SASTA OLIPHANT
SCIENCE AWARDS

SOUTH AUSTRALIAN SCIENCE TEACHERS ASSOCIATION

SASTA
South Australian Science Teachers Association

SA'S LARGEST
SCIENCE
COMPETITION

2020

Government of South Australia
Department for Education

ROWE SCIENTIFIC PTY. LTD.
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ENTRY INFORMATION

Sir Mark Oliphant

The South Australian Science Teachers Association has been privileged to have had Sir Mark Oliphant as our Patron for the SASTA Oliphant Science Awards since their inception in 1981.

Like many of the recipients of these awards, Sir Mark was born in South Australia and received his primary and secondary education in state schools here. An outstanding student, Sir Mark investigated a number of career pathways and eventually settled on the pursuit of science at the University of Adelaide. Sir Mark showed a love of tinkering and invention from an early age, and it was in the science laboratories in Adelaide that he started to make his own scientific apparatus. He was to become one of the leaders in the design and construction of revolutionary apparatus, including particle accelerators used to investigate the structure and interactions of the nuclei of atoms.

In 1927 a scholarship took Sir Mark to the famous Cavendish Laboratories in Cambridge, UK where he worked with Lord Rutherford, who was a pioneer in atomic physics.

Together with other great scientists including Fermi, Lawrence and Oppenheimer, Sir Mark created the brave new world of nuclear physics. His expertise in this area was to lead Sir Mark to the Manhattan Project in America and to his participation in the development of the first atomic bomb.

Sir Mark was always a champion of the peaceful uses of atomic energy, and in 1937 accepted his first professorship as head of the Physics Department at Birmingham University where he was to continue to push the boundaries of knowledge of nuclear physics. In this year he was elected as a 'Fellow of the Royal Society'.

In 1955 Sir Mark's reputation as scientist, research director and administrator were well established in the scientific community. This, together with his declared interest in establishing world class educational research facilities in Australia, led Sir Mark back to Australia at the request of the Government. In this year he founded the Research School of Physical Sciences at the newly established Australian National University in Canberra.

In the years after retirement from academic life, Sir Mark became a household name in South Australia where he gave distinguished service as our State Governor from 1971 to 1976.

A clear demonstration of his ongoing support of science and science education was provided to the science community in our state when Sir Mark agreed, in 1981, to lend his name as patron of the SASTA Oliphant Science Awards.

Sir Mark's legacy will live on in many ways, not least through the thousands of students and teachers who participate in these awards annually. Of special significance is that Sir Mark, through his love of tinkering and invention, made the perpetual Oliphant Trophy himself.

Introducing the
SASTA Oliphant Science Awards

The South Australian Science Teachers Association (SASTA) has conducted the Oliphant Science Awards every year since 1981.

Aim

The SASTA Oliphant Science Awards will stimulate students and enable them to:

- Undertake and report on scientific investigations in real life settings
- Explore their interests, skills, talents and creativity
- Develop their science knowledge and understanding
- Show their work to a broader audience
- Motivate themselves to conceive and complete an independent project
- Involve themselves in scientific and technological discovery and the application of these processes and knowledge to themselves and their world.

The SASTA Oliphant Science Awards

- Raise the profile and understanding of science in schools
- Attract thousands of entries from hundreds of schools
- Allow students and teachers to explore how curricular science can be extended as part of the greater scientific enterprise
- Support the implementation of the Australian Curriculum: Science, and its emphasis on science inquiry and the doing of science, and support teachers in assisting their students to achieve these curriculum outcomes
- Support current inquiry based pedagogical initiatives and practices in teaching and learning
- Promote teamwork and communication among entrants and among the many teachers and parents who volunteer their time to encourage their students
- Raise awareness of the many careers made possible by studies in science
- Support the view that science promotes innovation in thinking and acting, and the development of novel questions and solutions
- Encourage students to become involved in science in creative and exciting ways extending their skills and expertise in science
- Support the application of new technologies including ICTs in learning
- Foster a greater awareness and appreciation of the role played by science and technology in our daily lives
- Offer prizes in cash or in kind to a value in excess of $20 000.

The SASTA Oliphant Science Awards enable students to explore science and technology through

- Inquiry and investigation
- Innovation
- New technologies
- Writing
- Art and photography

The wide spread of categories encourages participation by all students, irrespective of gender, culture, socioeconomic group or school location.

The SASTA Oliphant Science Awards are open to primary and secondary students in South Australia.

General information for teachers and students

The SASTA Oliphant Science Awards are a wonderful opportunity for school students from Reception to Year 12 to develop their interests in science through a range of categories to suit a wide variety of abilities and interests.

Only the SASTA Oliphant Science Awards Coordinator at a school (a teacher or other staff member) can register students for the competition. Only one Coordinator can register for a school, but multi-campus schools can register a Coordinator for each campus.

Students must enter in the appropriate year level but may enter any category (or in multiple categories) as many times as they wish. (Please note that all entries are judged on their individual merits, so students should be advised that two brief projects are not as good a single comprehensive one.)

Year levels

R–2, 3–4, 5–6, 7–8, 9–10, 11–12

Categories

- Computer Programming, Apps & Robotics
- Crystal Investigation
- Games
- Models & Inventions
- Multimedia
- Photography
- Posters
- Scientific Inquiry (sponsored by the University of South Australia)
- Science Writing (sponsored by the Australian Institute of Energy)

Individual or group

Only individual students can enter Posters or Science Writing.

Students may enter all other categories as indiviuals or in groups of 2 or 3 students (maximum).

Registration

By registering, all entrants agree to the conditions of entry (see p. 6).

Students must register their entries through their school's SASTA Oliphant Science Awards Coordinator.

The OSA Coordinator will enter the details of the entries from their school on the OSA website: www.oliphantscienceawards.com.au.

Further details on the registration process are on page 25. All registrations are due by close of business Thursday 4 June (Week 6).

Please be aware that your school will be invoiced based on the number of entries that have been registered by 5 pm on Thursday 4 June. There will be no credit or refund should any of your students fail to submit their projects.

If you need assistance registering entries, please contact the SASTA office: 8354 0006 or office@sasta.asn.au.

