5E Arts Integrated STEM Lesson

Lesson Title: Perimeter and Area Come to Life Through Reader's Theater

Author: Danielle Bianco-Sheldon

Topic: Perimeter and Area

Targeted Grade Level: Grade 3

Time Needed: About one week

Subject Integration: Art, Math, Technology, Engineering, Reading

Justification:

Two very important third grade math topics are perimeter and area. I spend a lot of time teaching students the difference between these two concepts and how to find perimeter and area of various shapes. I decided to make the concepts of perimeter and area "come to life" by incorporating various forms of art, technology, and engineering. I plan on using flipped lessons to teach area and perimeter. I will teach students songs to remember the difference between perimeter and area. The students will then have time to practice solving area and perimeter problems in class with my guidance. Then students will perform a reader's theater called "The Three Little Pigs" that reinforces the topics of perimeter and area. Students will use drama to act out the parts, music to sing some of the lines, dance by choreographing some of the scenes, and visual arts by creating props, posters, backgrounds, and costumes. I will extend this by incorporating a follow-up engineering component in which students have to use the engineering process to complete a challenge based on the "Three Little Pigs" story. There is a logical integration between the math, reading, and art as students incorporate perimeter and area in a reader's theater activities. The technology, engineering, and visual arts will enhance the lessons.

Standards:

National Art Standards

3 TH:Cr1.1.3

a. Create roles, imagined worlds, and improvised stories in a drama/theatre work.
b. Imagine and articulate ideas for costumes, props and sets for the environment and characters in a drama/theatre work.
c. Collaborate to determine how characters might move and speak to support the story and given circumstances in drama/theatre work.

3 VA:Cr1.2.3

a. Apply knowledge of available resources, tools, and technologies to investigate personal ideas through the art-making process.

Common Core Math Standards

CCSS.MATH.CONTENT.3.MD.D.8
Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

CCSS.MATH.CONTENT.3.MD.C.7.A
Find the area of a rectangle with whole-number side lengths by tiling it and show that the area is the same as would be found by multiplying the side lengths.

CCSS.MATH.CONTENT.3.MD.C.7.B

Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems and represent whole-number products as rectangular areas in mathematical reasoning.

Language Arts Standards

CCSS.ELA-LITERACY.RL.3.2

Recount stories, including fables, folktales, and myths from diverse cultures; determine the central message, lesson, or moral and explain how it is conveyed through key details in the text.

CCSS.ELA-LITERACY.RL.3.5

Refer to parts of stories, dramas, and poems when writing or speaking about a text, using terms such as chapter, scene, and stanza; describe how each successive part builds on earlier sections.

Engineering Design Standards

3.3-5-ETS1-1. Define a simple design problem that reflects a need or a want. Include criteria for success and constraints on materials, time, or cost that a potential solution must meet

3.3-5-ETS1-2. Generate several possible solutions to a given design problem. Compare each solution based on how well each is likely to meet the criteria and constraints of the design problem.

3.3-5-ETS1-4 Gather information using various informational resources on possible solutions to a design problem. Present different representations of a design solution

Measurable Student Learning Objectives:

1. Students will be able to apply concepts of perimeter and area to solve problems.
2. Students will be able to differentiate when to use perimeter and area.
3. Students will be able to read with fluency and expression.
4. Students will be able to analyze components of dramas.

5. Students will be able to apply art resources and utilize the art-making process to create props, posters, backgrounds, and costumes.
6. Students will be able to use the engineering design process to formulate and create a structure that could withstand the most force.

Nature of STEM:

These lessons focus on math but incorporate so many different STEAM areas including technology, art, and engineering. There is also a cross-curricular connection to language arts because students will be developing reading fluency and expression by performing the Reader's Theater. These activities are engaging and student-centered. They include components of art such as performing arts and visual arts and there are follow-up engineering challenges that will be incorporated. There is also an emphasis on creativity, teamwork, and learning from mistakes.

Engaging Context/Phenomena:

Students will understand the real-life need for perimeter and area. This video shows how contractors use perimeter and area to design and build homes. In this video, a man describes how they are building a master bedroom in his attic. He spends time describing the measurements and how perimeter and area are needed for this construction.

Real-life perimeter and area video:

https://www.youtube.com/watch?v=XyAQToCMJ-c

Data Integration: During the perimeter and area follow-up problems. Students will record data to find the perimeter and area of various objects. Prior activities practicing perimeter and area will also be utilizing real-life student data and measurements.

