Making the Math and Science Connection

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About Me:

Professionally:
● Math Coach & K-5 Lead Science Teacher
● 14 years in Education
● Ed Leadership
The Science and Engineering Practices are where we started with NGSS in our district. It was a way to share and introduce teachers to the NGSS and Michigan Science Standards.

My main role in my district, currently, is math coach— but I am always looking for ways to keep science in the conversation.

Time

What’s best for STUDENTS?
Goals For Today:

- Review the Science and Engineering Practices (SEP)
- Develop understanding of 8 Standards for Mathematical Practices (SMP)
- Generate ideas to connect the SEPs & SMPs
- Generate ideas to share with others regarding the work done today
Building Bridges

Team Goal: Make a bridge that is the highest weight-bearing that stays within your budget.

Rules:
- Your bridge must be 1 foot long
- It must be at least 2 inches wide
- You must only use the materials provided
- You must stay within your budget.
- Your bridge will compete with others to see how much weight it can hold.

Budget:
- Your budget is $75 dollars
- You must calculate the price of the items you use for your bridge.
- You will lose points for going over your $75 limit.

Materials:

<table>
<thead>
<tr>
<th>Material</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Popsicle stick</td>
<td>$2.00</td>
</tr>
<tr>
<td>Drinking straw</td>
<td>$0.30</td>
</tr>
<tr>
<td>Toothpicks</td>
<td>$1.00</td>
</tr>
<tr>
<td>Scotch tape</td>
<td>$0.15 per inch</td>
</tr>
<tr>
<td>Masking tape</td>
<td>$0.50 per inch</td>
</tr>
<tr>
<td>White glue</td>
<td>$1.00 per use</td>
</tr>
<tr>
<td>Rubber bands</td>
<td>$0.75 per rubber band</td>
</tr>
<tr>
<td>Yarn</td>
<td>$0.10 per inch</td>
</tr>
<tr>
<td>Fishing line</td>
<td>$0.25 per inch</td>
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</tbody>
</table>

Actual Cost of Final Design:

<table>
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<tr>
<th>Material</th>
<th>Amount</th>
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Total Cost for Design Idea:

How much weight did your bridge hold?

Answer on a separate sheet of paper.

1. Did you stay within your budget?
2. Was your estimate close to your actual cost?
3. What worked well on your bridge?
4. What would you change about your design to make your bridge hold more weight?
Science and Engineering Practices:

- Asking questions and defining problems
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Using mathematics and computational thinking
- Constructing explanations and designing solutions
- Engaging in argument from evidence
- Obtaining, evaluating, and communicating information
Mathematics:

- Brainstorm actions that those who use mathematics in their profession do in their work. (ex-mathematicians, engineers, staticians, accountants, teachers, etc)
- Write one idea per sticky note.
- Think of actions these people do each day.
Standards for Mathematical Practice:

Make sense of problems and persevere in solving them

Reason abstractly and quantitatively

Construct viable arguments and critique the reasoning of others

Model with mathematics

Use appropriate tools strategically

Attend to precision

Look for and make use of structure

Look for and express regularity in repeated reasoning
What’s Next?

What are some ideas you have to share this information with others?
Let's Connect:

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