THE STRIVING

MUSLIM ACADEMY

Islamic and Academic Education

SCIENCE PROJECTS FOR CHILDREN AND PARENTS

Science Fair Projects

Eight fair tests, from question to display board

WHAT IS INSIDE

- Paper helicopters
- What melts ice fastest?
- Which wrap keeps a drink warm?
- Do seeds need light?
- Drop height and bounce height
- Which paper towel holds the most water?
- How many lemons light an LED?
- Balloon rockets

The Striving Muslim Academy

Ages 6 to 12, done together with a grown-up

Written for a parent teaching at home. No training assumed, and nothing else to buy.

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SCIENCE FAIR PROJECTS

SCIENCE FAIR PROJECTS

For the grown-up

This book has eight science fair projects. Each one is a fair test: your child changes one thing, measures what happens, and keeps all the other things the same. Most of what you need is already at home. The rest is sold in supermarkets, pharmacies, stationery shops and hardware shops, apart from the lemon battery parts, which come from a small electronics shop.

Do each project together. Read all the steps first and gather the materials. Steps marked for the adult are yours: hot water, sharp knives, pushing in nails, and marking 2 metres up the wall and dropping the paper helicopters from that mark. Let your child do all the other steps, even when they take longer.

Every project repeats its measurements and takes an average, because scientists repeat their measurements to check the quality of their results. Ask your child to write each number in the table straight away, including any that look odd.

After each test, ask: What did you see? Why do you think it happened? Was your prediction right? If a prediction turns out wrong, treat it as a result too: talk about why, and use it to choose a new idea to test.

Each project has a short "why it works" section. Read it after the test, not before, so your child sees the result first and then finds out the reason.

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Lab rules for every project

- Read all the steps before you start.
- Do the adult steps only with the adult beside you.
- Never taste or eat anything in a test.
- Change only one thing at a time.
- Write every result down straight away, even if it looks wrong.
- Never use a wall socket or mains electricity in any project.
- Wash your hands after every project.
- Clean up and put everything away when you finish.

The projects

1. Paper helicopters
2. What melts ice fastest?
3. Which wrap keeps a drink warm?
4. Do seeds need light?
5. Drop height and bounce height
6. Which paper towel holds the most water?
7. How many lemons light an LED?
8. Balloon rockets

Share your builds

Send us a photo of each finished build, showing the build only and no faces: by email to strivingmuslimacademy@gmail.com, through our website at strivingmuslimacademy.com/share.html, or with the WhatsApp code on the last page. We add them to our Achievement Wall, and your child can choose any one material from our shop at 50% off.

SCIENCE FAIR PROJECTS

How to do a science fair project

1. Question. Choose a question you can answer by measuring, such as: Do longer wings make a paper helicopter fall more slowly?

2. Prediction. Write what you think will happen and why. Scientists call a suggested explanation that can be tested a hypothesis.

3. Fair test and variables. A variable is any part of a test that can change. Change only one variable, measure one, and keep all the others the same. Then, if your results differ, the difference comes from the one thing you changed and not from something else.

4. Method. Write your steps in order, clearly enough for someone else to repeat your test. List your materials and the measuring tools you used.

5. Results table. Draw your table before you start. Put the thing you change in the first column, then a column for each try (most projects use Try 1, Try 2 and Try 3) and one for the Average. Write the units, such as cm or seconds, in the headings. Repeated tries also show how precise you were: precise measurements give very similar results each time you repeat them the same way.

6. Graph. Use a line graph when the thing you changed is a number, like a height or a length. Use a bar graph when it is a set of kinds, like types of wrap. Put the thing you changed along the bottom and what you measured up the side, and label both.

7. Conclusion. Say in one or two sentences what your results show, and whether your prediction was right. If the results do not support your hypothesis, you can make a new one and test that.

8. Display board. Lay your project out on a three-panel board, as in the drawing, so a visitor can follow it from left to right.

The display board

Left panel: your question, your prediction and your variables (what you changed, what you measured and what you kept the same).