Differentiation of Instruction:

- Reader's theaters parts will be assigned based on students' reading levels.
- Teachers should be aware of students' IEP goals to provide differentiate support as needed throughout the activities.
- Teachers will provide oral and written directions.
- Extended time will be allowed for perimeter and area math problems.

- Teacher will work individually with students who might need extra practice with the Reader's theater.

Real-life Connection: Real-life math problems involving perimeter and area will be used such as finding the area of a student's bedroom or the perimeter around the garden for a fence. Students will be reminded how engineers use the engineering process when creating just like the students will do for their challenge.

Possible Misconceptions: Students often confuse perimeter and area. Fun YouTube vides on perimeter and area will help by teaching songs about each. The teacher will also create flipped lessons on the topic of perimeter and area. Another misconception for Reader's Theater is that students need to memorize their lines. They do not. They should practice their scrips multiple times to build fluency and expression but will read from their scrips during their presentations.

Lesson Procedure:

5E Model	5E Objectives
Engage	**Procedure:** Background information: The following activities have been completed in the previous week during math: Student have been working on the concepts of perimeter and area. They have viewed the perimeter and area flipped lessons that I created and have worked on practice problems, including real-life examples such as finding the perimeter of the classroom and the area of the classroom carpet. Student will also view perimeter and area YouTube videos with songs to help remember the difference between perimeter and area. Students will continue to review perimeter and area and do problem solving and activities related to these concepts during math time. **Flipped lesson I created on perimeter and area:** **Perimeter** **https://www.youtube.com/watch?v=yYEpCt0gRB0&t=20s** **Area** **https://www.youtube.com/watch?v=88j_KS5EFfI&t=27s** **Perimeter and Area YouTube song:** **https://www.youtube.com/watch?v=Xk-PyhjFWw4** Before beginning the language arts component of this lesson, hook students in with an anchoring

	phenomenon. This hill help student to understand the real-life application of perimeter and areas which will connect to the Reader's Theater activity. This video shows how contractors use perimeter and area to design and build homes. In this video, a man describes how they are building a master bedroom in his attic. He spends time describing the measurements and how perimeter and area are needed for this construction. Real-life perimeter and area video: https://www.youtube.com/watch?v=XyAQToCMJ-c **Language Arts Lesson** 1) Explain to students that they will be working on a Reader's Theater activity that will incorporate what they are learning in math, perimeter and area. 2) Explain to students what Reader's theater is. Explain that they will do a fun Reader's Theater activity that will help them with their fluency and expression. They will be assigned to groups and receive parts. They do not need memorize their parts but will need to practice them several times. 3) Hand out the scrips and assign students to groups. Let students know which parts they are assigned. Allow students to meet with their groups and highlight their assigned parts. They should then spend some time reading their parts quietly to practice. I will work with several students to go over their reading also. **Modifications** • Assign parts based on students' reading abilities. • Work with some students beforehand to review words and vocabulary • Work with some students individually to practice reading his or her parts. • Allow student to use EZ readers to track their reading. • Some student might benefit from enlarged font. • Allow student to use whisper phones to practice. **Standards Addressed**

	Language Arts Standards CCSS.ELA-LITERACY.RL.3.2 Recount stories, including fables, folktales, and myths from diverse cultures; determine the central message, lesson, or moral and explain how it is conveyed through key details in the text. CCSS.ELA-LITERACY.RL.3.5 Refer to parts of stories, dramas, and poems when writing or speaking about a text, using terms such as chapter, scene, and stanza; describe how each successive part builds on earlier sections. **Formative/Summative Assessments** Informal assessments will take place as I walk around to groups and monitor student reading. I will take anecdotal notes and work with students as needed. Reader's theater rubric will also be used. **Resources** • Reader's Theater Scrips (Appendix A) • Highlighter • EZ reader • Whisper phone • Reader's Theater rubric (Appendix B)
Explore	**Procedure:** 1) Students will work with their groups to make their Reader's Theater performance come to life. They will continue to practice reading their parts and helping each other. 2) Students will be given time to use drama to act out the parts, plan music to sing some of the lines, and create movement and dances to enhance their Reader's Theater.

	3) Students will also use visual arts to create props, posters, backgrounds, and costumes. 4) Students will then take turns presenting their Reader's Theater to our class or classes of younger students. **Modifications** • Have students work with partners or group when creating props, posters, backgrounds, and costumes. • Assign parts based on students' reading abilities. • Work with some students individually to practice reading his or her parts. • Allow student to use EZ readers to track their reading. • Some student might benefit from enlarged font. • Allow student to use whisper phones to practice. **Standards Addressed** **Language Art Standards** 3 TH:Cr1.1.3 a. Create roles, imagined worlds, and improvised stories in a drama/theatre work. b. Imagine and articulate ideas for costumes, props and sets for the environment and characters in a drama/theatre work. c. Collaborate to determine how characters might move and speak to support the story and given circumstances in drama/theatre work.

