SASTA Newsletter

August 2022

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Upcoming Events

Improving Science Literacy

Friday 2 September & Thursday 22 September 2022

See website for more details.

Design & Deconstruct Workshop

Friday 23 September 2022

See page 5 for more details.

STEM Conference - Call for Workshops open

Friday 2 December 2022

See page 4 for more details.

Oliphant Science Awards - Presentation Ceremony

Friday 21 October 2022

Invitations will be sent to prize winners via their school coordinators.

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Patron of the South Australian Science Teachers Association

Professor Caroline McMillen, Chief Scientist for SA

Newsletter copy deadlines 2022

(Advertising deadlines one week earlier)

Edition	Deadline
November	14 October

Advertising

Advertising rates & booking form available online at www.sasta.asn.au

Views expressed in this newsletter are not necessarily those of SASTA or the editors. Whilst every effort is made to be factual, no liability is accepted for the accuracy of information presented.

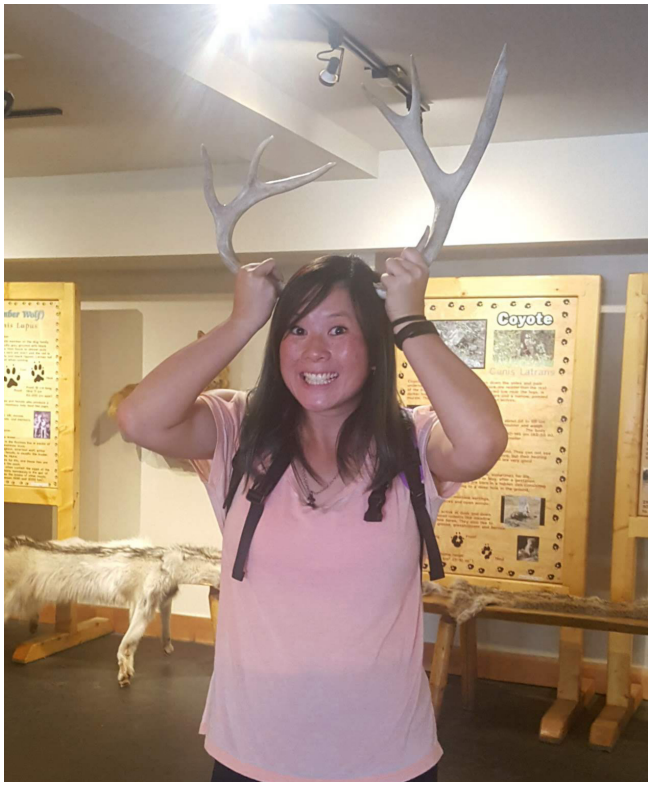
Adhering to the following guidelines would be appreciated:

- Save as a Microsoft Word document
- Tables to be set up as text with one tab between columns and a return at the end of each row.
- For spelling please use the Macquarie Dictionary and where several alternatives are listed, use the first. The exception to this is when you are citing, referencing or quoting directly from a source which uses alternative spelling.
- Photographs should be high quality untouched digital photographs.

From the President

Hello, science enthusiasts! Welcome to the August 2022 edition of the SASTA Newsletter. A question... How much does a rainbow weigh?

I'd like to introduce myself, as your newly elected SASTA President. My name is Dina Phan, and I have been a member of SASTA since 2016, though I've been teaching Science since 2012. Some things to note: I like green, I don't discriminate against cHocolate, and I'm excellent at horizontal running (let me know if you get that reference).



While I am currently teaching in a secondary setting, I also have 8 years' experience in a primary school. I love seeing and hearing students' reactions to science learning, as they "connect the dots", and explore the world around them. It's the best learning area, but I might be biased here, HeHe.

A few highlights of my science teaching career so far include STEM X, and CONASTA 68. But it's really the students' memories of me and my science lessons that I Remember best. That's how I know I'm doing something right.

Over the years, I have shared my learning at a range of SASTA conferences, and been able to meet so many amazing science educators. I would like to acknowledge the brilliant brains trust we have here in South Australia; I know that the future of science education is In safe hands. We've proven how adaptable and hard-working we are through the last few years, and while it may Be stressful and overwhelming at times, the outcome is that we are inspiring a new generation of scientists, and igniting the flame of curiosity and passion for science.

The SASTA Annual Conference held in July was a great success, as was the Oliphant Science Awards hosted at Science Alive! for the first time. Thank yOu to the SASTA Office, and the many volunteers, and workshop presenters who help to make these events a positive experience for all.

Please remember to check the SASTA website for details regarding upcoming events and professional development opportunities. Some "save the dAtes" include the STEM Conference on 2 December.

Lastly, thank you for the opportunity, and your trUst in me to represent the SASTA, and wider science education community. I look forward to continuing to connect with everyone, and wish you all the best for the remainder of the yeAr.