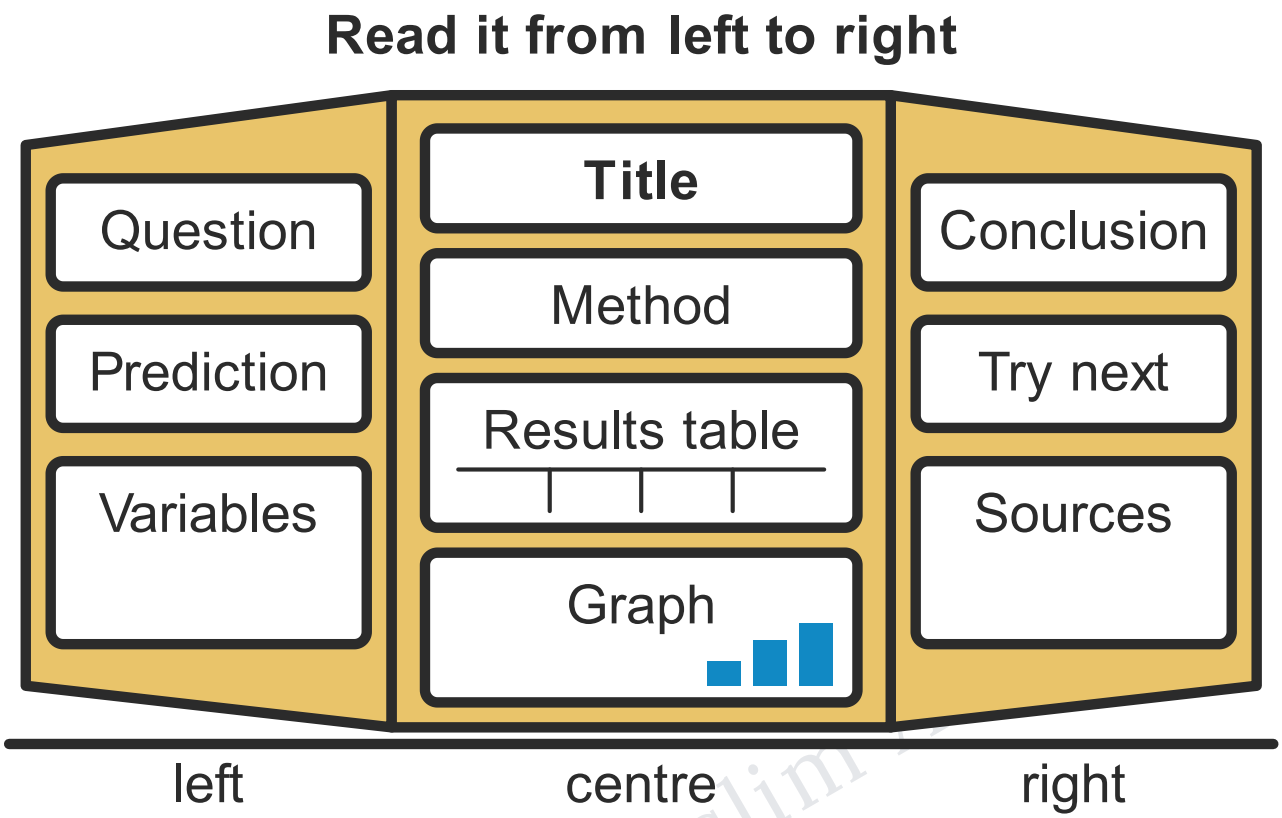
Centre panel: a big title, your method, your results table and your graph.

Right panel: your conclusion, what you would try next, and the books or websites you used.

Add a photo or a labelled drawing of your test setup. Write or print in large, neat letters so the board can be read from a step away.

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SCIENCE FAIR PROJECTS



What to show the judges: a checklist

Ask yourself these questions before the fair. If your fair gives out its own judging sheet, check your board against that too.

Is your question one you can answer by measuring?

Did you change only one thing and keep the other things the same?

Did you repeat your measurements and work out an average?

Is your table neat, with units, and are both sides of your graph labelled?

Does your conclusion say what your results showed, even if your prediction was wrong?

Can you explain your project in your own words and answer questions about it?

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SCIENCE FAIR PROJECTS

Shopping list

Everything in this book, by where to find it. Most families already have the things listed under At home. The project each thing is for is in brackets.

At home

- Digital kitchen thermometer (Which wrap keeps a drink warm?)
- Drinking straw (Balloon rockets)
- Glass jars, all the same size (Which wrap keeps a drink warm?)
- Kettle (Which wrap keeps a drink warm?)
- Kitchen foil (Which wrap keeps a drink warm?)
- Measuring jug (Which wrap keeps a drink warm?)
- Measuring jug, the smallest you have (Which paper towel holds the most water?)
- Paper towels, three different kinds (Which paper towel holds the most water?)
- Plates, all the same kind (What melts ice fastest?)
- Small plates, the same kind (Do seeds need light?)
- Sugar (What melts ice fastest?)
- Table salt (What melts ice fastest?)
- Teaspoon (Do seeds need light?, What melts ice fastest?)
- Tray (How many lemons light an LED?, What melts ice fastest?, Which paper towel holds the most water?)

Supermarket shop

- Balloons, all the same kind (Balloon rockets)
- Cotton wool (Do seeds need light?)
- Cress seeds (Do seeds need light?)
- Fresh, juicy lemons (How many lemons light an LED?)

Stationery shop

- Bubble wrap (Which wrap keeps a drink warm?)
- Paper clips, all the same size (Paper helicopters)
- Plain printer paper (Paper helicopters)
- Rubber bands (Which wrap keeps a drink warm?)
- Ruler (Paper helicopters, Which paper towel holds the most water?)
- Ruler with millimetres (Do seeds need light?)
- Sticky tape (Balloon rockets)

Hardware shop

- Bare copper wire, 5 cm pieces (How many lemons light an LED?)
- Clean, dry play sand (What melts ice fastest?)
- Galvanised (zinc-coated) nails (How many lemons light an LED?)
- Masking tape (Drop height and bounce height, Paper helicopters)
- Smooth string (Balloon rockets)
- Tape measure (Balloon rockets, Drop height and bounce height, Paper helicopters)

Electronics shop

- Crocodile clip leads (How many lemons light an LED?)
- Red LED (How many lemons light an LED?)

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