	National Art Standards 3 VA:Cr1.2.3 b. Apply knowledge of available resources, tools, and technologies to investigate personal ideas through the art-making process. Language Arts Standards CCSS.ELA-LITERACY.RL.3.2 Recount stories, including fables, folktales, and myths from diverse cultures; determine the central message, lesson, or moral and explain how it is conveyed through key details in the text. CCSS.ELA-LITERACY.RL.3.5 Refer to parts of stories, dramas, and poems when writing or speaking about a text, using terms such as chapter, scene, and stanza; describe how each successive part builds on earlier sections. **Formative/Summative Assessments** Informal assessments will take place as I walk around to groups and monitor student reading. I will take anecdotal notes and work with students as needed. I will take notes as students are working and presenting using the Reader's theater rubric (Appendix B) **Resources** • Reader's Theater Scrips (Appendix A) • Highlighter • EZ reader • Whisper phone • Bulletin board paper • Art materials

	• Poster board • Reader's Theater Rubric (Appendix B)
Explain	**Procedure:** 1) Review perimeter and area. 2) Hand out the perimeter and area task cards (Appendix C) 3) Go over these together. 4) Have students work on these to review perimeter and area based on the Reader's Theater activity. **Modifications** Allow students to work with a partner or in groups. Use of number grid or number line. Small group work or one-on-one support from teacher. **Standards Addressed** Common Core Math Standards CCSS.MATH.CONTENT.3.MD.D.8 Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters. CCSS.MATH.CONTENT.3.MD.C.7.A Find the area of a rectangle with whole-number side lengths by tiling it and show that the area is

	the same as would be found by multiplying the side lengths. CCSS.MATH.CONTENT.3.MD.C.7.B Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems and represent whole-number products as rectangular areas in mathematical reasoning. **Formative/Summative Assessments** Perimeter and area follow-up task cards will be graded for understanding of the concept and correct answers. **Resources** • Perimeter and area task cards (Appendix C) • Number grid or number line
Elaborate	**Procedure:** Follow-up engineering challenge. 1) Since students are familiar with The Three Little Pigs story, there will be a discussion about the different pig's experiences with the houses they built. What worked? What didn't work about each one and the materials they chose? Ask students to think about other types of houses and designs they have seen around the community. 2) Explain the challenge: Your task is to design a completely new house using your imagination! Name your house and describe your house. What materials will you use to make your house? Remember what the three little pigs used for their house? What will make it the strongest? *See appendix E with challenge instructions and resources. **Modifications**

	Teacher will carefully select student grouping. Teacher will circulate the room and provide assistance as needed. Teacher will review all directions prior to the activities. Students' behavior charts will be used during the activities. **Standards Addressed** Engineering Design Standards 3.3-5-ETS1-1. Define a simple design problem that reflects a need or a want. Include criteria for success and constraints on materials, time, or cost that a potential solution must meet 3.3-5-ETS1-2. Generate several possible solutions to a given design problem. Compare each solution based on how well each is likely to meet the criteria and constraints of the design problem. 3.3-5-ETS1-4 Gather information using various informational resources on possible solutions to a design problem. Present different representations of a design solution **Formative/Summative Assessments** Anecdotal notes will be taken during the activity. Teacher will conference with students during the activity. Teacher will review student work, completed project, and reflection. Teacher will use a hair dryer used as the "Big Bad Wolf" to test each group's project. Teacher will use the STEAM rubric to assess students' work.

	Resources **The Three Little Pigs Challenge (See Appendix E)** **Materials for Challenge:** • Popsicle sticks • Pipe cleaners • Toothpick • Construction paper • Playdough • Toilet Paper Tubes • Tape • Linking Cubes • Art supplies • Pencil • Hair dryer • STEAM rubric (Appendix D)
Evaluate	**Procedure:** There are several components to this lesson. Throughout the activities, the teacher will be circulating around the room to provide assistance and to assess student learning. Anecdotal records will be taken during Reader's Theater practice activities and the engineering challenge component. There will be a rubric used to evaluate student work during the Reader's Theater. Another rubric (Appendix D) will be used to evaluate the engineering challenge. Area and perimeter task cards will be evaluated and a follow-up perimeter and area test will be given. **Modifications** • Extended time if needed • Extra practice during reading of Reader's Theater scrips • Use of number grid for math problems