Entry fees

Individual entries: $16.00 per entry

- $3.00 discount per entry for SASTA members
- $5.00 discount per entry for Department for Education schools or Catholic Education schools

Group Entries: $24.00 per entry

- $5.00 discount per entry for SASTA members
- $5.00 discount per entry for Department for Education schools or Catholic Education schools

Administration fee for manual registrations

Entries sent to the SASTA office for entry (rather than Coordinators entering directly online) will be charged:

- 1–50 registrations $25.00
- 51–75 registrations $30.00
- 76–100 registrations $40.00
- Over 100 registrations $50.00

Key dates

- **Thursday 4 June**: Student registrations close
- **Friday 5 June**: Judges registrations close
- **Thursday 2 July – Wednesday 22 July**: Multimedia, Science Writing, Scientific Inquiry entries and Reports for Computer Programming, Apps and Robotics MUST be submitted online.
- **Date TBA**: Computer Programming, Apps & Robotics Judging Day
- **Thursday 20 August**: Crystal Investigation, Models & Inventions, Photography, Games & Poster entries to be delivered. Submission details will be provided to all coordinators closer to this date as will instructions and dates for project collection.
- **Saturday 22 August**: Final judging
- **Presentation Ceremony**: Date and venue TBA however this is most likely to be rescheduled for Term 4.

Prizes

- The overall winner receives the Oliphant Trophy, which was made by Sir Mark Oliphant. The trophy is engraved with their name and kept for one year. The trophy is replaced in the following year with the Oliphant Medal, which is the student's to keep.
- Prizes are awarded for 1st, 2nd and 3rd in each year level group for every category. There are also sponsors' prizes for individuals and schools.
- All students entering receive either a Certificate of Participation (non-winners), a Highly Commended certificate (outstanding entries) or a prize certificate (winners).

Conditions of entry

- Appropriate acknowledgment of assistance. It is anticipated that students may receive assistance in planning and developing their projects. Each entry is to clearly identify which aspects of the project were devised and carried out by the student alone and which aspects received assistance. The type and degree of any assistance should also be clearly noted. If the details of such assistance are not clearly stated, then the judges, in judging the entry, will use their discretion and experience of working with students in making judgments.

- It is essential that all entries are suitably packaged for delivery, and that all parts of entries are clearly marked using your registration number (see Identification Label or Cover Sheet), name and School. SASTA cannot accept responsibility for goods damaged due to inadequate packing, or for any damage, loss or theft of goods. Therefore, SASTA discourages the use of valuable materials / equipment as their safety cannot be guaranteed.

- Live animals may be used in Scientific Inquiry to obtain results provided that the experiment meets with the Animal Ethics Committee requirements as they apply to schools. SASTA cannot care for live animals or plants so will not accept these as part of any entry delivered for judging.

- Photos taken of winners may be used, without seeking further permission, by the relevant sponsors, but only in their publicity of the event. If this occurs, students will not be identified by school or name unless permission has been obtained from parents or guardians to do so.

- An entry will remain the property of the entrant. SASTA reserves the right, beginning with the submission of the entry and continuing until 31 December five calendar years later, to use all or a portion of the entry or images of an entry, for the publicity or promotion of SASTA or of the SASTA Oliphant Science Awards unless a patent exists or has been applied for. SASTA may also allow a sponsor to use such material for the sponsor's promotional purposes. Where a patent exists or has been applied for, the use of the entry or images of the entry may be negotiated with the entrant.

- By submitting your entry you agree that your entry or a copy of your entry can be used and/or displayed by SASTA to promote the Oliphant Science Awards at events, on SASTA websites and social media, and used in part of full within the SASTA Journal or Newsletter publications.

- SASTA shall have the right, but no obligation, to take any action it deems appropriate to prevent the misuse of an entry. Entrants and their parents and guardians may take reasonable steps or actions, as they deem appropriate to prevent misuse of a submitted entry.

- Whilst every attempt has been made to ensure the accuracy of the information published, neither SASTA nor the sponsors may be held responsible for any errors or omissions.

- SASTA and the sponsors reserve the right to change any awards, prizes or conditions as may in their opinion, be necessary.

- In 2020, School Coordinators will be advised closer to the submission date if or how projects are to be collected. If entries are not collected, SASTA reserves the right to courier them back to your school at your expense or dispose of them if alternative arrangements are not made. SASTA cannot store uncollected entries.

- If you wish to submit your entry into another competition it is your responsibility to make duplicate copies.

- All information and entry forms are available in PDF format and can be downloaded from www.oliphantscienceawards.com.au

Information for students

How to get started

- Your own inspirations, interests and skills are the best starting point.
- Check out the many different categories in the SASTA Oliphant Science Awards. You may enter different projects into one or more categories. You may enter as an individual in any of the categories, however some categories are better suited to a group entry (check the rules for categories you are interested in).
- Choose a category that motivates you and will be the best at showcasing your skills and knowledge. Think about how you could capture the judges' attention in an innovative and original way.
- Look for reliable sources of information. Your school library will have many science books and magazines. There are many science and environmental organisations that have useful web sites. Your science teacher may also be able to recommend places, websites or people that you could contact.
- Read the rules and the dot points about successful entries for the category you choose. These are the features that the judges are looking for in your entry. There are also valuable sponsors' prizes that are awarded if the entry meets both the category requirements and the criteria outlined by our sponsors.

How to enter

- Obtain a Registration Form from your School Coordinator, or download the Registration Form from the website.
- Return your completed Registration Form and any necessary fees to your School Coordinator.
- For group entries, only ONE Registration Form is to be completed. All group members must be named on the same Registration Form. (Note: maximum of three students per group entry; group entries are not allowed for Science Writing and Posters).
- Your School Coordinator will need to register students online (in their login area) at www.oliphantscienceawards.com.au by Thursday 4 June. Entries may only be submitted through your School Coordinator.
- Ask your School Coordinator about the date that they need your completed entry and who will deliver and collect it from the judging location. It is recommended that schools and parents try to organise a whole school delivery and collection method.

When your entry is finished

- Electronic submissions: Please be sure save your project in a recommended format (Word, pdf, ppt, mov, mp4) with your ID number and surname. We recommend you included your ID number and surname when saving/naming the file. You will need to include your cover sheet in your submission.
- Physical projects: Securely attach your Identification Label (your Coordinator will give you this) in a clearly visable position. Please ensure that all parts are labelled with your ID number and surname.
- Make sure you have followed all the rules and presentation instructions for your category. Please be aware that any entries that do not adhere to the size and/or weight requirements where indicated may not be accepted for judging.
- Give your completed entry to your School Coordinator in time to be delivered for judging (unless your Coordinator has organised different arrangements with you).

Open Day

Due to the current uncertainity around the future of large community events, the 2020 Open Day is unlikely to happen. Please be sure to keep a digital example of your project as it is likely that winning projects will be showcased on the SASTA Oliphant Science Awards website.

Presentation ceremony

Your School Coordinator will tell you before the Presentation Ceremony if you have won an award. Please do not contact SASTA without talking to your School Coordinator.

