



Math Storytelling: Survive the Wild with STEAM

Often learners wonder why math is important. You can teach them “why” through captivating stories and exciting, hands-on activities. This creates a positive outlook on math, sparks interest in skills, and generates authentic discussions.

With this freebie, groups collaborate to design, build and explain a tool necessary for surviving the wild. Inspired by activities found in Survivor, this interactive challenge promotes math storytelling through talking, drawing and writing about math.

In this lesson, learners analyze different building materials and record detailed notes through numbers and drawings. Additionally, they craft a letter to future survivors and mathematical language is key to communicating the steps required to build their tool. You'll be amazed at how math storytelling naturally occurs when immersed in a thrilling STEAM lesson!



HANDS-ON STEM EDUCATION

For over 30 years, PCS Edventures has inspired students to develop a passion for Science, Technology, Engineering and Mathematics (STEM), focusing our efforts on making learning and discovery a fun and interactive process for grades K-12.

- Classroom
- After-School
- Home Learning

Background Information

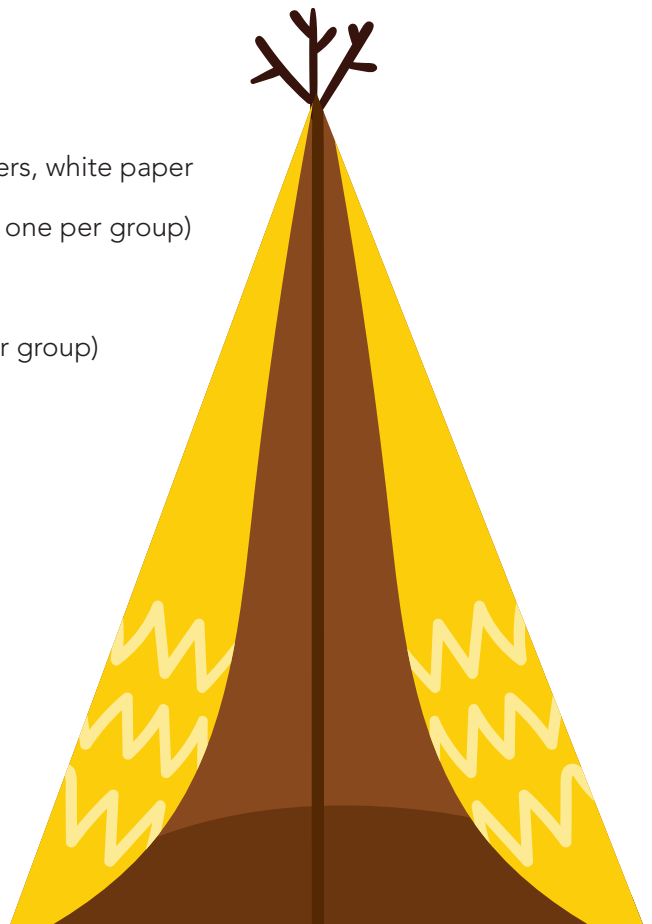
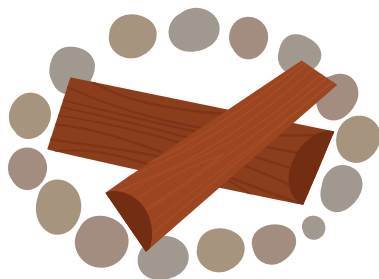
Well-told stories are captivating. They grab you, pull you in, keep you reading and cause wonder. The same can be said for stories about math. Math storytelling takes ordinary everyday moments and, in a creative way, encourages us to see the math in them.

So, why do we need math and when do we use math? Well, let's think of our daily lives. You tally scores in sports, count down the minutes until your favorite TV show releases a new episode, and measure when baking the most delicious batch of cookies. Shapes are used when drawing, angles when building, and area and perimeter when creating bulletin boards of student work. When thinking about the moments in your day, math truly is everywhere.