	• Use of EZ reader • Use of Whisper phone **Standards Addressed** Since there will be both formative and summative assessment, all of the standards previously mentioned will be addressed as part of the evaluation. **Formative/Summative Assessments** Formative assessments will take place throughout the activities to provide differentiated and ongoing support as needed. Summative assessments will include Reader's Theater rubric, STEAM rubric, evaluation of area and perimeter task card and follow-up perimeter and area math test. **Resources** • Reader's Theater rubric (Appendix B) • STEAM rubric (Appendix D) • Area and perimeter task cards (Appendix C)

Teacher Background: Teachers need to be familiar with teaching area and perimeter. Teacher should be familiar with students' reading levels to assign appropriate parts in the Reader's Theater. Teachers should be aware of students' IEP goals to provide differentiate support as needed throughout the activities.

Appendix A: The Three Little Pigs Reader's Theater

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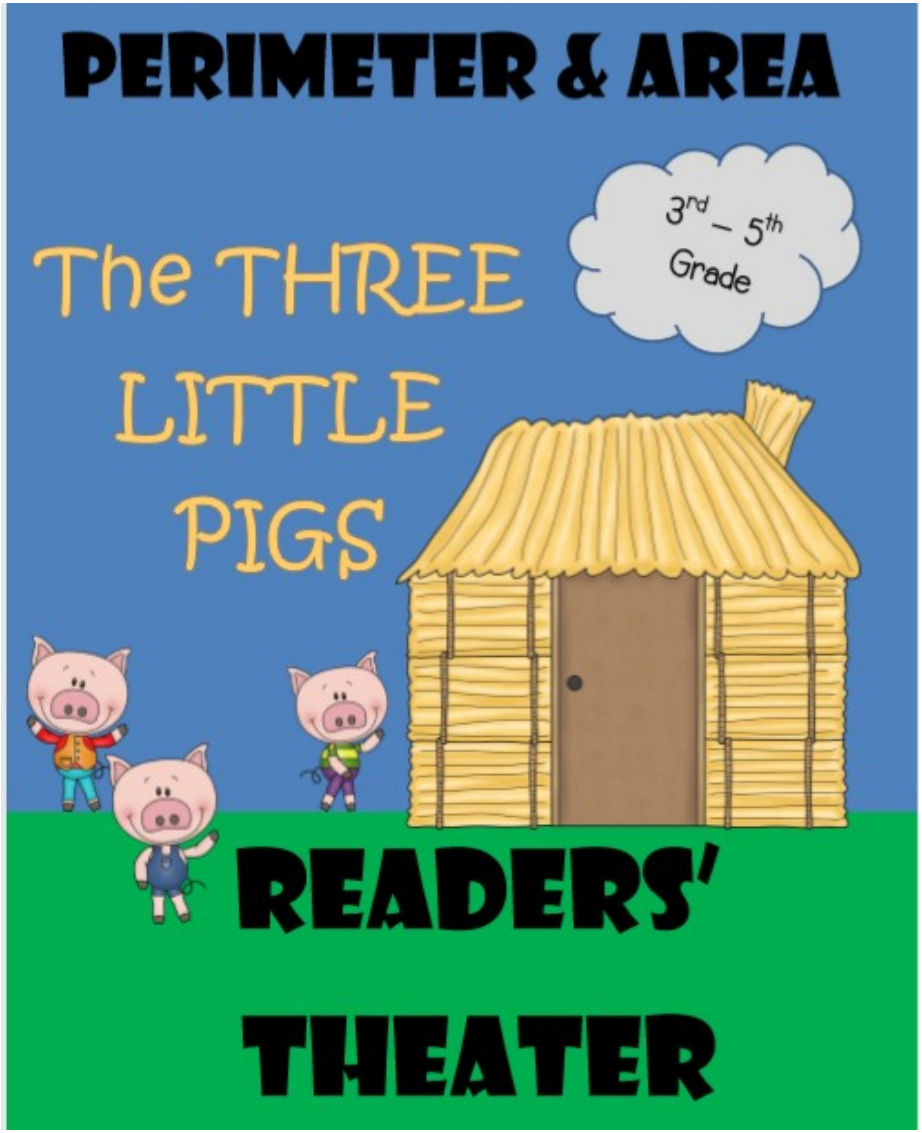


The THREE LITTLE PIGS

Characters

 First Little Piggy  Second Little Piggy  Third Little Piggy

Narrator One Narrator Two

Narrator One: This is no ordinary Three Little Pigs tale. This story is not going to be all about that smart pig who built his house of bricks. No, for once those two little pigs who built their house of sticks and straw are going to get credit for all their hard work.

