



**10** FUN  
*SUMMER*  
**STEM BOX**  
**CHALLENGES**

By Science Demo Guy



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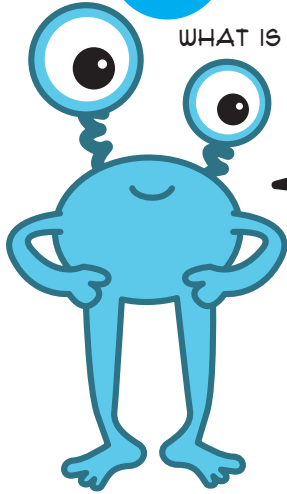
Reflection Sheet



# STEM ENGINEERING PROCESS

## 1 ASK

WHAT IS THE PROBLEM I NEED TO SOLVE??



My friends and I need to design a fast bike to ride to school!

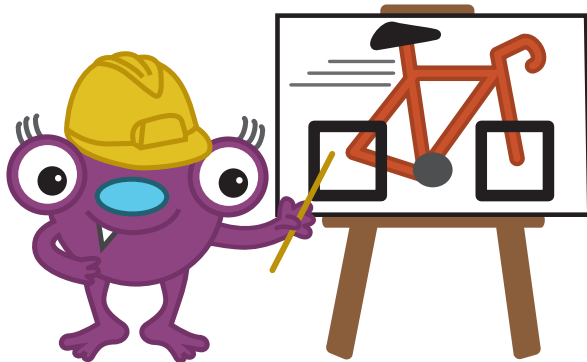
## 2 IMAGINE

WHAT ARE SOME WAYS TO SOLVE THIS PROBLEM?



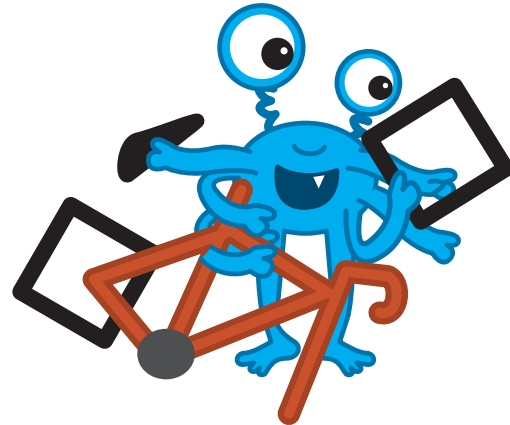
## 3 PLAN

WHAT ARE WE GOING TO DO TO SOLVE THE PROBLEM?



## 4 CREATE

LET'S BUILD IT!!!



## 5 TEST

HOW WELL DOES IT WORK?



## 6 IMPROVE

WHAT CAN WE DO TO MAKE IT BETTER?



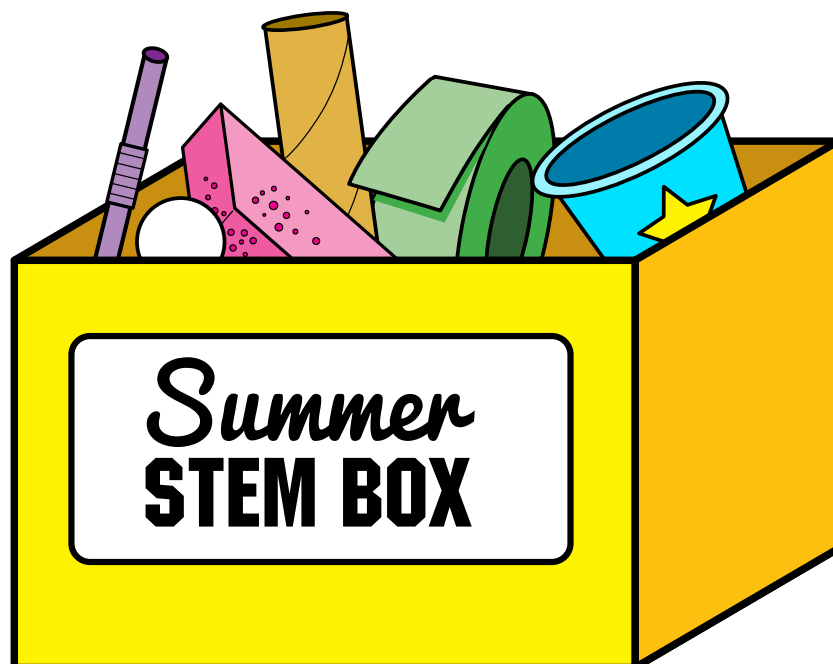
## PUT TOGETHER A "SUMMER STEM BOX"

**STEM Projects** are a fun way to add a bit of education into your summer schedule...and a whole lot of fun! :-)

### To create a Summer STEM Box:


1. Compile all or some of the materials listed and any others you'd like to add. Most are things you already have or can get at the dollar store!
2. Find a box, bin or basket to put them in.
3. Cut out the "challenge cards", fold them in half and place them in a jar. Kids can pull out a (random) card to get the challenge for the day!

These challenges are open-ended—the sky is the limit for creativity! They are great for individual or group work, maybe even a family competition!!



## Suggested Materials for your Summer STEM Box:

- Straws
- Pipe Cleaners
- Play Dough
- Ping Pong Balls (Table Tennis Balls)
- Marbles
- Army Guys
- Paper Cups (Dixie Size)
- Kitchen Sponges
- Tape (Masking, Duct, Scotch Tape)
- Craft Sticks (Popsicle Sticks)
- Plastic spoons
- Rubber Bands
- Milk Jug Lids
- Paper Clips
- Foil
- Paper (Construction, Card Stock, Printer Paper)
- Card Board (could be cereal or other packaging boxes)
- 50-ish Pennies (for testing)
- Paper Towel Rolls and Toilet Paper Rolls
- Bubble Wrap (?)



Design & create a really fun roller coaster for a ping-pong (table tennis) ball.

Create something that will keep an egg from breaking when dropped from 4 ft. ...or even higher!!

Build a catapult that will launch a marshmallow. How far can you get it to go?

Design & create a really fun slide for a marble.

Make a paper airplane that can carry pennies. See how far you can make it fly and how many pennies it can carry!

Create a floating raft for "army guys" (or other small toys). Experiment with different materials & designs. See how much cargo (pennies) your raft can hold until it sinks. Can you create a way for the raft to move on its own?

Design & build a play-ground for marbles... include all of your favorite playground equipment!

Make a ramp with 2 jumps for Hotwheels cars. Build one jump for your car to go far and the other to go high!

Build a bridge that can go between two chairs over the span of a foot. See how many small books it can hold!!

Build a tower out of just paper that can support a book. How many books can it hold? Try different shapes and sizes!

# PLANNING SHEET

LIST OR SKETCH SOME IDEAS:

CREATE A DRAWING TO PLAN OUT YOUR DESIGN:

# REFLECTION SHEET

WHAT WAS THE PROBLEM TO SOLVE?

HOW DID YOU SOLVE THE PROBLEM?

HOW COULD YOU IMPROVE YOUR SOLUTION?