The SASTA Oliphant Science Awards Presentation Ceremony will include all the 1st, 2nd and 3rd placed entrants and the sponsor prize winners. Attendabce at this event is by invitation only. Recipients of Highly Commended and Encouragement Awards are not invited to this ceremony.

All winning Models and Inventions (Engineering) entries in all age categories are to make a video for electronic submission to the BHP Billiton Science and Engineering Awards competition. Winners of the Scientific Inquiry (Investigations) category in all age categories will need to submit a copy of their project electronically for further judging in the BHP Billiton Science and Engineering Awards competition.

Computer Programming, Apps & Robotics

Write the instructions; be in control.

A successful SASTA Oliphant Science Awards Computer Programming, Apps & Robotics entry:

- Has accurate science content, and uses scientific principles to get results.
- Serves a scientific purpose.
- Is engaging and interesting to use.
- Is user friendly and almost impossible to crash.

Computers are programmed to help scientists with their work. Programs can:

- *Simulate behaviour using scientific understanding of interactions*

  Predicting the effects from a change is often difficult. Scientists might write mathematical equations of the many parts involved. They can then enter a virtual world where they can change some parts and the computer will work out the effect. The computer will also show the results in tables or graphs. Simulations are used instead of very long, difficult or dangerous experiments.

- *Control robots*

  Robots use sensors to get information and then respond to a change. For example a robot could sense the temperature in a glasshouse and open or close vents to suit the growing plants. Some robots move around and can sense their surroundings. They might change their behaviour depending on what they sense. Robots could be used in search and rescue situations to locate people and send a signal of where they are.

- *Model or help to demonstrate a scientific idea or principle*

  Programs can be written to show scientific concepts, or to model or simulate real life situations that are difficult to measure directly. Also, seeing interactive graphics can often make things easier to understand.

- A successful entry must do more than just follow a fixed sequence of steps. It should be innovative, and should show how the application could be applied to a practical application, or help solve a problem.

Rules for Computer Programming, Apps & Robotics:

- Entries for all year levels may program a robot or application or a computer program.
- A group of up to three students can enter a Computer Programming, Apps & Robotics entry. (The highest year level in the group will determine the year category of the entry)

- All entries will be judged on the elements that are the students' own work, and not on the robot itself, or the computer language that has been applied. The judges will place high value on the originality of the entry and the potential wider practical applications that it may address.
- Robotics entries may use recognised formats such as Lego Mindstorm, eLabtronics, Microbric or similar programs. Robots can be built from a kit, bought ready-made, or individually constructed.
- Computer Programming and Apps entries may use recognised programming languages such as Java, C++, Fortran, or Visual Basic.
- Your entry must include a written report that includes the following:
  - The aim of the entry, and its scientific purpose and potential applications
  - The type of robot or computer/device required to run the program
  - Clear instructions on loading or using the entry
  - A hard copy of the program and an explanation of what the sections of the program do
  - Acknowledgment of any external support provided to the entry
  - A bibliography that acknowledges relevant sources of information.

In presenting your Computer Programming, Apps & Robotics entry:

- You must electronically submit your Report/Programming details via the website by Wednesday 22 July 2020. Please ensure that you attach your Cover Sheet. Please be sure to include any links to your program/app or videos/photos of your robot in your report for judges to review. In 2020, students are asked to include an email address where they can be contacted directly by the judges should they require any further information.
- The date of the judging day will be confirmed in July (should it be able to be held). Otherwise judges will review all submitted projects electronically and will be in touch should they need to ask any questions.
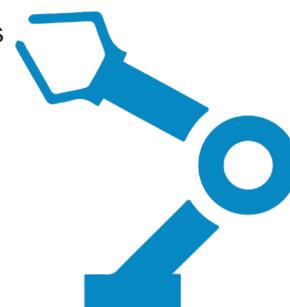
Crystal Investigation

The beautiful symmetry of crystals has charmed and delighted people for centuries. Here is your chance to investigate how beautiful crystals are formed.

A successful SASTA Oliphant Science Awards Crystal Investigation entry:

- Will answer an investigation question or investigate a hypothesis (prediction).
- Will include at least one crystal that shows sharpness of edges, smoothness of faces and has good clarity (transparency).

Rules for Crystal Investigation:

- A group of up to 3 students can do a Crystal Investigation entry. The highest year level in the group will determine the year category of the entry.
- Growing the crystals must be the student's own work.
- The crystals must be made from potash alum (common alum, potassium aluminium sulphate).
- **You must keep a journal or log book of your investigation, which will include details of:**
  - The investigation question or hypothesis.
  - Details of equipment and method used, including the quantities of alum and water used.
  - Dates and times of carrying out procedures.
  - Observations each time the crystals are inspected. This should include a written description as well as drawings or photographs of the crystals.
  - A discussion of any problems encountered and how you overcame them. Evaluate your method and make suggestions for improvements that could be made to it.
  - A summary of your findings including an answer to your investigation question or a statement stating if the hypothesis was supported or not supported by the results.

In presenting your Crystal Investigation entry:

- You must package your best crystal in a labelled, separate, small press-seal bag. This bag should then be placed into a padded Post Pak envelope for protection and labelled with a copy of your Identification information. Be sure to also label the small press-seal bag with your ID Number (listed on your Identification Label).
- You must securely attach your Identification Label (your Coordinator will give you this label) to the front of your logbook.
- Place your packaged crystal and logbook together in a folder or plastic sleeve.

Important information:

- You need at least 10 weeks to grow a good crystal.
- Information and advice on growing crystals is available on the following website: https://www.raci.org.au/Web/Schools/Crystal_ Growing.aspx#
- You can also download a log book checklist (pdf) and the Material Safety Data Sheet (MSDS) for alum (potassium aluminium sulfate).

A good source of alum is needed to grow a clear crystal. Ask your teacher or head to the RACI website (link above) to find out where to obtain alum.

Alum obtained from hardware stores or garden centres is likely to contain impurities and is not suitable without extensive extra preparation.
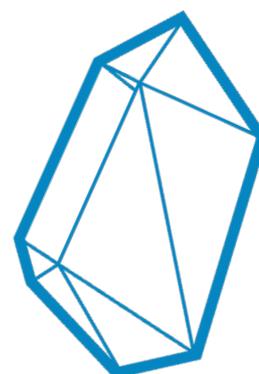
Games (electronic and board)

Games are fun to play and fun to make, but they can have a serious point too. Create some fun and tell the world about science by making an award-winning game.

Both electronic and board games will be accepted in this category!

