Science fair projects for 5th graders with three trials and a graph

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Science fair projects that fit 5th grade, each with three trials at every level, a mean and a bar or line graph, plus a conclusion that points at the numbers.

A 5th grade science fair project tests one question with three trials at every level, works out the mean for each level, shows it on a bar or line graph, and ends with a conclusion that points at the numbers. Thirty-nine of the forty projects on Peabody fit 5th grade, from a rubber band stretched by pennies to beans that take ten days to sprout. What makes one a 5th grade project isn't the topic; it's the trials, the mean, the graph and an honest conclusion.

I built the science fair pages on Peabody so the sheets come from the same data as the project. The levels your child is told to test are the rows of the results table, the unit is in the header, the mean column is already there, and the project says whether its graph is bars or a line. Here's what a 5th grade fair expects, twelve projects that suit it, and how to get from three trials to a graph.

What a 5th grade fair expects

A 5th grader can usually run the project from start to finish while a grown-up stays in the room rather than at their elbow. The parts are the same as 4th grade (one thing changed, one thing measured with units, three tries a level, a mean column, a graph), and the new expectation is in the conclusion. Not just "my hypothesis was right", but which numbers show it, and what your child would change or test next. Expect a judge to ask for exactly that, and the strongest answer is a finger on the right row of the table.

Fifth graders can also take on projects that run over several days. Those need a logbook: a dated line each day saying what was done, what was seen, and what your child thinks. It shows a judge the work happened over time. Peabody prints a logbook sheet for every project.

Twelve for 5th grade

These twelve fit 5th grade and show the range: some test in an afternoon, a few run for days. The graph column is what the project asks for. Of the thirty-nine that fit 5th grade, twenty-two use a bar graph and seventeen a line. All thirty-nine are on the 5th grade page.

- Project: How much does a rubber band stretch with each extra weight? · Grades: 5th–8th · Testing: 1 day · Graph: line · Cost: free
- Project: Does a longer string swing slower? · Grades: 4th–8th · Testing: 1 day · Graph: line · Cost: free

- Project: Does a bigger water drop make letters look bigger? · Grades: 4th–8th · Testing: 1 day · Graph: line · Cost: free
- Project: Do the heaviest liquids always sink to the bottom? · Grades: 4th–8th · Testing: 1 day · Graph: bar · Cost: about $2
- Project: Which grows crystals faster: salt or sugar? · Grades: 4th–8th · Testing: 5 days · Graph: line · Cost: free
- Project: Does a bigger parachute fall slower? · Grades: 3rd–8th · Testing: 1 day · Graph: line · Cost: free
- Project: Which wing shape flies farthest? · Grades: 3rd–8th · Testing: 1 day · Graph: bar · Cost: free
- Project: Does dish soap stop oil and water from separating? · Grades: 3rd–8th · Testing: 1 day · Graph: line · Cost: free
- Project: Do leaves help celery pull up coloured water? · Grades: 3rd–8th · Testing: 1 day · Graph: bar · Cost: about $2
- Project: Does planting a seed deeper make it slower to come up? · Grades: 3rd–8th · Testing: 14 days · Graph: line · Cost: about $1
- Project: Which cup keeps an ice cube from melting longest? · Grades: 1st–7th · Testing: 1 day · Graph: bar · Cost: about $1
- Project: How much water do bean seeds need to sprout? · Grades: 2nd–6th · Testing: 10 days · Graph: bar · Cost: free

The rubber band is the one project that starts at 5th grade. It's a good pick for a child who likes numbers, because the points can fall close to a straight line, and checking whether they do is a real question.

From three trials to a graph

Three trials, every level. Every Peabody project has at least three levels and three tries at each; the check in the code won't publish one with fewer. Write each try in the table the moment it's measured, never from memory afterwards.

The mean. Add the three tries for a level and divide by three. For example (made-up numbers), tries of 12, 13 and 14 add to 39, and 39 ÷ 3 = 13. If it doesn't divide evenly, round to one decimal place. A table with the mean worked out for every level is what a 5th grade judge looks for first.

Bar or line. A bar graph when the things tried are separate kinds: wing shapes, cups, liquids. A line graph when the thing changed is a number that grows: 10, 20, 30 and 40 pennies; 1, 3 and 6 cm deep. What was changed goes along the bottom; what was measured goes up the side, with its unit. Plot the means.

The conclusion. Three parts, in your child's words: was the hypothesis right, partly right or not; which numbers show it; and what they'd test next. A conclusion sheet has those three

prompts.

The board. The board plan lays out a 36 × 48 inch tri-fold in reading order: Question, Hypothesis and Materials on the left, Steps and Results (the table and graph together) in the middle, Conclusion on the right, with each section's size in inches.

Safety, checked in code

Every project on Peabody is checked in code before a child can see it: no flames, no chemicals beyond the kitchen, no animals, no cultures, no people as the thing tested, and a grown-up's step wherever there's a sharp knife or hot water (the crystals start with a grown-up pouring hot water, for example). Your school's sheet wins if it says anything different.

Try tonight

Tape a pencil to the edge of a table, loop a rubber band over it and hang a small paper cup from the band. Measure the band's length from the pencil to the cup's handle: that's the start length. Put in 10 pennies and measure again; take them out, let the band rest a minute, and repeat twice more. Then 20, 30 and 40 pennies, three tries each. Take away the start length to get the stretch, find the means, and plot them. That's How much does a rubber band stretch with each extra weight? in about 45 minutes. If your child would rather choose, Pick my project asks four questions and hands over one.

Questions grown-ups ask

Is three trials really enough?

Three is the minimum every Peabody project uses, and it's what most elementary fairs ask for. If there's time, more trials at each level make the mean steadier. What matters more is that the trials are done the same way each time.

What if the graph doesn't show a pattern?

Then that's the result, and it's a real one. "Changing the cup made little difference to how long the ice lasted" is an honest conclusion, as long as the tries were fair. Judges at this level are listening for honesty more than a neat line.

How much should I be doing at 5th grade?

Mostly asking questions. Check the setup, keep anything hot or sharp in your hands, and let your child run the test, fill in the table and write the conclusion. If they can explain the graph to you, they can explain it to a judge.

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 by reading level for when the graph is drawn.