Narrator Two: It all began one crisp fall morning. The three little pigs sat around an outdoor fire talking of the coming winter.

Piggy One: I heard this winter is going to be a bad one!

Piggy Two: We probably should prepare a little better this winter than last.

Piggy Three: Prepare how?

Piggy Two: We should build shelter for the winter to protect us from the cold and snow.

Piggy Three: That sounds like too much work.

Piggy One: I think it sounds like a grand idea. We should get started right away!

Narrator One: And that my friend is how the story began. The three pigs set off their separate ways to find supplies and make plans to build their homes.

Narrator Two: The First Piggy sat down to draw up a plan for his home. He wanted a home that was 6 ft. by 9 ft. He knew if he kept his home small, it would be easier to keep warm. So, the First Little Piggy headed to see a farmer nearby who sold straw bales. As he walked, he calculated his dimensions.

Piggy One: I know one straw bale is 18 inches in height and 36 inches in length. I want 3 ft. ceilings in order to preserve the heat.

Narrator One: The first little piggy picked up his supplies from the nearby farmer and headed home to build his house of straw.

Narrator Two: Meanwhile, the Second Piggy had decided to make a home out of sticks. He could gather the sticks and create a mixture of clay to hold the sticks together. With the money he saved, he could purchase a small heating device.

Narrator One: The Second Little Piggy worked very hard gathering sticks. All day long he looked for sticks of just the right size. When he finished, he looked at his pile and began thinking about the dimensions of his home.

Piggy Two: I want to be able to have guests so I will need to have a big enough area to entertain. I will build a home with an area of 30 sq. feet. This will give me enough room for guests, my space heater, and a small kitchen area to store my favorite treats!

Narrator Two: So the Second Little Piggy began building his home of sticks.

Narrator One: While the first two pigs were working hard, the Third Little Pig was dreaming of a mansion made of brick. He wanted nothing but the best. His home would be the envy of his brothers.

Piggy Three: I will have the grandest home of all! There will be enough room to host parties! It will be U-shaped with a courtyard in the center. I will have a mud hole to bask on sunny days!

Narrator Two: The Third Little Piggy spent most of his day dreaming about his mansion. He eventually looked at the time, quickly sketched his plans, and set out for supplies.

Piggy Three: Everyone will be so jealous of my new home. It will be the talk of the town. Little pigs everywhere will want to waller in my mud hole!

Narrator One: The Third Little Piggy made it to the store right before closing. While the kind gentleman at the store figured out how many bricks it was going to take to build this little pig's mansion, the Third Little Piggy was bragging to anyone in the store who would listen about his house of bricks.

Narrator Two: The bricks were loaded into a wheelbarrow with no help from the Third Little Piggy. He was informed it would take five trips for him to get all of his bricks. He didn't have a problem with that until he found out the store did not deliver.

Piggy Three: How will I ever get all these bricks back home? This may be more work than I can handle. I'll get my brothers to do it. This was all their idea; they can help with the work!

Narrator One: The Third Little Piggy returned home, panting, sweating, and certainly not the happiest pig in the pen! It was well after dark and his brothers were just finishing up for the day.

Piggy One: Where have you been? We've been working all day on our homes and we haven't seen a thing out of you!

Piggy Two: What is this wagon of bricks for? That isn't enough bricks to build a home for a squirrel let alone a pig your size.

Piggy Three: While you two have been sweating and breaking your backs, I have been making plans for the grandest home ever! Just look at these plans I have drawn. My home will put your homes to shame!

Piggy One: This is not a contest.

Piggy Two: We are building these homes to stay warm and dry this winter.

Narrator Two: This is where the story takes a turn. While the Three Little Pigs are arguing among themselves, a visitor shows up.

Narrator One: You guessed it; it's the Big Bad Wolf!

Narrator Two: Another big discrepancy in the story of the Three Little Pigs is all the hype about this Wolf. Not only was he not big, he wasn't bad either. It turns out the Wolf was an insurance salesman for Geico. He had heard the pigs were building homes and thought they could use some property insurance.

Narrator One: And this is pretty much where the story ends. The first two pigs had finished building their homes and even purchased home insurance. The third little pig moved in with his brother in the house of sticks. He never did build the mansion and the wolf....well; they became the best of friends. He ended up building a home beside the pigs and they all made it through the winter just fine.