A successful SASTA Oliphant Science Awards Games entry:

- Is original, visually appealing, interesting and fun to play.
- Will have accurate scientific content.
- Will involve players in learning about the scientific content, not just winning by chance or good luck.
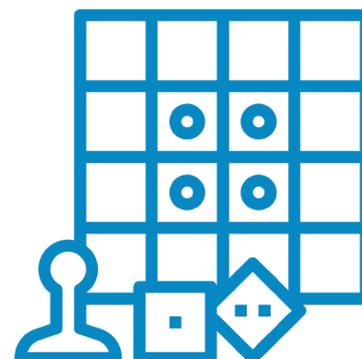
Rules for Games:

- A group of up to 3 students can do a Games entry. The highest year level in the group will determine the year category of the entry.
- The game must be the student's own work.
- The rules of the game must be clear and easy to follow.
- You must identify the age group the game is intended for.
- Your board game must be no larger than 60cm x 40cm x 20cm high (this includes any packaging) and must weigh less than 8kg, including the box.
- Your electronic game must be presented on a platform that is accessible by all digital devices (PC and Mac and/or Android and/or iOS) with your identification label provided on a cover sheet and any physical parts of the game submitted as per instructions below.

In presenting your Games entry:

- You must package your game in a strong box, making sure to strictly adhere to the dimensions above.
- You must clearly label all the parts of your game, because parts may become separated when the judges play your game or during transport.
- You must securely attach your Identification Label (your Coordinator will give you this label) to the outside of the box.

- In 2020 students are asked to consider recording a short video of the game being played to include as part of their submission.

Models & Inventions

If a picture paints a thousand words a good model must be worth a million.
Necessity is the mother of invention; look around - what do we need?

A successful SASTA Oliphant Science Awards Models & Inventions entry:

- Has accurate science content.
- Will be interactive allowing the viewer to manipulate it in some way.
- Will communicate ideas clearly.
- Will show creativity and originality.
- Will show skill in construction and design.

Rules for Models & Inventions:

- A group of up to 3 students can do a Models & Inventions entry. The highest year level in the group will determine the year category of the entry.
- The Risk Assessment for Models & Inventions form must be completed before you start your entry.
- The ideas demonstrated in the model or invention must be your own work.
- Your model or invention must be no larger than 1 m in height × 1 m in width × 1m in length.
- Your model or invention must not weigh more than 8 kg.
- Your model or invention cannot be built from a kit without additional original input.
- Your model or invention must not include live animals or plants.
- Your model or invention must not include any items of value – SASTA cannot accept responsibility for any loss or theft of goods.
- All parts must be clearly labelled with your ID number (see Identification Label), because parts may become separated during judging or transport.

- **A short written report must include:**

  ○ The completed Risk Assessment for Models & Inventions form.

  ○ The scientific principle demonstrated by your model or used in your invention.

  ○ How the entry was made, including any adult help needed in its construction.

  ○ Any problems that occurred and how you overcame the problems.

  ○ How to operate your model or invention.

  The report length depends on your year level:

    ○ Year R–2: less than 100 words;

    ○ Year 3–4 and 5–6: approximately 250 words;

   ○ Year 7–8, 9–10, 11–12: do not exceed 500 words.

If there is any special reason for someone other than the entrants to edit or type the report this must be acknowledged in the report. You must also acknowledge any other assistance that you receive (see earlier Conditions of Entry).

In presenting your Models & Inventions entry:

For the 2020 Competition, more information about the method for submission will be sent closer to the due date. However we recommend you prepare the following:

- Attach a Report and Risk Assessment
- You must attach your Identification Details as sent to you from your School Coordinator (ID Label or Electronic Cover Sheet)

- A short video of your model or invention in action to show how it works.
- **Special consideration for country schools:** Because of the difficulty and possible damage to models and inventions, students may send in a video of their entry working instead of their actual entry. Please upload the students' videos, risk assessment and reports to a Dropbox or Google Drive folder and share the link with becci@sasta.asn.au
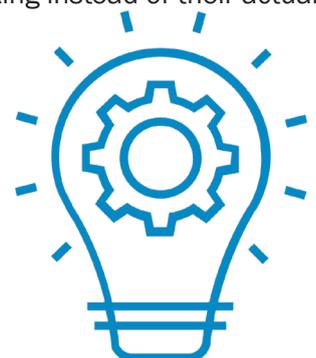
Multimedia

The information super highway includes video, computer interactives and web pages.

A successful SASTA Oliphant Science Awards Multimedia entry:

- Has accurate science content.
- Has an impact on viewers and communicates ideas clearly.
- Will show creativity, originality and resourcefulness.
- Demonstrates good technique and quality of production.

Rules for Multimedia:

- A group of up to 3 students can do a Multimedia entry. The highest year level in the group will determine the year category of the entry.
- The multimedia production must be the student's own work.
- **A written report must include (dependant on which type of entry you have):**
  - The URL for the website. Please do not make any changes to your pages between submitting your entry and the Presentation Ceremony.
  - A list of any software you used to create your video, interactive or web page
  - A bibliography that contains all the sources of information you researched in creating your multimedia project. This includes all the books, websites, magazines and any people you have interviewed. If you quote directly from a source, you must use quotation marks and include a reference to the source of the quote.
  - A discussion of any problems you had and how you overcame the problems.
  - Acknowledgment of any assistance you had with editing, graphics, design or technical help with equipment or software used. (Students may get help with filming their video, but the core of the creation of the video must be the student's own work.)
  - The report length depends on your year level:
    - Year R–2: less than 100 words;
    - Year 3–4 and 5–6: approximately 250 words;
    - Year 7–8, 9–10, 11–12: do not exceed 500 words.

- Your multimedia project must not include any items of value – SASTA cannot accept responsibility for any loss or theft of goods.
- Technical specifications:
  - A video must be submitted via the online submission process
  - Videos should run for no longer than 3 minutes.
  - Web pages must be readable by current web browsers available on PC and Mac and include NO plug-ins other than those normally distributed with the browser.
  - Web pages must be online - link provided on a word document and submitted online.
  - PowerPoint and interactives must be submitted via the online submission process.

In presenting your Multimedia entry (online submission ONLY):

- Cover sheet with your Student ID details (your Coordinator will give you this)
- Multimedia Formats: video (mp4 or mov), Powerpoint (ppt or mp4)
- Electronic copy of your written report (pdf or Word)

For full details on electronic submission, see www.oliphantscienceawards.com.au/participant_information/online_project_submission.

Photography

Capture the moment forever. Tell your story through photography.

