# Easy science fair projects for 2nd graders (no flames, nothing to buy)

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Fourteen free science fair projects that fit 2nd grade, with no flames and nothing to buy: what a 2nd grade fair expects and how to run three tries at home.

The easiest good 2nd grade science fair project changes one thing, measures one thing, and does it three times: how far a toy car rolls off a higher ramp, how many pennies a paper bridge holds, how long an ice cube lasts under salt, sugar or sand. Eighteen of the forty projects on Peabody fit 2nd grade, and fourteen of them cost nothing at all, because everything they use is already in most houses. None uses a flame, and the only hot water is poured by a grown-up.

I built the science fair pages on Peabody so a 2nd grader can do a real project with a grown-up nearby: every project has the question, the hypothesis frame with the blanks your child fills in, the steps (which can be read aloud), a results table to fill in by hand and a board plan. Here's what a 2nd grade fair is looking for, and the free ones.

## What a 2nd grade fair expects

At seven or eight, a child can use a ruler, count well past a hundred and write numbers in boxes. So the step up from 1st grade is the results table: the things tried go down the side, Try 1, Try 2 and Try 3 go across, and your child writes each number in as it happens, wobbly writing and all.

For 2nd grade, that means:

- One thing changed, one thing counted or measured. Ramp height and distance; bridge shape and pennies.
- Three tries at each level. At a very first fair one try is often accepted, but three is the habit worth building, and Peabody's tables have three columns.
- A simple graph. A bar for each thing tried is plenty, drawn by hand.
- A conclusion in your child's own words. "The fan bridge held the most pennies" is a complete conclusion at seven.

A grown-up at this age reads the steps, writes down what the child says if needed, and holds the ruler. Where you can, pick one that's done in a single sitting: at seven, attention usually runs out before the materials do, and an hour-long project actually gets finished.

## The free ones

Every project here fits 2nd grade, costs nothing, and tests in a day or two. The grades column shows how far each one stretches, so an older sibling could do the same project at a harder level.

- Project: How does a shadow change through the day? · Grades: 1st–4th · Testing: 1 day · One sitting: about 20 minutes · Cost: free
- Project: Which floor makes a ball bounce highest? · Grades: 1st–5th · Testing: 1 day · One sitting: about 40 minutes · Cost: free
- Project: Which paper towel soaks up the most water? · Grades: 1st–5th · Testing: 1 day · One sitting: about 40 minutes · Cost: free
- Project: Which boat shape carries the most pennies? · Grades: 1st–5th · Testing: 1 day · One sitting: about 45 minutes · Cost: free
- Project: Does sugar dissolve faster in warm water? · Grades: 2nd–6th · Testing: 1 day · One sitting: about 40 minutes · Cost: free
- Project: Does a steeper ramp make a toy car go farther? · Grades: 2nd–6th · Testing: 1 day · One sitting: about 45 minutes · Cost: free
- Project: Does a wider base keep a cup tower from tipping? · Grades: 2nd–8th · Testing: 1 day · One sitting: about 45 minutes · Cost: free
- Project: Does food colouring spread faster in hot water? · Grades: 2nd–8th · Testing: 1 day · One sitting: about 45 minutes · Cost: free
- Project: Which paper bridge shape holds the most coins? · Grades: 2nd–7th · Testing: 1 day · One sitting: about 50 minutes · Cost: free
- Project: What melts ice fastest: salt, sugar or sand? · Grades: 2nd–6th · Testing: 1 day · One sitting: about 90 minutes · Cost: free
- Project: Where does a puddle dry fastest: sun, shade or wind? · Grades: 2nd–6th · Testing: 2 days · One sitting: about 20 minutes · Cost: free

Three more free projects fit 2nd grade but wait on seeds or rain: How much water do bean seeds need to sprout? (10 days of testing), Do plants bend toward the window? (12 days) and Where does the most rain land? (7 days). They're lovely if the fair is a few weeks off. The other four that fit 2nd grade cost about $1 each. The 2nd grade page has all eighteen.

## How to run one with a 2nd grader

1. Say the guess out loud first. Read the frame to your child: "If I make the ramp higher, then the car will go…" and let them finish it. The because is the tricky bit, and any honest guess counts. Write down exactly what they say on the hypothesis sheet.
2. Do three tries at every level. Put a strip of masking tape down as a start line, so every try starts in the same place. It's the first thing a judge asks about.
3. Write each number straight into the table. Print the results table from the project's page;

it already has the right levels down the side and the right unit at the top.
4. Draw one bar for each thing tried. Use the middle of the three tries. Second graders don't need a mean; that column starts at 4th grade on Peabody's sheets.
5. Say what happened. One or two sentences in your child's words. Was the guess right? Which bar is tallest?
6. Lay out the board. The board plan shows six sections in order (Question, Hypothesis, Materials, Steps, Results, Conclusion) on a 36 × 48 inch tri-fold, with drawings welcome.

## No flames, and the check is in code

Every project on Peabody passes a check in the code before it can be shown to a child. It refuses anything off the fair's safe-list of materials, any flame, any chemical beyond the kitchen, any animal, any culture grown on purpose and any project that tests people. Hot water never appears below 2nd grade, and when it does (the food colouring project), a grown-up pours it. Your school's sheet wins, so check it for anything different.

## Try tonight

Make two stacks of books the same height, 20 cm apart. Lay a flat sheet of paper across the gap, stand a small cup in the middle, and add pennies one at a time until the bridge falls in. Count them. Do it twice more with a fresh sheet, then fold a sheet back and forth like a fan and test that three times, then roll sheets into tubes and tape them side by side. That's Which paper bridge shape holds the most coins?, and counting pennies is exactly the kind of measuring a 2nd grader can do alone. If that one doesn't appeal, Pick my project asks four questions and hands over another.

## Questions grown-ups ask

## Does a 2nd grader need a hypothesis?

Yes, but it's just a guess with a reason. "If I put more books under the ramp, then the car will go farther, because it's going faster." If the reason is "because I think so", that's fine at seven. What matters is that the guess is written down before the test.

## Can I write things down for my child?

Yes. At 2nd grade a grown-up often holds the pen. What judges at elementary fairs look for is the child's own words and drawings, so write what your child says, not what you'd say.

## Do we really need three tries?

Three is the habit worth starting now, and every Peabody project has three columns for it. If your child runs out of steam, one careful try at each level is better than an unfinished project; just say so on the board.

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 2nd grade readers when the board is done.

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Free at peabody.kids/blog/science-fair-projects-for-2nd-graders