Appendix B: Reader's Theater Rubric

Name: _____ Date: _____

Readers Theater Rubric

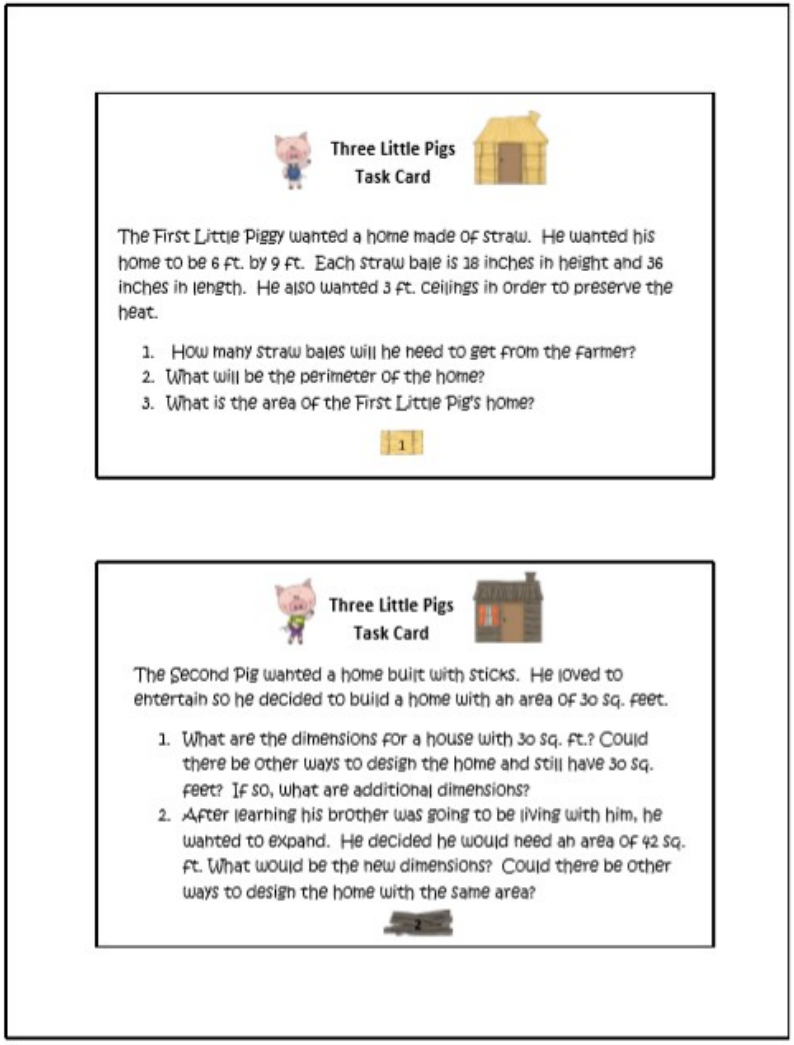
Name: _____

Individual Scores	4–Excellent	3–Good	2–Fair	1–Needs Improvement
Delivery	Student read the script with confidence and expression, made gestures and good eye contact, and used props to add to the performance	Student read the script with some expression, gestures, eye contact, and use of props	Student read the script but had little expression, few gestures, little eye contact, or did not use props appropriately	Student had difficulty reading the script and consistently did not use expression, eye contact, or props appropriately
Cooperation with group	Student worked cooperatively with the group in all aspects of the project and shared all responsibilities and ideas well	Student worked cooperatively with group in most aspects of the project and shared most responsibilities and ideas	Student worked cooperatively with group in some aspects of the project but sometimes could not agree on what to do and wasted time	Student did not work cooperatively together with group and could not agree on what to do. Student did not share responsibilities or ideas and wasted time
Comments				

Group Members: _____

Group Scores	4–Excellent	3–Good	2–Fair	1–Needs Improvement
On-task participation	High level of active, on-task participation from all group members	Majority of group members on-task and actively participating	Moderate level of on-task work or few of the group members actively participating	Low level of active participation from majority of group members
Comments				

Appendix C: The Three Little Pigs Area and Perimeter Task Cards



Three Little Pigs Task Card

The First Little Piggy wanted a home made of straw. He wanted his home to be 6 ft. by 9 ft. Each straw bale is 18 inches in height and 36 inches in length. He also wanted 3 ft. ceilings in order to preserve the heat.

1. How many straw bales will he need to get from the farmer?
2. What will be the perimeter of the home?
3. What is the area of the First Little Pig's home?