2020 Photography titles:

- Camouflage
- Life in the Wetlands
- New Life
- Science of Celebrations
- Sports Science

A successful SASTA Oliphant Science Awards Photography entry:

- Has accurate science content.
- Will communicate ideas clearly, each photograph expressing a single idea within the topic chosen.
- Will contain good quality photographs.
- Will have the photographs displayed effectively
- Will show creativity and originality.

Rules for Photography:

- The photographs must be on one of the titles listed above.
- A group of up to 3 students can do a Photography entry. The highest year level in the group will determine the year category of the entry.
- The photography and ideas expressed must be the student's own work.
- The photography can be either black and white or colour.
- A maximum of six photographs/images can be used per entry.
- Each photograph must be no larger than 25 cm × 20 cm.
- The photographs must be mounted on a single sheet of lightweight card no larger than 51 cm × 65 cm. No corflute, glass, wood or other heavy frame or backing is permitted.
- Each photograph must have a caption or short statement, linking it to the title.
- All production work must be done by the student including any special effects or manipulation (Commercial developing may be used).
- Any type of camera may be used.
- You must include a written statement of no more than 100 words which includes:
  - The make and model of the camera used.
  - The developing / printing process used.
  - Any special effects or manipulations used.
  - Acknowledgment of any help.

In presenting your photography entry:

- You must attach your written statement about the camera and processing to the back of the entry.
- You must securely attach your Identification Label (your Coordinator will give you this label) **to the front of your entry**.

Posters

A picture tells a thousand words, so have your say.

2020 Poster titles:

- Natural History Illustration (hand drawn only)
- Miniature World
- A Satellite Zoo
- Bush Foods
- The Science of Bushfires
- Forces in Children's Toys

A successful SASTA Oliphant Science Awards Poster entry:

- Has a strong science message and accurate science content.
- Communicates a single idea clearly.
- Shows good quality artistic skills and imagination, giving the poster visual appeal.
- Uses minimal words (try using fewer than 25 words). The judges will favour entries that give a visual message without the use of a lot of text.
- Can be easily read from a distance.

Rules for Posters:

- The poster must be on one of the titles listed above.
- The poster must be the work of one person (No group entries or unacknowledged assistance by an adult).
- The poster must be the student's own work.
- The poster must be original.
- The poster must be on lightweight card no larger than 51cm x 65cm. No corfulte, glass, wood or other heavy frame or backing permitted.
- The poster must not weigh more than 200g.
- The poster may be a collage of other pictures or made using computer assisted graphics.
- The poster must be flat. (No three-dimensional material attached).
- The student's name and school must not appear on the front of the Poster.

In presenting your poster entry:

- You must securely attach your Identification Label (your Coordinator will give you this label) **to the front of your entry**.

Science Writing

Proudly sponsored by the Australian Institute of Energy

Budding journalists and science writers, here is your chance to inspire, impress and inform your readers.

2020 Science Writing titles:

- Climate Change; The Way Forward?
- Hidden Waves
- Does Radiation make Superheroes?
- Living on Mars
- Deep Blue: Innovations for the future of our oceans
- Science as a Human Endeavour (YEAR 11–12 LEVEL ONLY)

A successful SASTA Oliphant Science Awards Science Writing entry:

- Is well researched and has accurate science content.
- Will communicate ideas clearly.
- Will be original, innovative and your own work.
- Will have accurate punctuation and spelling.
- Will have a References section that acknowledges all sources of information (for students in Years 7–8, 9–10 and 11–12, this will include in-text referencing).

Rules for Science Writing Entries:

- You must write on one of the titles listed above.
- The Science Writing entry must be the work of one person (no group entries).
- You must include a reference list that contains all the sources of information that you used. This includes all books, websites, magazines, and any people you have interviewed.
- Appropriate "in text" referencing is expected for students in Years 7–8, 9–10 and 11–12.
- If you quote directly from a source, you must use quotation marks and include a reference to the source of the quote.
- Science Writing can be in a number of different genres such as:
    - Recount
    - Narrative
    - Explanation
    - Discussion
    - Response
    - Information Report
    - Procedure
   - Persuasion/Exposition
    - Description

- You may include pictures and graphic illustrations. However, if illustrations or pictures are copied you must include a reference next to the illustration or picture.
- Write or word-process your entry yourself. If there are special reasons for using help in typing or editing, then this help must be acknowledged after your reference list.
- The length of your Science Writing entry depends on your year level:
    - Year R–2: do not exceed 200 words;
    - Year 3–4 and 5–6: do not exceed 800 words;
    - Year 7–8, 9–10, 11–12: do not exceed 1500 words.
    - A word count must be included on your entry (please note: the reference list is not included in the word count).

In presenting your Science Writing entry (online submission ONLY):

The following documents will need to be uploaded for your project:

- Cover sheet with your Student ID Label attached (your Coordinator will give you this label)
- Electronic copy of your science writing entry. Entries will be accepted as PDF or Word documents only. We cannot guarantee judges will be able to access any other file types.

For full details on electronic submission, see www.oliphantscienceawards.com.au/participant_information/online_project_submission.
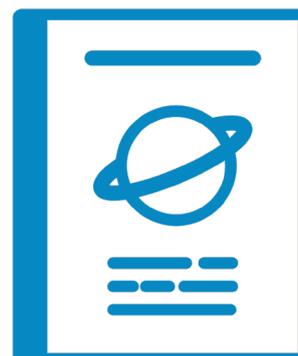
Scientific Inquiry

Proudly sponsored by the University of South Australia

Scientific inquiries build our understanding of how the world works, and how science makes a difference to our everyday lives. Wow – your inquiry could change the world!

A successful SASTA Oliphant Science Awards Scientific Inquiry entry:

- Will follow a scientific method of investigation.
- Will communicate ideas clearly.
- Will be an original inquiry.
- Will include evidence of reading on the topic.
- Scientific Inquiries that show a hypothesis is not supported are just as likely to win as Scientific Inquiries that show a hypothesis is supported. (You will not know the answer until you do the work!).

Rules for SASTA Oliphant Science Awards Scientific Inquiry:

- A group of up to 3 students can do a Scientific Inquiry entry. The highest year level in the group will determine the year category of the entry.
- The inquiry must be your own work.
- If you plan to use animals in your inquiry, then you must comply with animal ethics requirements. Check with your science teacher before you start.
- You must keep a science journal or log book containing dates for your on-going ideas, raw data, notes and where needed a completed Risk Assessment for Scientific Inquiry Form (remember your science teacher needs to sign this form).
- **Your scientific report should include the following sections:**
  - Questioning and predicting: What is the question that you are investigating? What do you predict will happen?
  - Planning and conducting: Explain why you chose the particular method for your investigation. What are the possible variables in your investigation? Which variable will you change? Which variable will you measure? Is your investigation a 'fair test'? Describe all the steps of your investigation so that someone else could do it again exactly as you did it.
  - Equipment and materials: List all the equipment and materials that you used in your investigation. List any possible risks that may result from the investigation, and describe how they were controlled.
  - Processing and analysing data and information: Present the measurements or observations from your investigation in suitable ways.

