

EARTH DAY

CHALLENGES

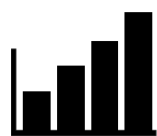


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ENGINEER'S

NOTEBOOK



Earth Day STEM Challenge Supply List

Acrylic paint	Google eyes	Scissors
Aluminum foil	Hammer	Screwdriver
Baking soda	K'Nex®	Screws
Baggies	Leaves	Shredded paper
Beads	LEGO® bricks	Skewers
Cardboard	Lollipop sticks	Sponges
Clothes pins	Magnets	Springs
Coffee filters	Marbles	Stapler
Cookie cutters	Measuring cups	Strainer
Cotton balls	Needle and thread	Straws
Cotton swabs	Nails	String
Craft paper	Nuts & bolts	Styrofoam balls
Craft sticks	Nuts, nut butters	Sugar cubes
Doilies	Paint	Tape
Duct tape	Paper	Tape measure
Feathers	Paper cups	Trash container
Felt	Paper clips	Tin can
Flat marbles	Peeps	Toilet paper rolls
Flowers	Pencil	Toothpicks
Food coloring	Pinecones	Twine
Funnel	Pipe cleaners	Twist ties
Gears	Pom-poms	Washi Tape
Gems	Pretzel Sticks	Water
Glitter (gold)	Pulleys	Water beads
Glitter glue	Raffia	White vinegar
Glow stars	Ribbon	Wire
Glow sticks	Rope	Wooden planks
Glue	Rubber Bands	Yarn
Golf tees	Seeds	Zip ties



DESIGN & BUILD A RECYCLING BIN

Why do people litter instead of recycling when a bin is right around the corner?

Design and build a recycling bin or can that encourages more people to recycle! Ask if you can place your bin in a special location.



Possible Supplies: trash container, scissors, glue, tape, craft paper, nuts & bolts, screwdriver, screws, nails, hammer, springs, K'Nex®, LEGO® bricks, tape measure, twist ties, wooden planks, string, stapler, duct tape, paper clips, scissors, craft paper

My ideas:

KNOW IT, TEST IT, WRITE IT

Write it: What special things would you add to this bin to make it stand out or encourage people to recycle more?

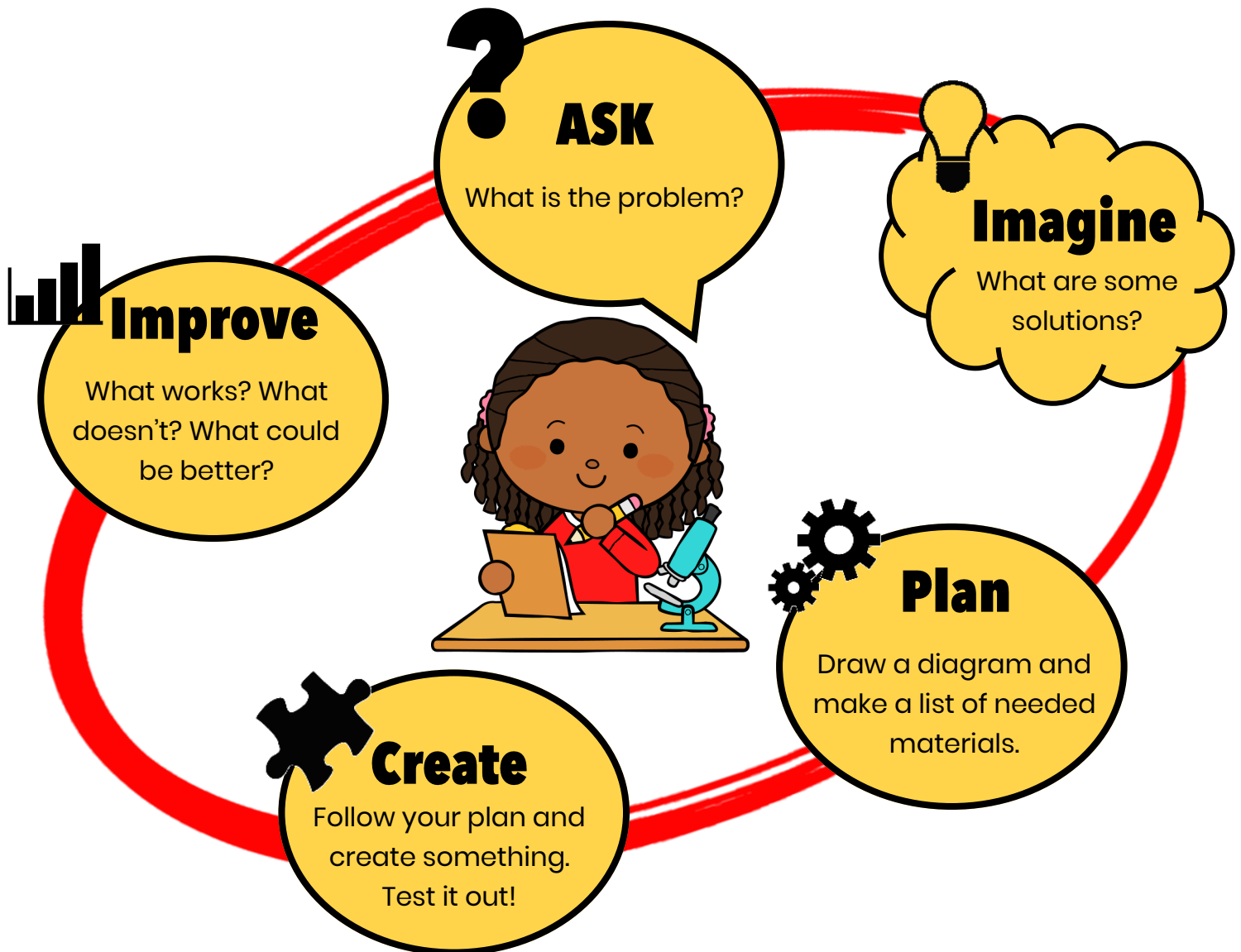
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KNOW IT, TEST IT, WRITE IT

