Science fair projects for 7th graders that ask a real question

Peabody blog · Science · updated 2026-10-30

Science fair projects that fit 7th grade, each a testable question with a second variable to add, means for every level and a graph with two lines.

A real science fair question for 7th grade is one you can test: change one thing, measure one thing, keep the rest the same, and then change a second thing and test again. "Does a longer string swing slower?" is a real question; "pendulums" is a topic. Twenty-nine of the forty projects on Peabody fit 7th grade, and every one of them comes with a second variable written out, so the graph can have two lines and the conclusion can compare them.

I built the science fair pages on Peabody so every project is a question first, with the If-Then-Because hypothesis, the variables card, a results table with a mean column and a board plan. For 7th grade and up, each project has a "Going further" line with the second test. Here's what a 7th grade fair is looking for, and twelve questions with their second variable.

What a 7th grade fair expects

For many students, 7th grade brings the first fair with high school style judging. The expectations go up in four places:

- A second variable. Once the first test is done, change a second thing and run it again. The graph gets two lines or two sets of bars.
- Three or more tries at every level, and a mean for every level of both tests.
- How sure you are. If the three tries at a level sit close together, the result is more trustworthy than if they're scattered, so say which it was: "my three tries were within 2 cm of each other" is a sentence worth putting on the board.
- A conclusion that uses the numbers, says what might have gone wrong, and asks a next question.

A grown-up at this age advises; the student runs it. Start a dated logbook on day one, and number the steps clearly enough that a stranger could repeat the test.

What makes a question real

The judging rubric Peabody prints for schools gives a top score to a question that's testable, with one thing changed and one thing measured, and the lowest to "a topic or a demonstration, nothing tested". A 7th grader's test is simple: can you fill in "If I change ___, then ___ will ___"? If not, it's not a question yet. "Volcanoes" fails. "Does more baking soda make a bigger fizz?" passes, because the amount is the change and the foam's height is the measure.

Twelve questions and their second variable

These twelve fit 7th grade. The last column is the project's own Going further line, shortened. All twenty-nine are on the 7th grade page.

- Project: Does a longer string swing slower? · Grades: 4th–8th · Testing: 1 day · Cost: free · Second variable: keep 40 cm and hang 3, 5 and 8 pennies
- Project: How much does a rubber band stretch with each extra weight? · Grades: 5th–8th · Testing: 1 day · Cost: free · Second variable: two bands side by side
- Project: Which wing shape flies farthest? · Grades: 3rd–8th · Testing: 1 day · Cost: free · Second variable: one paper clip on each nose
- Project: Does a bigger parachute fall slower? · Grades: 3rd–8th · Testing: 1 day · Cost: free · Second variable: the 30 cm one with 2, 4 and 6 paper clips
- Project: How much salt does it take to float an egg? · Grades: 3rd–7th · Testing: 1 day · Cost: free · Second variable: sugar instead of salt, spoon for spoon
- Project: Which grows crystals faster: salt or sugar? · Grades: 4th–8th · Testing: 5 days · Cost: free · Second variable: a warm spot and a cool spot
- Project: Does a higher start make a marble roll faster? · Grades: 3rd–8th · Testing: 1 day · Cost: free · Second variable: every slide tilted more steeply
- Project: Does dish soap stop oil and water from separating? · Grades: 3rd–8th · Testing: 1 day · Cost: free · Second variable: 10 drops of soap, shaken 10, 20 and 40 times
- Project: Do the heaviest liquids always sink to the bottom? · Grades: 4th–8th · Testing: 1 day · Cost: about $2 · Second variable: each liquid cold from the fridge too
- Project: Do leaves help celery pull up coloured water? · Grades: 3rd–8th · Testing: 1 day · Cost: about $2 · Second variable: a sunny window and a dark cupboard
- Project: Does grass grow best under red, blue or green light? · Grades: 4th–8th · Testing: 14 days · Cost: about $3 · Second variable: a second set on a shady shelf
- Project: Does a bigger water drop make letters look bigger? · Grades: 4th–8th · Testing: 1 day · Cost: free · Second variable: the wrap lifted 1 cm and 2 cm above the page

A few have a twist worth noticing. The pendulum's second test asks whether weight changes the count at all. The density tower asks whether the order you weighed matches the order the liquids stack in.

How to run it with a second variable

1. Write the hypothesis for the first test only. "If I change the length of the string, then the number of swings in 15 seconds will ___, because ___." Use the hypothesis sheet, which has a variables card for what's changed, what's measured and what's kept the same.
2. Run the first test: three tries at every level. Write each number in the results table as it's measured.
3. Find the mean for each level. Add the tries, divide by how many there were.

4. Now write a second hypothesis and run the second test the same way, with its own table. Keep everything else from the first test the same.
5. Graph both on one set of axes. Two lines for numbers that grow (string length, pennies), or bars side by side for separate kinds (sunny and dark, warm and cool).
6. Write the conclusion. Which numbers answer each question? Did the second variable change the first result? What might have gone wrong, and what would you test next? The conclusion sheet has prompts for each.
7. Lay out the board. The board plan fits a 36 × 48 inch tri-fold, with the results (both tables and the two-line graph) in the middle.

The safety line, checked in code

Every project on Peabody is checked in code before it can be shown: nothing off the fair's safe-list of materials, no flames, no chemicals beyond the kitchen, no animals, no cultures, and no people as the thing tested. Any step with a sharp knife or hot water is a grown-up's. Middle school fairs that feed a regional fair often have stricter rules and forms, so your school's sheet wins.

Try tonight

Pour 2 cups of water into a tall clear glass, lower a raw egg in with a spoon, and measure how high its top sits. Lift it out, stir in 2 tablespoons of salt until it disappears, and measure again; keep going 2 tablespoons at a time up to 8. Do the whole run three times. Tomorrow, the second variable: the same test with sugar, spoon for spoon, and both lines on one graph. That's How much salt does it take to float an egg? (wash your hands after the raw egg, and the egg isn't for eating). For a different question, Pick my project asks four questions and hands over one.

Questions grown-ups ask

Is a second variable required in 7th grade?

Not everywhere. It's what many middle school fairs start to look for, and it's the clearest way for a 7th grader to show more than a 5th grade project would. If your school's sheet doesn't ask for it, it's still a strong addition if there's time.

My 7th grader wants to test people, like reaction times or a survey. Is that allowed?

Every rule set I read says projects that test people need a review and consent before they start. Peabody leaves them out for that reason. Ask the teacher first; the school's process decides.

How involved should I be?

Advise, don't run it. Ask the judge's questions at the dinner table: what did you change, what did you keep the same, and how sure are you? If your child can answer those, the project is theirs.

Peabody (peabody.kids) is free through the end of 2026, with no ads and no sign-up, and nothing a child taps on the science fair pages is sent anywhere. The library has stories for older readers too.

Free at peabody.kids/blog/science-fair-projects-for-7th-graders