



SILVER AWARD

HIT-AND-RUN INVESTIGATION



Typically 30 hours of project work
Recommended for 14-16 year olds



Practical
project

Use forensics to investigate a
hit and run accident.

#physics

#materials

#crime



HOW TO RUN CREST USING THIS ACTIVITY

Entering your project without a teacher or facilitator? No problem! You can enter your work yourself by following this link: www.crestawards.org/sign-in

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

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

- **Develop and lead the project**
- **Complete a minimum of 30 hours of project work**
- **Consider the broader impact of their project and demonstrate an innovative approach**
- **Write a project report or portfolio of evidence**
- **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 Silver Award project with the name(s) of the student(s) and the title of the project. If you don't have the details yet, 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 Silver student guide to plan and carry out their project. Each student involved in the project should complete their own profile form.

You don't want all their good work to go to waste, so be sure they keep a record of all their amazing progress. Keeping a regular project diary will save them precious time when writing their final project report.

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. At the end of the project, each student should complete a Gold profile form and communicate their project. This is a chance for them to reflect on all the interesting things they've learnt and the invaluable skills they have used.

Students working in a group can either submit a joint report or separate reports, but they must each complete a profile form.

Use the CREST criteria on the profile form to help the students check that they have included everything in their report.

Enter your project for a CREST Gold Award

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

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

Select your project and upload the profile form per student, project report and other evidence, such as pictures and diagrams.

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

Congratulations on submitting for CREST Silver!

What next?

Is university on the horizon for your students? They can use their project to help demonstrate their newly found STEM skills and knowledge in UCAS personal statements.

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

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

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Hit-and-run investigation

In a hit-and-run accident, the offending vehicle is driven away, but evidence is left behind in the form of skid marks and pieces of the vehicle. This evidence can help to identify the vehicle involved. In this project you will take on the role of accident investigators and interpret clues about what happened.

Getting started

Imagine you are at the scene of a hit-and-run. What evidence do you think you might find? Apart from skid marks and broken lights, what evidence do you think a crash vehicle might leave at the scene or take away from the scene, that wasn't on the vehicle before? Think about how you would show that a suspect vehicle matches evidence left at the scene.

Investigating skidding: Depending on facilities, including safety equipment, this could be an outdoor investigation with a bicycle, or a laboratory exercise with models. For simplicity, define a skid as sliding across the surface without the wheels going round – not necessarily leaving a skid mark. Think about what factors affect skidding. You will need to control these during your experiments, to make sure that you are altering only one factor at a time. Devise a procedure for investigating how mass and speed affect the length of a skid. Find out what determines whether a skid leaves a skid mark and what accident investigators can deduce from skid marks.

Identifying materials: The most obvious sign left on the road by a crash is broken lights. Devise simple tests to show how samples from different vehicles can be distinguished for small fragments and larger pieces. Explain how such tests can help to identify the type of vehicle involved in a hit-and-run accident.

Now use your new skills to help solve a hit-and-run case. Try to match 'Exhibit A' (a fragment found at the crash scene) with one of 'B', 'C' or 'D' (taken from three different suspect vehicles). Present your evidence clearly, suitable to use in court.

Things to think about

You might like to find out how an anti-lock braking system (ABS) prevents skidding.

You could find out how to measure, or at least compare, the properties of small fragments of different types of glass and plastics. Possibilities include: Density, Refractive index, Optical clarity (degree of transparency) Colour

Useful resources

Make contact with police or a professional company of accident investigators to find out about the techniques and equipment they use.



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Health and safety

A science project 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.