

Inventions (All divisions)



**Students are encouraged to explore ANY scientific area of interest.
Design a device to solve a real world problem.**

What is an invention?

Inventions are **original applications** of technology which **solve a problem**. The scope for inventions is limited only by your imagination. You are asked to apply your **knowledge of science** to make a **WORKING** invention that has a practical application. Your invention may be a new device, method or process that has not existed before or you may choose to look at an existing device and invent a solution that works better.

Note that Inventions is a separate section to Information and Scale Models. See page 15 for information about the Working Models section.

✓ *Tick that you have satisfied each of the guidelines below.*

Entry guidelines and criteria

- ☐ Your invention must be presented as a **WORKING** invention.
- ☐ Your invention must be no larger than 0.5m x 0.5m x 0.5m and weigh no more than 15 kg unless special permission is granted by the STS Coordinator.
- ☐ Your invention must be safe to operate in a crowded area and must have appropriate safety features (e.g. boilers must have correctly operating safety valves). Dangerous chemicals must not be used and rocket- type inventions will not be judged. Projects that involve cruelty to animals will not be judged.
- ☐ **Your invention solves a real problem.**
- ☐ Your invention is well constructed.
- ☐ You have shown resourcefulness in the parts you have chosen to use including consideration of properties of the materials.
- ☐ Your invention includes a **design brief** that clearly shows the scientific principles involved and/or how it applies to the invention.
- ☐ Your invention is easy to use and comes with instructions on how it operates.
- ☐ **Your invention demonstrates a high level of applied scientific principles.**
- ☐ Your invention must be highly **original, innovative** and **inventive**. (Scale models of existing devices should be entered in the Working Models section.) Be sure to research thoroughly that your invention has not been tried already.
- ☐ Due to new safety standards, STS recommends students use their own battery pack for power.

Written report

You must include with your invention a written report that includes the following:

- ☐ **Aim(s)** - Explains the purpose of your invention and how it solves a problem
- ☐ **Introduction** - Explains what is original or new about your invention, and your ideas behind it. How your invention is important or relevant to an existing problem.
- ☐ **Instructions** - operating instructions of your invention.
- ☐ **Design brief** - describes how you went about building and testing, problems you encountered and how they were solved, and the science principles used and applied to the design. **Draw and label diagrams of your prototype designs**, including relevant explanations.

- ☐ List any safety considerations in your design. Attach **Risk Assessment Form**, see sample on page 23.
- ☐ **Discussion** – discuss the scientific principles involved and how they apply to the invention. Explain how your invention solves a problem. Analyse and include the results of your field tests. Describe the limitations of your design and/or suggest how you would make further improvements.
- ☐ **Acknowledgements and References** – Make sure you include a list of people who gave you help/advice and outline the ways they helped you. Also list other sources of information used (refer to page 23).
- ☐ Include or attach a photo(s) of your invention in your report.
- ☐ Your report should be no more than 1000 words in length, (word count does not include any appendix or logbook attached) on A4 paper and presented in a paper manila folder (not plastic) with a copy of the completed Face Sheet firmly attached to the front.
- ☐ **Keep a full electronic copy of your work**, including scans of your log book etc. See page 23 for naming your file
- ☐ A student self-assessment checklist to assist with your entry requirements is available from the STS website.

Judging Day

Students will be expected to give an oral presentation that demonstrates to the judges how the invention works and discuss the following aspects:

- ☐ How it solves a problem.
- ☐ How your invention is original, innovative and/or inventive.
- ☐ Your understanding of the **scientific principles** used in the design and its application.
- ☐ What materials and their properties have you used in your device. Would you use anything else to construct your invention if you could do it again?

Judges will look for evidence of depth of research into the science behind your Invention.

JUDGING DAY FOR INVENTIONS

Saturday 8 August 2020

Methodist Ladies' College,
Fitzwilliam St Entrance, KEW

Country entrants are encouraged to bring their invention along to Judging Day to discuss their entry with Judges. Country entrants may submit their projects electronically. This includes your report, log book, risk assesment and a video.

Students who win major bursaries in the experimental research and inventions sections will be eligible for the **National BHP Foundation Science and Engineering Awards**. You must notify STS if you do NOT want your project forwarded to BHP Foundation Science and Engineering Awards. For more information go to <http://www.scienceawards.org.au>