



BRONZE AWARD

WHICH MATERIAL IS THE STRONGEST?



Typically 10 hours of project work
Recommended for 11-14 year olds



**Practical
project**

Test materials to find out the strength of each.

#materials

#physics

#fashion



HOW TO RUN CREST USING THIS ACTIVITY

Looking for some support? Find a mentor by contacting your local STEM Ambassador hub: www.stem.org.uk/stem-ambassadors/local-stem-ambassador-hubs

To use their project to achieve a CREST Bronze Award your students will need to:

- **Complete a minimum of 10 hours of project work**
- **Consider the broader impact of their project and demonstrate an innovative approach**
- **Complete the project workbook or short report in another medium**
- **Reflect on their work during the project using a student profile form**

Preparation

Ready to get going with CREST? Sign up for a CREST account here: www.crestawards.org/sign-in

Create a new Bronze Award project with the name(s) of the student(s) and the title of their project. If you don't have all the details, you can fill these in later!

Run the project

We have some super handy workbooks and profiles for your students to use when running a CREST Award. You can download these when you create your CREST account by following the link above.

Encourage your students to use the workbook or profile to plan and carry out their project, keeping a record of all their amazing progress.

Make sure you consider safety and risks!

Reflection

So, your students have been hard at work and completed their CREST project, but don't let this be the end of their learning. They should now fill in any remaining sections of their workbook. This is a chance for them to reflect on all the interesting things they've learnt and the invaluable skills they have used.

Enter your project for a CREST Bronze Award

Hard work deserves a reward! Celebrate and certify your student's achievements by entering their project for a CREST Bronze Award. Simply:

Log in to your CREST account at www.crestawards.org/sign-in

Select the project and upload a sample of the students' workbooks or other project evidence.

Check the participating students have met each of the criteria on the teacher assessment page.

Finally, complete the delivery and payment details to order your snazzy certificates.

Congratulations on completing CREST Bronze!

What next?

The scientific discovery doesn't need to end here. Students can have a go at the next level up - CREST Silver.

Don't keep all the fun to yourselves, encourage others to take part in CREST projects and share the wonder of science. For free ideas on how to get started, see www.crestawards.org

STUDENT BRIEF

**BRONZE
AWARD**

Which material is the strongest?

In this project, you will test the strength of samples from different items of clothing to find out which material is the strongest

Getting Started

You should begin by choosing your clothes. For example, you could test a piece of denim from a pair of jeans, or a piece of cotton from a T-shirt. Make sure you use old clothes, or someone may get cross when you cut up their favourite T-shirt! You should cut pieces of material from the clothes - these are called your samples.

To make sure you carry out a fair test, you should make sure your samples are all the same size.

One way to see which material is strongest would be to hang weights from it until it breaks. The one that holds the most weight is the strongest.

If you use this sort of test you should use thin strips of material, otherwise you might need really heavy weights to make it break. You should have more than one sample of each material. This means you can do the tests more than once. It will give you better results because if you make any mistakes they will be easier to spot.

The results:

Make a note of the size of your samples. Some materials can be very strong and it might not be safe to carry on adding weights until it breaks. What is the heaviest weight that your weight-catcher could safely cope with?

How could you adjust the test so that less heavy loads were needed?

You will need to write down the weight that broke each piece of material. You can call this the breaking strength. Make sure you use the same units each time - in other words, all the results should be measured in kilograms or grams, but not a mixture of both.

Things to think about

What will you use as the weight?

How will you attach weights to the end of the material?

How will you be able to add more weights?

How many weights will you add each time?

How will you hold the material in place?

How will you make the apparatus safe? For example, you don't want heavy weights falling onto your toes when the material breaks - something to catch the weights will be useful.

Useful Resources

For bath bombs you can often find recipes on the internet, try searching for "homemade bath bomb". You may also be able to find recipes in books in the library. For the mould you could buy one, recycle something, or make your own.



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Health and Safety

A science project work is both dynamic and exciting but can also carry some risk. To avoid any accidents, make sure you stick to the following health and safety guidelines before getting started:

- find out if any of the materials, equipment or methods are hazardous;
- assess the risks (think about what could go wrong and how serious it might be);
- decide what you need to do to reduce any risks (such as wearing personal protective equipment, knowing how to deal with emergencies and so on);
- make sure your teacher agrees with your plan and risk assessment.

Remember!

Science isn't just about data. The most successful projects will demonstrate good communication skills and show original ideas that address a real-world problem.

Look at the world around you and consider all the innovative ways that you could address the challenge. Even if things go wrong, use this to show what you have learned. Don't forget to use the student profile form to help structure your project.