Stay well,

Dina Phan

P.S. Did you find all the elements?

And the answer to my question: pretty light!

Modelling STEM

STEM Conference
2 December 2022

MASA
Mathematical Association of South Australia

SASTA
South Australian Science Teachers Association

Call for Workshops is now open

The 2022 STEM Conference will bring together science, mathematics, design and technologies and digital technologies teachers, classroom teachers, leaders in education and businesses who are interested in sharing and exploring teaching methods, tools, resources, and related activities for implementing Maths, Science & STEM education into our schools and communities.

Some topics you may wish to consider around the theme 'Modelling STEM' when preparing your workshop session include:

- What does modelling mean?
- How do you use modelling in science?
- VR modelling for processes that are hard to comprehend or replicate
- Modelling for conceptual understanding
- Role plays-students modelling concepts or processes
- Science by Doing
- Where are models useful and where do they risk introducing misconceptions?
- Creating models for assessment, keeping science at the core of the learning process
- Using APPS and tech for modeling and data access
- Why do scientists use models?
- What are the limitations of models?
- Teacher attitude - modelling STEM inquiry
- Mathematical models in science
- Finding misconceptions through student modelling

Full details can be found on the SASTA website:
www.sasta.asn.au

Professional Learning for Term 3 2022

Design & Deconstruct Workshop

Friday 23 September 2022
9.00 am – 3.00 pm
Education Development Centre

Presented by Jason Greenslade, Curriculum Leader Science, Westminster School

This workshop is aimed at people who want to further their skills in setting, assessment and providing feedback on the D&D + practical report task. It also will cover the writing and marking of practical questions for tests and exams as well. There will be time to examine your own student work and participate in some cross-moderation and marking of work/drafts.

Program:

Morning Sessions: The D&D Reporting Task

- Performance Standards
- Introducing + structuring the task (inc. ideas for D&Ds + tasks sheets + resources to help)
- Providing guidance to students (drafting)
- Marking and moderation

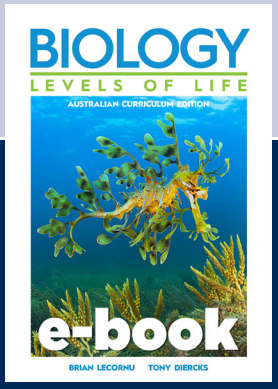
Afternoon Session: The task continued + experimental questions in tests/exams

- Marking and moderation (cont.)
- Types of experimental questions
- Guiding students to answer these questions
- Writing experimental questions – how to structure them

BIOLOGY: LEVELS OF LIFE

Brian LeCornu and Tony Diercks

$29.95



NEW for 2022

The Biology: Levels of Life Textbook is now available as an e-book!

For full details visit the SASTA website.

Biology: Levels of Life - Australian Curriculum Edition Textbook ($63.95)

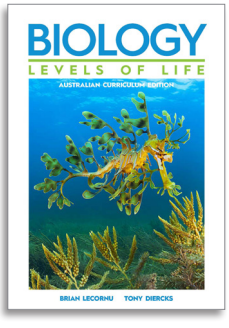
This textbook provides detailed coverage of all the content (Science Understanding) of the SACE Stage 2 Biology subject. The new content is relevant, up-to-date and addresses Science as a Human Endeavour, with many examples throughout. The textbook is divided into four topics, with each topic presented in chapters designed to make the material easy to follow, with study questions at the end of each chapter. **A complimentary 15 month subscription to the e-book is available with every hard copy purchased.**

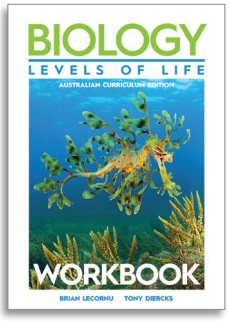
Biology: Levels of Life - Australian Curriculum Edition Workbook ($24.40)

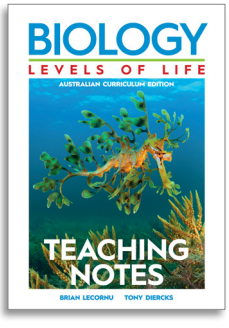
Written specifically to complement the textbook, this workbook covers all Science Understandings of the Biology subject outline. It can be used in conjunction with the textbook or on its own as an aid for understanding and revision. By completing answers to the workbook questions, students will develop their knowledge and understanding of biological principles and concepts.

Biology: Levels of Life - Teaching Notes ($120.00)

Teachers will find the Teaching Notes invaluable in ensuring that all Science Understandings are covered for each of the four topics. There are teaching tips throughout as well as additional information. Answers to questions in the Workbook will assist teachers in explaining concepts to students.







