
Making Your Way to Mathland

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**“If we all learned
mathematics in math land,
we would all learn
mathematics perfectly
well.”**

Papert, 1980

Making in an Education Content

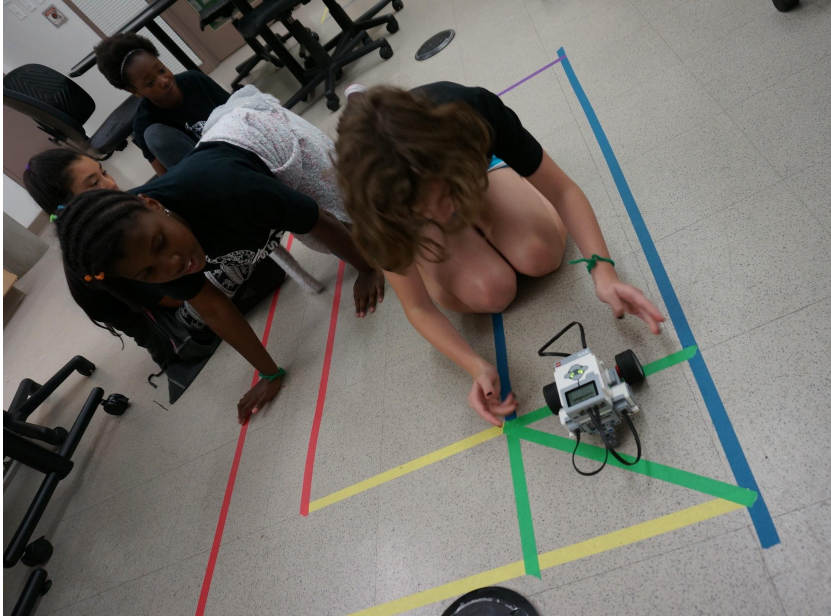
Here is what we notice:

- Increase in students' ability to describe their thinking (metacognition)
- Increase in student engagement with a corresponding decrease in unwanted behavior
- Increase in student interpersonal & collaboration skills



Solving Area & Perimeter with BeeBots

Meaning-Making & Thinking Become Visible



LEGO Mindstorm Challenge



LEGO WeDo and Scratch Challenge

Does that
always work?



Creating Math Stories with ScratchJr.
<https://www.scratchjr.org/>

Can you find
another way to
solve that?



Learning about cardinal directions & coordinates with BeeBots
<https://www.bee-bot.us/>



What would happen if. . .?

Learning about sequencing while making a Jelly Sandwich

Catapults

WHAT: Catapults were devices created in Ancient Greece that used a wooden arm (lever mechanism) to hurl large objects through the air.

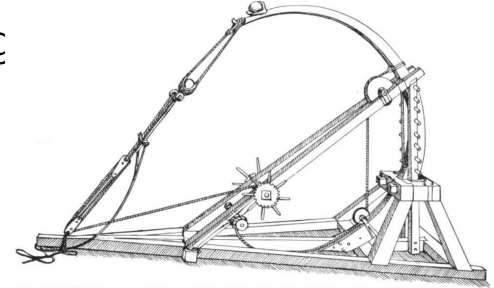
YOUR CHALLENGE: Using the materials provided, can you design a new and more efficient system to propel different objects?

CAN YOU:

- Test your catapult by seeing how far it can propel a ping pong ball?
- Record the distance?
- Post your best of three attempts?
- Modify your design and see if you can beat your best attempt?



<https://upload.wikimedia.org/wikipedia/commons/2/25/Steinschieuder-catapult.jpg>



https://upload.wikimedia.org/wikipedia/commons/c/c8/Leonardo_Da_Vinci_Sling_Catapult.PNG



Part-Whole & Equivalent Fractions

Stop Motion

WHAT: Stop Motion Studio Pro is an app that allows you to join together many pictures into a movie. The onion skin feature helps you line up your shots to create a smooth animation. The voice recording feature even lets you narrate the story once you are done filming.

YOUR CHALLENGE: Create a stop motion video that visualizes a part-whole relationship. Demonstrate how parts of the whole can be equivalent fractions.

CAN YOU:

- Create an engaging storyline?
- Add a voice narration to explain your thinking?



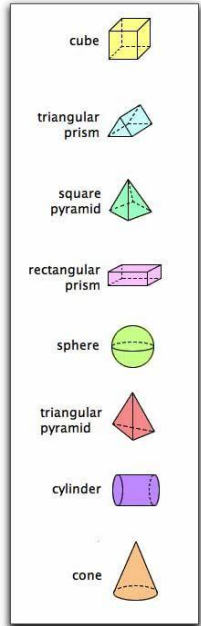
Geometry City

WHAT: Tinkercad is a free online tool that can be used for 3D modeling and 3D printing. <https://www.tinkercad.com/>

YOUR CHALLENGE: Design a cityscape using 3-dimensional shapes. The foundation (base) of your city needs to have an area of 36 inches squared.