Depending on the year level, these may include tables, graphs and photographs or sketches. Analyse your results. What patterns and relationships can be seen in the data? What conclusions can be made? Do your results support your predictions?

  - Evaluating: How could your investigation be improved? How could your findings be useful to others? What other related questions could be further investigated?
  - Communicating: Present your science investigation using scientific terms where this is appropriate. Represent your findings in a number of ways. These may include various texts, charts, graphs, tables, and may include the use of digital technologies. Relate your investigation to any research that you have done from other sources. Your report must include a References section containing all the sources of information you researched (all the books, websites, magazines and any people you have talked to). If you quote directly from a source, you must use quotation marks and include a reference to the source of the quote.
- The expected detail in addressing the above criteria depends on your year level.

In presenting your Scientific Inquiry entry (online submission ONLY):

The following documents will need to be uploaded for your project:

- Cover sheet with your Student ID Label attached (your Coordinator will give you this label)
- Electronic copy of your scientific report in either A4 'scientific article' style, or maximum size A2 'scientific poster' style
  - Entries will be accepted as PDF, Word documents or an image (.jpg or .png) only. We cannot guarantee judges will be able to access any other file types.
- Completed risk assessment form
- Electronic copy of your journal/log book

For full details on electronic submission, see www.oliphantscienceawards.com.au/participant_information/online_project_submission.

Sponsor Prizes

Platinum Sponsor Prizes

Department for Education South Australian Young Scientist Awards (R–6, 7–12)

Rowe Scientific New/Country Secondary School Prize

Awarded to the best student entry from a new/country school.

Gold Sponsor Prizes

Defence Science and Technology Secondary School Prizes (7–12)

Category Naming Rights Sponsor Prizes

Australian Institute of Energy Prizes (R–6, 7–12)

For the best entry at each year level with a sustainable generation and uses of energy theme.

University of South Australia – Sustainable Future Prizes (R-6, 7-12)

For the most inspiring entry highlighting the value of Information Technology, Engineering and Environmental Science to a Sustainable Future.

Silver Sponsor Prizes

Catholic Education SA Primary Schools Prize

Awarded to two primary schools that have the highest number of winning entries.

CSIRO Crest Prizes

For the best CREST and non-CREST School for participation and achievement in the Scientific Inquiry and Models & Inventions categories.

Flinders Environment Prize (7–12)

For the most inspiring entry covering an environmental issue in South Australia.

Flinders University Science Prize (7–12)

For the most outstanding research-based entry in science.

University of Adelaide Faculty of Sciences Prize (7–12)

For the most outstanding entry highlighting the benefits of scientific research to the community.

University of Adelaide Faculty of Engineering, Computer & Mathematical Sciences Prize (7–12)

For the most outstanding entry with an engineering, mathematical or computing theme.

Bronze Sponsor Prizes

Australian Society of Biochemistry & Molecular Biology Prize (R–12)

For the best student project with a biochemistry or molecular biology theme.

Australian Institute of Physics Prize (R–12)

For the best student project with a physics theme.

RACI - Chemical Education Group Prize (R–12)

For the most outstanding entry with a chemistry theme.

All Sponsor Prizes listed are correct at time of publishing but may be subject to change.

**Government
of South Australia**

Department for Education

Department for Education

proudly sponsor

South Australian Young Scientist Awards R–6 and 7–12

|	
1st prize	$500 cash
2nd prize	$250 cash
3rd prize	$150 cash

The Department for Education has been a sponsor of the SASTA Oliphant Science Awards since their inception in 1981, and is delighted to continue this arrangement as a Platinum Sponsor in 2020.

The SASTA Oliphant Science Awards exemplify the inquiry based approach to the teaching and learning of Science that is so important in engaging our students, and in supporting the development of their scientific understanding and processes that leads to improved scientific literacy.

For many young people their experience of science at school sets a pattern that lasts throughout life. The Department for Education is strongly committed to each and every student having the opportunity to experience the joy of scientific discovery, and to apply their natural curiosity to their world. All students are supported in developing the scientific knowledge, understandings and skills to make informed decisions about local, national, global issues, and to participate, if they so wish, in science related careers.

The Department for Education has a major role in the South Australian Government Science, Technology, Engineering and Mathematics (STEM) Skills strategy. Through our own Department for Education STEM Strategy we are ensuring all educators connect with the latest in teaching practices and the wide range of programs available to support their work.

The Department for Education acknowledges the role that SASTA, through its many volunteers, plays in engaging so many students in Science inquiry and in the promotion of scientific literacy, and is proud to sponsor and support this important project.
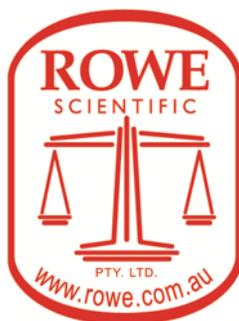
Rowe Scientific

proudly sponsor

Country Secondary School Prize

New Secondary School Prize

Awarded to the best student entry from a country secondary school, and to the best student entry from a secondary school that has not participated in the SASTA Oliphant Science Awards in the past five years.

Rowe Scientific also supports the category prizes and Encouragement Awards for Years 7–12.

Rowe Scientific in keen to promote greater interest by students in all aspects of science, with a view to that interest influencing students' future career choices.

New and Country Schools Incentive

Schools who have not participated in the SASTA Oliphant Science Awards in the past five years and all country schools can apply for support with registration fees.

Up to $200 will be provided to selected schools to assist with the costs of registration fees and/or transporting entries to Adelaide.

All applications will be assessed on their own merits and the amount of support provided may be dependant on the total number of applications received.

Both primary and secondary schools are eligible to apply for support by completing the online form and providing contact information for the school and coordinator, and explaining why support is being sought.

Go to www.oliphantscienceawards.com.au

Australian Government

Department of Defence
Science and Technology

Defence Science and Technology

proudly sponsor

DST Secondary School Prize

A Defence Science and Technology (DST) School Prize of $500 will be awarded to the school with the highest aggregate score in each of the following school categories; Junior Secondary (7–8, 9–10) and Senior Secondary (11–12). The second school in each category will receive a DST School Prize of $250.

Selection criteria:
For each prize-winner in every category and year level the following points will be accumulated.

