

# Jack and the Parachute STEM Challenge

We're all familiar with the story of Jack and the Beanstalk. If not, here's a quick recap! Jack, a poor country boy, trades the family cow for a handful of magic beans, which grow into an enormous beanstalk reaching up into the clouds. Jack climbs the beanstalk and finds himself in the castle of an unfriendly giant. ... Jack then escapes by chopping down the beanstalk.

Unfortunately, Jack did not learn his lesson the first time and once again has been lured by the magic of the beans. Read the challenge below in order to help Jack escape the giant!

## **Directions:**

1. Read the Challenge
2. Brainstorm and design a parachute to help Jack escape
3. Record your observations
4. Choose 2 of the extension activities to complete - you can complete more if you want!

## **Materials:**

1. Small action figure or object to represent Jack
2. Variety of building materials (tissue paper, newspaper, plastic grocery bags, canvas, coffee filters, pipe cleaners, string, dental floss, rubber bands, etc.)
3. Timer

## Jack and the Parachute

Oh no! Jack has done it again. He can't resist magic beans, and he is once again being pursued by the giant. The giant, having learned from past mistakes, has lined the beanstalk with barbed wire. Jack needs another plan of escape. That's where YOU come in.

**Your challenge:**  
Build a parachute to help Jack escape from the giant.

**Constraints:**

\*Your parachute can be no larger than ~~the top of your desk~~ 1 yard x 1 yard (3 feet x 3 feet).

\*You must have string or some way to attach the parachute to Jack.

**Success Criteria:**

Your parachute should hold Jack in the air longer than the control drop.

**ASK** How can I create a parachute for Jack?

**CONTROL** Drop Jack from the designated height with no parachute. Measure the time it takes for him to hit the ground.

Control Drop Time \_\_\_\_\_

**IMAGINE** Now think about ways that you can keep Jack in the air longer than the control drop. Brainstorm materials and shapes that would make a good parachute.

**CREATE** Create your parachute, and sketch your design. Label your diagram with the materials that you used.



**TEST**

Trial 1—How long did Jack stay in the air?

Time

Did your parachute fall slower than the control? Yes \_\_\_ No \_\_\_

**IMPROVE** What can you do to make your parachute better? Try it! Sketch your second parachute. Label your materials.



**TEST**

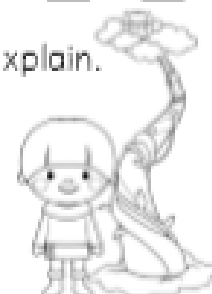
Trial 2—How long did Jack stay in the air?

Time

Did your parachute fall slower than the control? Yes \_\_\_ No \_\_\_  
Did it fall slower than your first parachute? Yes \_\_\_ No \_\_\_

**REFLECT** Were your changes effective? Explain.

Was your parachute a success? Explain.



# Jack and the Parachute

## Extension Menu



### Engineering

Try making more parachutes out of various materials. Try different sizes and shapes. Test them.

### Technology & Writing

Write and record a video commercial convincing others to buy your parachute.

### Creative Writing & Art

Write a comic strip that shows what happens when the giant sees Jack escaping with the parachute.

### Math

Create a bar graph or a double bar graph of the class data from this project.

### Creative Thinking & Art

Design a travel brochure for adventurers who want to parachute from the beanstalk.

### Science

Plant a variety of bean seeds. Observe and compare them. Record your notes and observations, and share your findings with your class.

### Writing

Re-write a version of Jack and the Beanstalk that includes your parachute as part of the story.

### Reading

Read and compare several different versions of Jack and the Beanstalk.

### Engineering & Math

Create parachutes that are a variety of geometric shapes (circle, triangle, rhombus, octagon, etc...) Conduct a test to determine which shape is best.