1

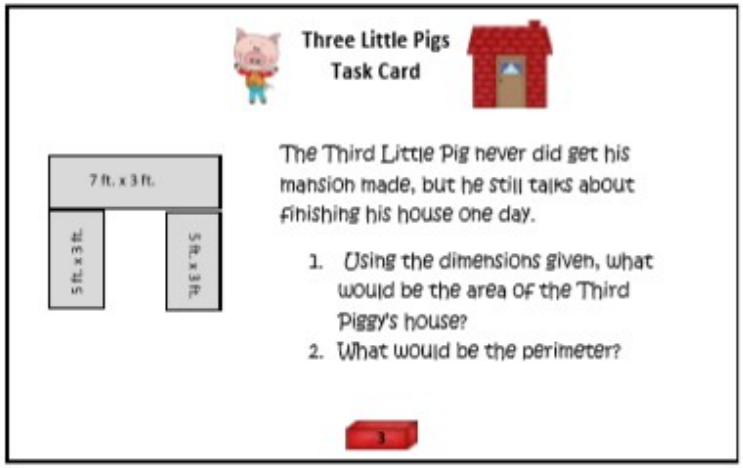
Three Little Pigs Task Card

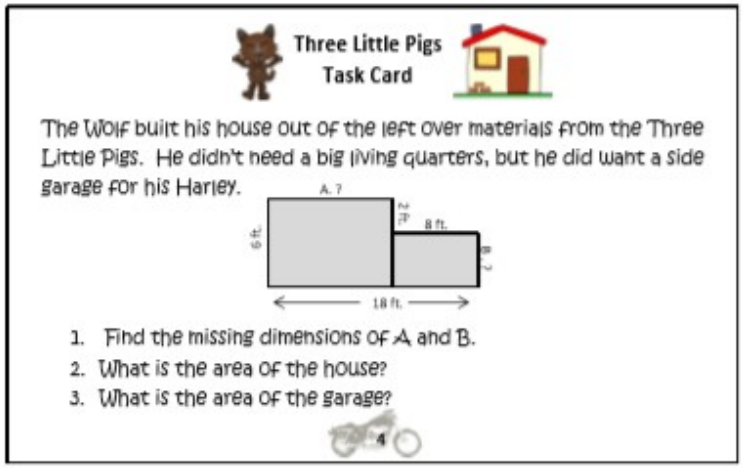
The Second Pig wanted a home built with sticks. He loved to entertain so he decided to build a home with an area of 30 sq. feet.

1. What are the dimensions for a house with 30 sq. ft.? Could there be other ways to design the home and still have 30 sq. feet? If so, what are additional dimensions?
2. After learning his brother was going to be living with him, he wanted to expand. He decided he would need an area of 42 sq. ft. What would be the new dimensions? Could there be other ways to design the home with the same area?

2

Endeavor STEM Teaching Certificate Project
DANIELLE BIANCO-SHELDON
SPRING 2020


Three Little Pigs
Task Card
7 ft. x 3 ft.
5 ft. x 3 ft.
5 ft. x 3 ft.
The Third Little Pig never did get his mansion made, but he still talks about finishing his house one day.
1. Using the dimensions given, what would be the area of the Third Piggy's house?
2. What would be the perimeter?
3


Three Little Pigs
Task Card
The Wolf built his house out of the left over materials from the Three Little Pigs. He didn't need a big living quarters, but he did want a side garage for his Harley.
A. ?
6 ft.
8 ft.
18 ft.
1. Find the missing dimensions of A and B.
2. What is the area of the house?
3. What is the area of the garage?
4

Task Card
Answer Key

Task Card 1: 1. 20 bales 2. 30 ft. 3. 54 Sq. ft.

Task Card 2: 1. 6ft. by 5 ft. Or 5ft. by 6 ft.
3ft. by 10ft. Or 10ft. by 3 ft.
2 ft. by 15 ft. Or 15 ft. by 2 ft.

2. 6 ft. by 7 ft. Or 7 ft. by 6 ft.
No other ways

Task Card 3: 1. 51 Sq. ft 2. 40 ft.

Task Card 4: 1. A. 10 ft. B. 4 ft.

2. 60 Sq. ft. 3. 32 Sq. ft.