1st prize	4 points
2nd prize	3 points
3rd prize	2 points
Encouragement Award	1 point

The DST offers a rewarding career with the chance to work with many of Australia's leading scientists and engineers, access to some of the most advanced technology and facilities currently available, links with other national and international organisations, excellent career development opportunities, and travel.

In undertaking its research, the impact of DST, particularly on the electronics industry in South Australia, has been huge. As the largest scientific facility in Australia, DST Edinburgh is a major employer and innovator of electronics in Australia.

DST Edinburgh, north of Adelaide, can offer careers in computer science, information technology, electrical or electronic engineering, mathematics, behavioural or cognitive science and psychology.

DST is part of the Department of Defence. Its role is to ensure the expert, impartial and innovative application of science and technology to the defence of Australia and its national interests.

BHP Foundation
Science & Engineering Awards

The BHP Billiton Foundation Science and Engineering Awards are Australia's most prestigious school science and engineering awards. The finalists are the best and brightest student researchers and innovators in the country. The BHP Billiton Foundation Science and Engineering Awards also recognise teachers who engage students in the study of open-ended investigations and work consistently within their school community and wider professional arenas to make an outstanding contribution to science education in Australia.

The BHP Billiton Foundation Science and Engineering Awards are a partnership between the BHP Billiton Foundation, CSIRO, the Australian Science Teachers Association, SASTA and all other state and territory Science Teacher Associations across Australia. Entry to the BHP Billiton Foundation Science and Engineering Awards is via nomination through the SASTA Oliphant Science Awards.

Student Prizes

The top twenty-six finalists will be invited to an all-expenses paid, four-day educational science camp and the prestigious BHP Billiton Foundation Science and Engineering Awards ceremony to be held in Melbourne in February each year. Part of this camp includes the final judging round for the major prizes.

The top three projects from the Investigations category and top three projects from the Engineering category receive the following prizes:

First prize A$4000

Second Prize A$3000

Third Prize A$1500

One finalist will be awarded the Innovator to Market prize. The Innovator to Market prize winner will receive an all-expenses paid experience including attendance at one of CSIRO's ON programs and visit to CSIRO labs or centres. The top twenty finalists will receive a A$250 prize. Up to 100 semi-finalist entries will win A$100. The finalist winners for the BHP Billiton Foundation Science and Engineering Awards will have the chance to participate in the Intel International Science and Engineering Fair (Intel ISEF) in the United State of America in May. Up to eight winning primary entries will win A$250. Up to 90 primary students will receive encouragement award prize packs.

Student Entry

Entry into the BHP Billiton Foundation Science and Engineering Awards is via nomination only, through the SASTA Oliphant Science Awards.

To be considered for nomination, please submit your project/s into the relevant categories:

- experiment, research or investigation category of the SASTA Oliphant Science Awards (Scientific Inquiry)
- the invention or engineering category of the SASTA Oliphant Science Awards (Models & Inventions)

For nominated entries into the BHP Billiton Foundation Science and Engineering Awards, please ensure the following requirements are met, to be eligible for selection as a finalist:

- projects must include designing and carrying out an experimental investigation or engineering project
- the project has been nominated for entry through the SASTA Oliphant Science Awards
- the PDF entry form and online entry form are both completed (contact your local STA for these forms)
- a written project report is uploaded with the online entry form (PDF preferred)
- project report includes acknowledgement of prior research/development and assistance from experts/ industry professionals
- group projects include a maximum of three students
- students must be an Australia Citizen or permanent resident
- and for engineering entries only, a short video of the product in operation is uploaded with the online entry form (5 mins max)

Important Registration Information for School Coordinators

- Photocopy and distribute the relevant information to students; Registration Form, Student Information, Conditions of Entry, Category Information & Rules and Risk Assessment Forms if submitting Scientific Inquiries or Models & Inventions.

- Set a date for Registration Forms to be completed and returned (prior to Thursday 4 June).

- Completed Registration Forms can be submitted the following ways:

  ◦ Online; Registration Forms can be submitted online using your email and unique login password in your members section at www.oliphantscienceawards.com.au For further information or login details please contact SASTA on 8354 0006 prior to the closing date, Thursday 4 June. Please ensure that you have registered as a coordinator prior to trying to enter your registrations.

  ◦ Forms can be scanned and emailed to office@sasta.asn.au. This method will be subject to an additional administration fee relative to the number of registrations received. All forms must be completed in full and received by SASTA before the close of business Thursday 4 June.

- All Registration Forms must include the School Name and School ID#. Your School ID# can be accessed using the school's login for the SASTA Oliphant Science Awards website or by contacting SASTA.

- **Please note:** by submitting each student entry, the student(s) agree that a copy of their entry can be displayed at Open Day, on the SASTA websites or social media, or used in SASTA publications.

- Schools will be invoiced based on the number of entries that have been registered by 5pm on Thursday 4 June using the fee schedule listed on Page 5. There will be no credit or refund should any of your students fail to submit their projects. However, should one (or more) student / project fail to enter, another student / project can be entered in its place.

- Identification labels must be securely attached to each entry (see Category Information for label positions). Ensure all parts are labelled clearly and include the Registration ID # (found on the Identification Label) Please contact SASTA before making any amendments to the label.

- Make note of the Key Dates for Registration, Delivery and Collection of entries.

- Schools who are registering more than 10 entries are requested to allocate one or more judges for one or multiple categories.

OSA PROJECT REGISTRATION FORM

COMPLETE ONE FORM FOR EACH ENTRY. PLEASE ENSURE ALL FIELDS ARE COMPLETED.

School: _____ School ID #: _____

First name: _____ Surname: _____ ☐ M ☐ F ☐ X

Is this a Group Entry? ☐ Yes ☐ No (If yes, add names below; maximum of 3 students per group)

First name: _____ Surname: _____ ☐ M ☐ F ☐ X

First name: _____ Surname: _____ ☐ M ☐ F ☐ X

Title of Project: _____

School OSA Coordinator's Name: _____

Year Level: ☐ R–2 ☐ 3–4 ☐ 5–6 ☐ 7–8 ☐ 9–10 ☐ 11–12

Category: ☐ Computer Programming, Apps & Robotics ☐ Crystal Investigation ☐ Games
☐ Models & Inventions ☐ Multimedia ☐ Photography
☐ Posters ☐ Scientific Inquiry ☐ Science Writing

☐ Tick (✓) if you intend seeking a **patent** and do not want your entry publicly displayed.

☐ Tick (✓) if your Models & Inventions entry should not be touched by the public during the Open Day.