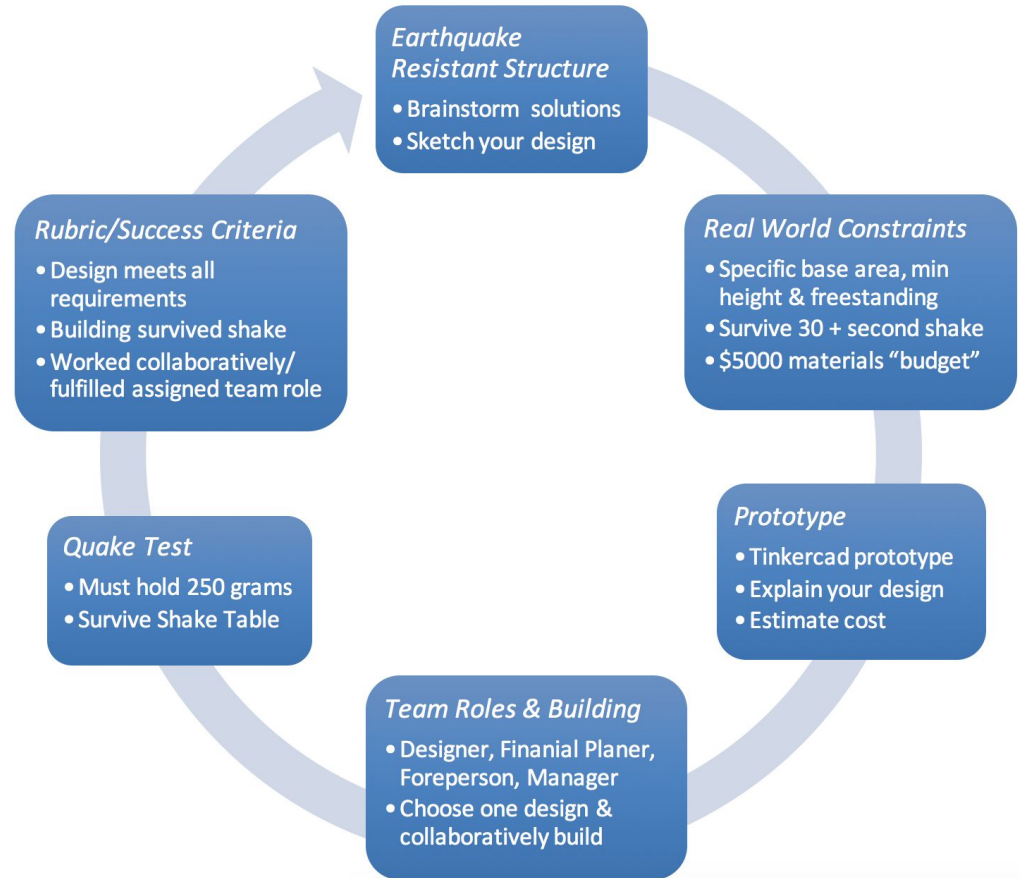
CAN YOU:

- Identify the attributes of each building?
- Can you create different buildings with the defining attributes of a cube? A prism?
- Design a public sculpture that has a cylindrical base?
- Include a waterway and engineer a bridge for cars and pedestrians to cross?



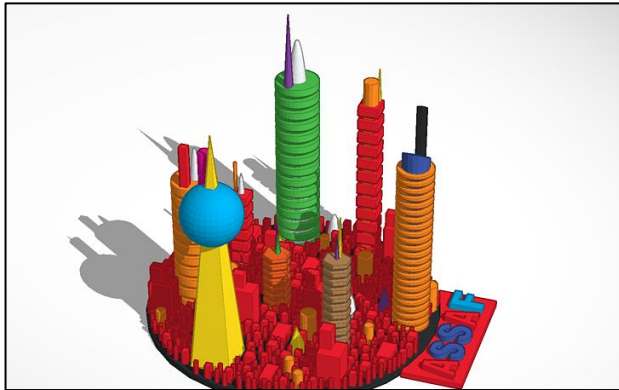
Earthquake Resistant Building Project

Matt Burch - Kennedy School
Somerville Public Schools



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WHAT: The Brazilian Luge team needs your help. They are planning ahead to the next winter Olympics in South Korea and want to start training. A marble run will serve as the initial design concept and prototype.

YOUR CHALLENGE: Design a world class run for these Olympic Luge contenders. Remember that speed is not the only factor for these sliders. They also need to be prepared to address complex curves, variable speeds, and other unknown dangers.

- Several turns/curves that challenge our sliders.
- Safety features that protect the athletes.
- The Olympic rings or other Olympic decor?



https://en.wikipedia.org/wiki/List_of_bobsleigh,_luge_and_skeleton_tracks



*A makerspace is
not a place . . .*

A makerspace is
a mindset.