During this activity, you'll be completing an engineering challenge to survive the wild where math is present in every step. Collaborating when counting materials, measuring and cutting lengths and building innovative structures all generate exciting math discussions. Mathematical language is key when communicating the steps required to build your innovative design. In this case, math storytelling is necessary for you to survive the wild!

MATERIALS:

- scissors
- rulers
- pencils
- suggested building materials:
 - craft sticks or twigs, toothpicks, yarn, pipe cleaners, white paper
- "Our Tribe's Building Blueprint" worksheet (page 5, one per group)
- "Survival Letter" template (page 6, one per group)
- optional: "Survival Letter" example (page 7, one per group)



DIRECTIONS:

- 1 Read through the Survivor Mail task:

**SURVIVOR MAIL**

Greetings, Survivors!

Uh-oh! It looks like you've landed in a remote location where no one has set foot before. When you look around the immense wilderness, you realize the gravity of your situation. You do not have a shelter, garden, raft, water storage, or any hunting tools. It's up to you and your tribe to work together to survive. Are you up for the challenge?

Your tribe must collaborate and build one tool necessary for survival. Now, remember, supplies are limited out in the wild. You need to use materials available in nature and what you brought with you. Luckily, you have a surplus of logs (craft sticks), twigs (toothpicks) and reeds (pipe cleaners). Your tribe also brought with them rope (yarn) and tarps (pieces of paper).

You'll need to be creative to turn these materials into a survival tool. As you build, take detailed notes on what you're using and how you're using it.

After your tool is constructed, you will leave a letter to any future survivors that end up in your shoes. In your letter, detail which tool to make and provide explicit instructions with drawings detailing the building steps. Now, we want to set these future survivors up for success which means mathematical explanations should be in your letter. After all, you'll quickly learn from experience that it isn't easy starting from scratch.

Good luck!

- 2 Discuss the following question as a class: *how might you use math in your survival task?*
- 3 Split learners into tribes (groups) and provide materials for them to build a survival tool.
 - a. Tribes may develop and build their own survival tool or you may choose to assign each tribe a different tool to build (shelter, secure gardening area, raft, water storage, or a hunting tool).
 - b. Allow students to share roles or encourage them to assign roles from the following:
Project Manager, Builder, Mathematician, Recorder, Timekeeper, Runner
- 4 As tribes build, they complete "Our Tribe's Building Blueprint." Remind them to take detailed notes and drawings on which materials they're using and how they are being used.
- 5 Once groups are finished building, they write a letter to a future survivor, detailing how to construct the tool. Learners must use pictures, numbers, and words to explain the math concepts used throughout their engineering process.
 - a. If necessary, provide groups an example of the Survival Letter with the math language word bank.
- 6 Wrap-Up: switch survivor letters and have tribes build another group's tool following their instruction.

Discussion Questions:

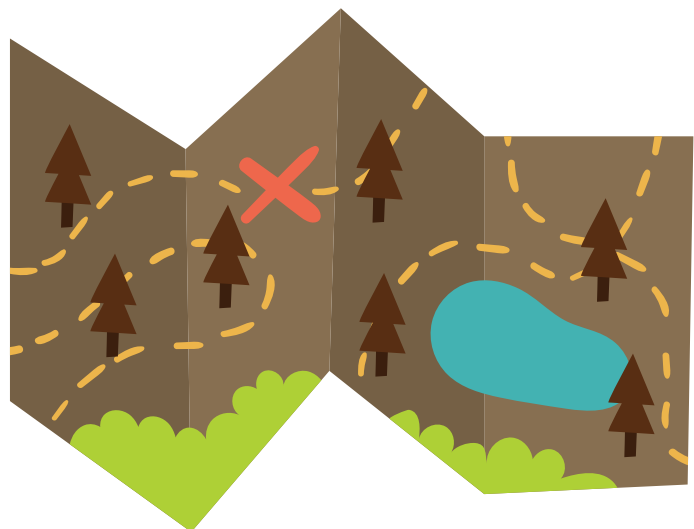
- Why was using math important when building survival tools?
- How did math help you when you built another tribe's design?
- How do we use math in our daily lives?