Terms & Conditions

1. Information on how to enter, conditions of entry, category information and rules form part of these Terms and Conditions. Participation in this competition is deemed acceptance of these Terms and Conditions, as listed herein or at www.oliphantscienceawards.com.au.
2. SASTA reserves the right, at any time, to verify the validity of entries and entrants in its sole discretion and to disqualify any entrant who submits an entry that is not in accordance with these Terms and Conditions or who tampers with the entry process.
3. Entry is open only to South Australian School children in years Reception to 12.
4. By entering this competition, eligible entrants and their teachers acknowledge that they have received parental/guardian consent for the eligible entrant's name, school and photograph to be displayed on the SASTA Website and published in other nominated forms of print and media.
5. SASTA's decision is final and no correspondence will be entered into.
6. Prizes, or any unused portion of a prize, are not transferable or exchangeable and cannot be taken as cash.
7. On issuing prizes SASTA and associated sponsors take no responsibility for prizes damaged, delayed, lost or stolen.
8. All entries unless otherwise stated must be collected as advised. Unclaimed entries will be destroyed following final advice of collection dates.
9. Except for any liability that cannot be excluded by law, SASTA (including its officers, employees and volunteers) excludes all liability (including negligence), for any personal injury; or any loss or damage (including loss of opportunity); whether direct, indirect, special or consequential, arising in any way out of the Competition, including, but not limited to, where arising out of the following: (a) any technical difficulties or equipment malfunction (whether or not under SASTA's control); (b) any theft, unauthorised access or third party interference; (c) any entry or prize claim that is late, lost, altered, damaged or misdirected (whether or not after their receipt by SASTA) due to any reason beyond the reasonable control of SASTA; (d) any variation in prize value to that stated in these Terms and Conditions; (e) any tax liability incurred by a winner or entrant; or (f) use of a prize including attendance at events included as part of the prize.
10. By submitting this entry you agree that your entry or a copy of your entry can be used and/or displayed by SASTA to promote the Oliphant Science Awards at events, on SASTA websites and social media, and used in part of full within the SASTA Journal or Newsletter publications.
11. SASTA is the South Australian Science Teachers Association incorporating the SASTA Oliphant Science Awards Convenors, Committee and Volunteers.

☐ I/We certify that I/we have read and agree to the Terms & Conditions outlined for entry into the SASTA Oliphant Science Awards Competition. I/we also certify that the completed entry is my/our own work except where appropriate acknowledgment is made in a note attached to the entry.

Signed (Student 1) _____ Signed (Parent/Guardian 1) _____

Signed (Student 2) _____ Signed (Parent/Guardian 2) _____

Signed (Student 3) _____ Signed (Parent/Guardian 3) _____

OSA RISK ASSESSMENT FORM
for all entries in (✓) ☐ Models & Inventions and ☐ Scientific Inquiry
This must be included with your report, log book or entry. One form per entry.

NAME: _____ ID:_____

SCHOOL: _____

Activity: Give a brief outline of what you are planning to do.

_____

_____

_____

_____

_____

Are there possible risks? Consider the following:

- Chemical risks: Are you using chemicals? If so, check with your teacher that any chemicals to be used are on the approved list for schools. Check the safety requirements for their use, such as eye protection and eyewash facilities, availability of running water, use of gloves, a well-ventilated area or fume cupboard.
- Thermal risks: Are you heating things? Could you be burnt?
- Biological risks: Are you working with micro-organisms such as mould and bacteria?
- Sharps risks: Are you cutting things, and is there a risk of injury from sharp objects?
- Electrical risks: Are you using mains (240 volt) electricity? How will you make sure that this is safe? Could you use a battery instead?
- Radiation risks: Does your entry use potentially harmful radiation such as UV or lasers?
- Other hazards.

Also, if you are using other people as subjects in an investigation you must get them to sign a note consenting to be part of your experiment.

Risks	How I will control/manage the risk

(Attach another sheet if needed.)

Risk Assessment indicates that this activity can be safely carried out

RISK ASSESSMENT COMPLETED BY (student name(s)): _____

_____

SIGNATURE(S): _____

☐ By ticking this box, I/we state that my/our project adheres to the listed criteria for this Category.

TEACHER'S NAME: _____

SIGNATURE: _____ DATE: _____

REGISTER AS A JUDGE

You can register online at www.oliphantscienceawards.com.au or complete this form and send to:
SASTA, 249 Henley Beach Road, Torrensville SA 5031
or fax to 08 8354 0008. Registrations close Sunday 7 June.

- ✓ Teachers work as part of a judging team.
- ✓ All teachers who assist with judging will be issued with a professional development certificate that indicates outcomes achieved and time spent.
- ✓ Judging provides an opportunity to network with others interested in science and provides inspiration and ideas for your programming.

- Multimedia, Scientific Inquiry and Science Writing will be sent to judges electronically for judging between 30 July and 13 August.
- Computer Programming, Apps & Robotics will be judged on Saturday 8 August from 8:30 am – 2:00 pm at a central venue (TBA).
- Final judging will be held from Saturday 22 August – details will be confirmed closer to this date.

Judge's details:

Name: _____

Mobile: _____ Email: _____

School: _____

Year level(s) teaching: _____

Address: _____

_____ Postcode: _____

Signature: _____ Date: _____

* Schools with 10 or more entries are expected to provide judges.

Please tick to indicate your judging preferences below.

☐ Computer Programming, Apps & Robotics	☐ R–2	☐ 3–4	☐ 5–6	☐ 7–8	☐ 9–10	☐ 11–12
☐ Crystal Investigation	☐ R–2	☐ 3–4	☐ 5–6	☐ 7–8	☐ 9–10	☐ 11–12
☐ Games	☐ R–2	☐ 3–4	☐ 5–6	☐ 7–8	☐ 9–10	☐ 11–12
☐ Models & Inventions	☐ R–2	☐ 3–4	☐ 5–6	☐ 7–8	☐ 9–10	☐ 11–12
☐ Multimedia	☐ R–2	☐ 3–4	☐ 5–6	☐ 7–8	☐ 9–10	☐ 11–12
☐ Photography	☐ R–2	☐ 3–4	☐ 5–6	☐ 7–8	☐ 9–10	☐ 11–12
☐ Posters	☐ R–2	☐ 3–4	☐ 5–6	☐ 7–8	☐ 9–10	☐ 11–12
☐ Scientific Inquiry	☐ R–2	☐ 3–4	☐ 5–6	☐ 7–8	☐ 9–10	☐ 11–12
☐ Science Writing	☐ R–2	☐ 3–4	☐ 5–6	☐ 7–8	☐ 9–10	☐ 11–12