Appendix D: STEAM Rubric

Name: _____ *Student Reflection

STEAM Rubric	4 STEAMtastic!	3 STEAMazing!	2 STEAMprogess!	1 STEAMworking on it!
Collaboration	Consistently works well with teammates and supports everyone's efforts. Works well with others and accepts team decisions.	Usually works well with teammates and supports everyone's efforts. May have some difficulty accepting team decisions and working to help the group succeed.	Doesn't use time well, doesn't help much, or doesn't accept group decisions. Teammates often have to remind him/her to focus on the task.	Doesn't work well with teammates. Let's others do all the work or refuses to help after his or her ideas aren't selected by the team.
Critical Thinking	Actively looks for ways to solve problems while addressing the criteria and constraints.	Often looks for ways to solve problems while addressing the criteria and constraints.	Generally, tries to problem-solve, but ignores some of the challenge criteria and constraints.	Does not try to solve problems or does not address the criteria and constraints.
Risk-Taking	Takes risk to design something truly different or unique. May use the materials or apply the criteria and constraints in unexpected ways.	May draw upon ideas they've seen before but makes refinements and modification.	Uses ideas seen before and makes few refinements and modifications.	Copies others' ideas without improvements or modifications.
Functionality	Design is consistently functional and achieves the goals of the challenge.	Design is usually functional and achieves the goals of the challenge.	Design is sometimes functional and occasionally achieves the goals of the challenge.	Design is not functional and does not achieves the goals of the challenge.

Name: _____ *Student Reflection

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Appendix E: The Three Little Pigs Challenge

The Three Little Pigs Challenge!

You have heard of the story of the Three Little Pigs and the Big Bad Wolf. Do you think you can help me design and build a house that can withstand the huffing and puffing of the Big Bad Wolf? If you accept this challenge, you and your team of engineers will use the money that I have saved up to buy supplies and build my new house!

Do you accept this challenge?

YES NO

Directions:

Your team's goal is to create a house that won't get blown away by the Big Bad Wolf! To build this house, each person must have a job. Discuss with your teammates which job you would like. When you have decided your jobs, please write the name of the person responsible for each job.

~ Let the teacher know if anyone is not following the rules. ~

Challenge Captain: _____
- ☐ Listen to all ideas and make decisions for the team.
- ☐ Make sure everyone gets a chance to share his/her ideas.
- ☐ Make sure team members are doing their jobs correctly.
- ☐ Help other team members do their jobs if needed.

Materials Master: _____
- ☐ In charge of handling money and keeping track of supplies.
- ☐ Gather and organize materials for the team.
- ☐ Make sure team members are sharing and using the materials safely and correctly.
- ☐ Request for additional materials if needed.

Testing Coordinator: _____
- ☐ Decide when it is time to test your project.
- ☐ Test project and describe what happens to the team.
- ☐ Come up with new ideas or changes to make your project better and more successful.

Chief Architect: _____
- ☐ Coordinate building for the team.
- ☐ Decide which ideas to use during the challenge.
- ☐ Suggest when a test may be needed in the challenge.
- ☐ Make sure team is building safely at all times.
- ☐ Request additional building help if needed.

Rapid Reporter: _____
- ☐ Share the ideas used by the team to complete the challenge.
- ☐ Explain problems faced by the team during the challenge.
- ☐ Explain the solution the team used to solve the challenge.
- ☐ Answer any questions from classmates about the challenge.

Support Staff: _____
- ☐ Help out wherever you are needed!
- ☐ Help the testing coordinator carry your project to test it.
- ☐ Help the Chief Architect with building.
- ☐ Help the Materials Master handle money and carry materials/supplies.

Step 1: Plan!

What will your house look like?

Our house will be made out of _____

_____

_____

We chose these materials because _____

_____

_____

This is a diagram of our house.

Step 2: Choose!

What supplies will you use? You have $100 to spend on supplies and materials. Please use it wisely! And keep an eye out for the Big Bad Wolf!

Your house MUST have the following things: Think about what you will use to create the following things:

- ☐ Door
- ☐ Roof
- ☐ Four walls
- ☐ Floor/Foundation
- ☐ A little pig must be able to fit inside!

Material	Cost	Quantity	Total
Popsicle Stick	$1.00 each		
Pipe Cleaner	$5.00 each		
Toothpick	$1.00 each		
Construction Paper	$5.00/sheet		
Play Dough Tub	$10.00 each		
Toilet Paper Tubes	$20.00 each		
Tape	$5.00/foot		
Linking cubes	$2.00/cube		
		Grand Total	

Step 4: Test!

After testing your project, what happened?

_____

_____

_____

This is what our house looked like after it faced the Big Bad Wolf.

Step 5: Reflect!

What needs to happen next? What do we need to change or fix? How can we make our project better?

Testing 1	
What did you change?	What happened during the test?

Testing 2	
What did you change?	What happened during the test?

Testing 3	
What did you change?	What happened during the test?