Extensions:

- **ELA:** Learners craft a descriptive journal entry portraying a small moment of their daily life surviving the wild. Encourage using adjectives and sensory details (hear, smell, taste, touch, see).
- **STEAM:** Create dioramas of survival camps! Assign tribes different locations (desert, island, forest, tundra, jungle). Provide time to research the environment and items necessary to survive there. Tribes collaborate and build an accurate diorama of the environment and necessary survival tools.
- **MATH:** Using what they have learned about Math Storytelling, learners develop a math word problem. They write their word problem on the front of an index card and solve it on the back. Place the index cards around the room and have learners rotate through to solve one another's problems.

References:

Benson-O'Connor, Carol D.; McDaniel, Christina; and Carr, Jason (2019) "Bringing Math to Life: Provide Students Opportunities to Connect their Lives to Math," *Networks: An Online Journal for Teacher Research*: Vol. 21: Iss. 2. <https://doi.org/10.4148/2470-6353.1299>

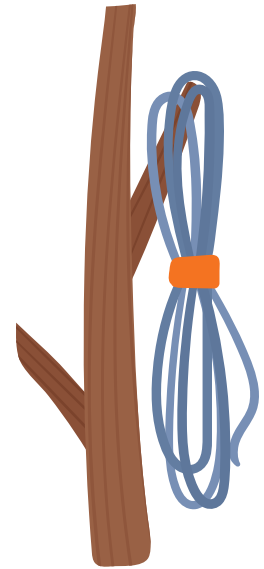


Our Tribe's Building Blueprint

Our Tribe's Survival Item:

Materials Needed & Amount:

- logs (craft sticks) ____
- twigs (toothpicks) ____
- rope (yarn) ____
- reeds (pipe cleaners) ____
- tarp (piece of paper) ____

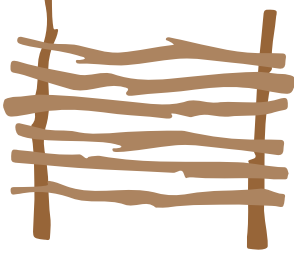
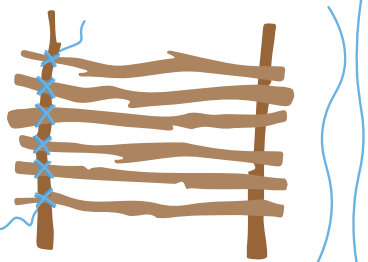


Building Plans (try to use picture, numbers and math words):

Survival Letter (Example)

Ahoy, future survivor!

Right about now, we are sure you're wishing you had a raft. You've been stuck on land for weeks and that body of water must be teeming with fish. Don't worry. We were in the same spot, wishing the same thing. Luckily, we figured out how to build a raft using natural resources and have some notes to help you out:

Numbers and Words	Picture
<p>First, place 2 logs parallel to one another. Perpendicular to the base logs, place 6 logs on top.</p>	
<p>Next, cut four pieces of rope to be 5 inches each. Tightly wrap the rope in tight circles around the sections where the logs intersect. This will secure the pieces.</p>	

Good luck,

The Green Tribe

Math Word Bank		
<p>add subtract multiply divide half quarter balance</p>	<p>area perimeter yards feet inches centimeters equal</p>	<p>parallel perpendicular angle square rectangle circle triangle</p>

Survival Letter

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Numbers and Words	Picture

Good luck,

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Featured Product

This STEAM activity is inspired by the activities found in *Survivor Enrichment Program*.



As survivalists, students learn exactly what to do through a team-based study of real-world survival skills. From investigating the utility of tools to working through challenging situations, they explore **positive character development** by using ingenuity to gain crucial skills such as knot tying, water purification and compass navigation. Bringing STEM to the great outdoors through exercise and movement, instructors love the **hands-on, collaborative, social-emotional learning** curriculum. With each thrilling activity, students **problem-solve** and put their new skills to the test in order to conquer every challenge Mother Nature throws their way.



For more information, visit: <https://edventures.com/collections>
or contact a STEM Program Specialist at (800) 429-3110

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