Make it: If possible, take a plain trash container and decorate it with your ideas! Draw your ideas below.



Engineering Design Process



Engineering Design Process



ASK

What is the problem?

What do I need to know?

How can I solve the problem?



Imagine

What information will I need?

What are some solutions?

How can I solve the problem?



Plan

What things do I need to use?

Draw a diagram and make a list of needed materials.



Create

Follow your plan and create something.

Test it out!



Improve

What changes can

I make to make it better?

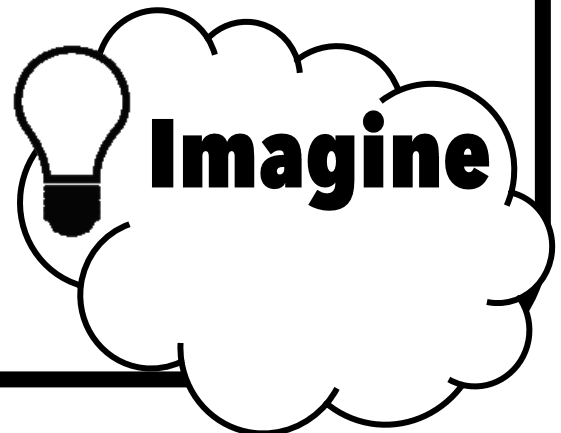
My STEM Challenge:



ASK

What's the problem?

BRAINSTORM AND RECORD possible solutions, as many as you can.



Imagine



Plan

Draw a diagram and make a list of needed materials.



Plan

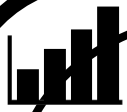
My STEM Challenge:



Create

Look at the materials provided for use in creating your models.

My STEM Challenge:



Improve

Create a new drawing incorporating your ideas as well as the feedback you received on your prototype. Create an improved version of your original model.

Questions for Reflection

Use these questions for reflection with your kids after they have completed the STEM challenge to encourage discussion of results and critical thinking.

1. What were some of the challenges you discovered along the way?
2. What worked well and what did not work well?
3. What part of your model or prototype do you really like? Explain why.
4. What part of your model or prototype needs improvement? Explain why.
5. What other materials would you like to use if you could do this challenge again?
6. What would you do differently next time?
7. What parts of your model or prototype are similar to the real world version?

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