wrong?



CREATE

- I will test my plan!
- I will take notes of my process/observations!
- I will draw/take pictures as I work, for reference later!



IMPROVE

- I will reflect on my design.
- What changes can I make to improve my plan/solution?
- What does my data tell me about my first attempt?
- I create another plan and retest!

STEM JOURNAL

DATA &
RESULTS

TODAY MY CHALLENGE IS:

What problem do I need to solve?

What questions do I have about my problem?

What are some solutions?

What materials do I need?

STEM JOURNAL

DATA &
RESULTS

TODAY MY CHALLENGE IS:

What is my plan?

Does my plan work? Test it!

What changes can I make to my plan?

STEM JOURNAL

DESIGN & PLANNING PAGE for NOTES & SKETCHES

DATA &
RESULTS

STEM SUPPLIES

15 Cheap & Easy to use STEM Materials

Many of these items can be sourced from around the house or classroom or easily found at most dollar stores!

- Toothpicks
- Marshmallows/gum drops
- Tin foil
- Popsicle sticks
- Rubber bands
- Craft tape
- Cardboard/
construction paper/paper
- Balloons
- Yarn/string
- Pipe cleaners
- Paper clips
- Straws
- Paper tubes
- Plastic cups
- Recyclables

3 Tips for Building Your STEM Supply Kit

Use large storage bins to collect unusual packaging materials, found items, and non-recyclable items. Keep one bin for recyclable items and one bin for non-recyclable items!

Visit dollar stores for holiday and seasonal items to add themes to your STEM activities. Save these items from year to year in zip tops bags.

Try a cleaning caddy for storing and displaying smaller items. Make sure to have plenty of paper, glue, markers, pencils, and pairs of scissors on hand for planning and design.