Science fair projects about sound: five ways to turn a sound into a number

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Five sound science fair projects, no app or sound meter: salt that jumps on a drum, a muffled timer, a paper ear cone and a spoon bell, each measured in cm or seconds.

The hard part of a sound science fair project is the number: ears can tell loud from quiet, but they can't give you a measurement. The trick is to measure what the sound does instead, like how far away a bang can be and still make salt jump on a drum, how far away you can still hear a ticking timer, or how many seconds a spoon keeps ringing. Peabody has five new sound projects that work this way, all free, all done in one sitting of 30 to 45 minutes, with nothing more than a tape measure or a timer.

Until this week the sound and music page on Peabody said "not yet", because I couldn't find a sound project a family could measure at home without an app. Now it lists these five, each with the hypothesis frame, the steps, a results table and a board plan.

The five sound projects

- Project: Does a bigger paper cone help you hear a quiet sound from farther away? · Grades: 1st–5th · Time: 40 min · The number: cm to where the ticking fades
- Project: Does a bigger spoon ring longer when it hangs on a string? · Grades: 2nd–6th · Time: 30 min · The number: seconds of ringing
- Project: Which sound makes salt dance on a drum from the farthest away? · Grades: 2nd–6th · Time: 40 min · The number: cm to the last bang that moved the salt
- Project: Which wrap muffles the sound of a ticking timer best? · Grades: 2nd–7th · Time: 45 min · The number: cm to where the ticking fades
- Project: Does a bigger drum feel sound from farther away? · Grades: 3rd–7th · Time: 45 min · The number: cm to the last bang that moved the salt

How each one turns sound into a number

The salt drum (two projects). Stretch plastic wrap tight over a bowl, hold it on with a rubber band, and sprinkle a pinch of salt in the middle. Bang a metal baking tray once with a spoon right beside it, and the salt hops. Step back 20 cm and bang again, and again, until the salt stops jumping. The distance of the last bang that moved it is the number. In the first project you change what you bang (a baking tray, a shoebox, a hardback book); in the second you change the drum (a paper cup, a clear jar, a big bowl), and tap each skin first to check they all feel just as tight.

The muffled timer. Put a ticking timer in a shoebox, close the lid, and step back one step at a

time with your eyes shut until you can't hear it. Put a tape mark at your toes and measure from the box. Then wrap the timer in paper towels, a wool sock and bubble wrap, three times each. The shortest distance is the best muffler: fluffy things full of air pockets soak up the shaking.

The paper ear cone. Roll a small and a big paper cone and snip the tip of each so there's a small hole at the narrow end. With the timer at one end of a quiet room, step back until you can't hear it: first with no cone, then holding each cone's narrow end near your ear (never inside it) with the wide end pointed at the timer. Ear trumpets worked this way before hearing aids.

The spoon bell. Tie a teaspoon to the middle of a string, wrap one end round each pointing finger, and press your fingertips gently against your ears, never inside them. Lean over so the spoon swings and taps the edge of a table. A grown-up starts the timer at the tap, and you say stop when you can't hear the ring. Then a big spoon and a serving spoon. The ring comes up the string straight to your ears, so it sounds deeper and louder than through the air.

The ear is the instrument, never the thing tested

In three of these, a person's ears do the listening, and that needs care. Peabody's projects never test people: a project that compares how well different people hear uses people as the thing being tested, and the UNM STEM-H Center's K–5 fair rules (read 31 October 2026) say projects with human subjects need a review board's approval before they start. So in these projects one listener does every try, eyes shut, in the same quiet room. The thing that changes is the wrap, the cone or the spoon. Nothing goes inside an ear, and nothing is banged right beside anyone's ears.

What about music?

Google suggests "science fair projects with music" too (it was the second suggestion after "science fair project ideas with" when Peabody gathered them on 30 October 2026). The honest answer: most music ideas end up testing what people hear or like, and that makes people the thing being tested. The Workshop's Shoebox Guitar shows the idea behind music, that a tighter band sounds higher, and it's good to build and play. But building a guitar isn't a test. The spoon bell is the closest music project here: three spoons, three rings, and a timer.

One graph each

All five are bar graphs: one bar for each thing tried, the height of the bar the middle number (or the mean, from 4th grade). For 7th grade and up, each project has a second test, such as testing each drum with the wrap tight and a little loose, using one, two and three layers of the best wrap, or pointing each cone straight at the timer and off to one side.

The steps are written so a 1st or 2nd grader can do them with a helper: the ear cone starts at 1st grade, and four of the five start by 2nd.

Try tonight

Find a kitchen timer that ticks, a sheet of construction paper and a tape measure. Set the timer ticking on a table at one end of a quiet room. Step back until you can't hear it, put a tape mark at your toes, and measure. Then roll the paper into a cone, hold its narrow end near your ear, point the wide end at the timer, and step back again. Three tries each. That's the first half of Does a bigger paper cone help you hear a quiet sound from farther away?, and a grown-up can write the numbers while your child listens.

Questions grown-ups ask

Do we need a sound meter app?

No. None of the five uses one, and Peabody never asks a child to use an app or post anything. A tape measure and a timer give a number a judge can check.

Our timer doesn't tick. What now?

The muffled timer and the ear cone need a ticking timer, quiet enough to fade across a room. A wind-up kitchen timer works. The salt drums and the spoon bell need no timer that ticks.

Can my child bring the drum to the fair?

Check your school's sheet. A bowl with plastic wrap is dry and quiet, but loose salt on a display table may not be welcome. Photos of the salt mid-hop make a great board picture.

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 a quieter evening.

Free at peabody.kids/blog/science-fair-projects-about-sound