



Three Little Pigs

STEAM Activity | Grades 5-8

Can be adapted for other grade levels



Three Little Pigs STEAM Activity | Overview

With the **Three Little Pigs STEAM Activity** students will engage in Science, Technology, Engineering, Arts, and Mathematics activities that also connect to reading.

Students will team up to build houses for the Three Little Pigs out of index cards and masking tape. After subjecting the constructed houses to a wind test, teams will have the opportunity to rebuild or reinforce their structures before a second wind test!

This activity can be completed within a seventy-minute block.

Science, Technology, Engineering

- Consider how the materials provided create limitations and opportunities for the project
- Plan, construct, test, and refine designs to improve performance on wind tests
- Consider how forces (wind) act on structures

Art

- Use sketches and drawings to show how the parts of the “house” are related to each other
- Convey meaning through the use of design sketches
- Document changes in designs through drawings

Math

- Name shapes of quadrilaterals, triangles and other polygons in sketches and buildings
- Use unit prices to calculate costs when purchasing materials
- Analyze givens, constraints, relationships, and goals of the design project

Reading

- Connect literature to real-life situations through the construction of a model
- Create alternate endings to the story
- Consider a story from the perspective of the wolf



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STEAM Activity | Materials

Building Materials

3 x 5 Index Cards: 25 cards per team of students

Two-Inch-Wide Masking Tape: One roll can make it through about four class periods, with the students divided into 35 small teams. Each team of students will need a one-foot strip of tape.

Platforms: Each team will need one platform. The foundation of the houses will need to be built/taped onto the platform. Mini-whiteboards work well.

Rulers: One per team

Scissors: One pair per team

Roof: Each team will need a roof, provided in the template below. Older students can assemble the roof in their groups. Younger students will require preassembled roofs.

Optional Materials

Little Toy Pigs: 1" x 1" x 2" (approx.) toy pig figurines that can fit through the door of the constructed houses

Wolf Mask: One mask to be placed on the fan to enhance the story connection

Prior to Class

- ★ Gather and prepare all materials in advance.
- ★ Set up the **Wind Test Area**. The measuring tape should be taped down on the table next to the fan.
- ★ Designate a space to be the **Building Materials Store**. This store will be opened after the first round of wind testing is completed. Teams will be able to purchase additional index cards and masking tape to rebuild or reinforce their houses.
- ★ Decide on the number of team tables needed to complete the STEAM activity. Assemble desks into groups if necessary.
- ★ Have the following materials* out on each team's table prior to the beginning of class:
 - 16 Index Cards
 - Platform
 - Roof (either the template or preassembled)
 - Scissors
 - Ruler
 - 5 Coins/Currency

*The Instruction Sheet and Masking Tape are not initially distributed in order to prevent students from starting construction until directed to do so.

Experiment Materials

Fan: One "Squirrel fan" or carpet dryer for the entire class. Most school janitors have a fan that can be borrowed in order to conduct the wind test.

Measuring Tape: One measuring tape to be used alongside the fan.

Chips/Markers/Coins: Five per team of students. After the initial wind test, groups will need currency to purchase additional building supplies in order to rebuild or reinforce their structures.

Instruction Sheet: Each team will need a copy of the one-page instruction sheet provided below.

Student Reflection: Every student will need his or her own reflection sheet to complete at the end of the STEAM activity. Provided below.



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ACTIVITY INSTRUCTIONS FOR TEACHERS



- 1 Count off students into teams of four as they enter the classroom. Direct them to their team table.
- 2 Read aloud the *Three Little Pigs* fairy tale. Then introduce and explain the object of the STEAM activity to students.
- 3 Have each group select a team member to be responsible for materials. The selected “Materials Manager” will retrieve the Instruction Sheet and return to their table.
- 4 Teams have three minutes to read the Instruction Sheet, review materials, and plan. After the three minutes are up, ask the team “Materials Manager” to retrieve a one-foot strip of tape.
- 5 Teams have 15–20 minutes to build their house. Each house must be at least eight inches high, including the roof. Once a team completes their house they can head to the **Wind Test Area**.



- 6 At the testing area, place the house (still attached to its platform) one meter from the fan. Turn the fan on and up to the maximum speed. If the building can endure the maximum fan speed at one meter, move it closer to the fan. Measure how close the house can get to the fan before “blowing down.”



- 7 After every team has completed the wind test, the **Building Materials Store** will open. Review the store pricing policies with students.

3 Inches of Masking Tape = 1 Coin

4 Index Cards = 1 Coin

- 8 Teams have three minutes to discuss plans to reinforce their structures and decide what materials they want to purchase. The “Materials Manager” will be responsible for purchasing additional materials.
- 9 Teams have 7–10 minutes to rebuild or reinforce their structures.
- 10 Begin the second round of wind testing. Observe whether structures have improved.
- 11 Have each student complete a Student Reflection Sheet about the activity.

Three Little Pigs

STEAM Activity | Instructions

Help keep the Three Little Pigs safe! As a team, build a house that will be able to stay standing, with its roof on, during a blast of “wolfish” wind. The challenge is to build the house using 16 index cards and one foot of tape.

Building Guidelines

1. Build house on the platform provided
2. Use only the materials provided
3. Use the provided roof
4. House must be at least eight inches tall, including the roof
5. Create a door where the pigs can enter
6. Include four windows
7. All team members must participate in construction process

Whose house will stay standing?

When building is complete, take your house to the **Wind Test Area** to see if it can endure the “huffing and puffing” of the Big Bad Wolf! After the wind test results, your team will have the opportunity to rebuild or make improvements to the house. Materials can be purchased with the five coins given to your team.

Pricing for additional materials:

- 4 Index Cards = 1 Coin
- 3 Inches of Tape = 1 Coin



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STEAM Activity | Reflection

Name _____

Explain one change your team made to the house after the first wind test.



Draw a picture of your team's initial house. Draw a picture of your house that depicts the changes made after the first wind test.

Before Rebuilding/Reinforcement	After Rebuilding/Reinforcement

Describe why you thought this change would make your house stronger.

Why did your change work or not work?

How would you rate this activity?

Color in the face that shows how you feel.



Explain your rating.

Three Little Pigs STEAM Activity | Roof Template

Instructions: Print roof template on 11x17 paper. Cut out the template and fold as indicated on the lines. Use the tab to tape or glue the roof together.