2022 Oliphant Science Awards

Student registrations for the 2022 Oliphant Science Awards (OSA) closed on 20 May, with electronic submissions for Multimedia, Science Writing, Scientific Inquiry and reports for Programming, Apps & Robotics due in June

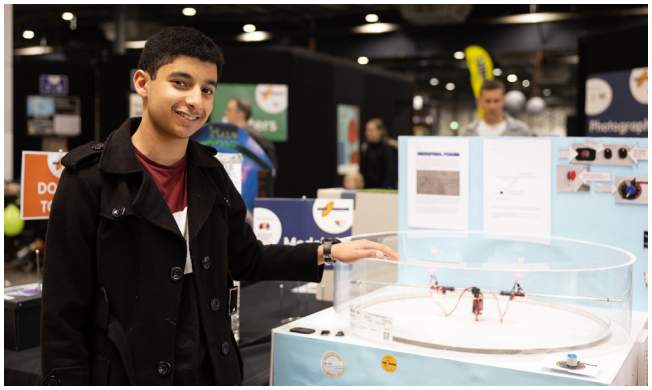
- 31 volunteers judged the Multimedia, Science Writing and Scientific Inquiry entries (total 404 entries)

The Programming, Apps & Robotics Judging Day was held on Saturday 30 July at Pulteney. Students made appointments to meet with the judges to demonstrate their projects.

- 54 students made appointments to see 12 judges across the day

Shelby Paulson, Largs Bay School
Programming, Apps & Robotics 5-6

Connor Wallace, Scotch College
Posters 5-6



Steven Girgis, Prescott College Southern
Models & Inventions, 9-10

SASTA partnered with Science Alive! to host the Oliphant Science Awards onsite competition for the first time this year. It was a very busy week for SASTA staff & OSA volunteers including:

- **Tuesday - Project delivery day**
  - 1,233 onsite projects delivered
- **Wednesday - Onsite judging**
  - 55 volunteers onsite to judge Crystal Investigation, Games, Models & Inventions, Photography and Poster entries
- **Thursday - Sponsor judging, photography for Virtual Open Day & final set up**
  - 40 sponsor prizes were awarded
  - Photographs taken of 302 winning entries
- **Friday - STEM Day Out at Science Alive!**
  - 3,246 teachers and students attended STEM Day Out
- **Saturday & Sunday - Science Alive!**
  - The Science Alive! event was SOLD OUT with 7,679 people through on Saturday and 8,790 on Sunday

At Open Day all Models & Inventions entries plus the winning entries for the other 8 categories were on display. We had iPads and TVs set up to view the electronic entries.

Martin Westwell, Chief Executive,
Department for Education and Monica Oliphant AO,
Oliphant Science Awards Patron

Hosting the Open Day at Science Alive! was a fantastic opportunity to showcase students' work and increase the awareness of the competition. We were also able to show some VIPs through the display including Honourable Frances Adamson AC, Governor of South Australia, Professor Caroline McMillen, Chief Scientist of South Australia & SASTA Patron, Martin Westwell, Chief Executive, Department for Education and Monica Oliphant, Oliphant Science Awards Patron.

Students could find out if they were prize winners at Open Day, however they won't find out their place until the Presentation Ceremony on Friday 21 October. Winning students will receive an invitation to the Presentation Ceremony via their coordinator in the coming weeks.

The Virtual Open Day on the OSA website was released from 15 August. It took approximately 37.5 hours (5 days) to collate the electronic entries, organise corresponding photos and upload them all to the website.

This is such a great opportunity to celebrate the enormous effort students put into their projects and provide inspiration for future entries! The past 3 years of winning OSA entries can now be viewed on the website under the 'About' tab.

Gerald Little & Peter Turnbull, OSA Convenors, Monica Oliphant AO, Phoebe Wood & Kit Washington, OSA Ambassadors

Thank you to our generous sponsors, volunteers, school coordinators, judges and committee members without whom the Oliphant Science Awards would not be possible!

SASTA OLIPHANT SCIENCE AWARDS

SOUTH AUSTRALIAN SCIENCE TEACHERS ASSOCIATION

Virtual Open Day now live!

oliphantscienceawards.com.au

Shipbuilding, a STEM career students can sail towards

Did you know thousands of people will be required in STEM-based roles to design, build and maintain Australia's current and future naval fleet — from engineers and trades people to program and project managers and supply chain experts.

The pipeline of work ahead provides a once-in-a-generation opportunity for students to start now and build strong foundations for a dynamic and exciting career in a cutting-edge industry.

The Naval Shipbuilding College (NSC), an Australian Government initiative, can help students start their career in shipbuilding with free career advice — from choosing high school subjects to reviewing university courses or apprenticeship pathways.

The NSC can help you and your students:

- better understand the opportunities available
- recognise how students' skills and interests can translate into long, successful careers
- learn about the pathways students can take to begin their careers.

For a free chat, students can register at: **navalshipbuildingcollege.com.au/career-education**

Quick facts

- Thousands of STEM-based jobs will be supported in the naval shipbuilding industry.
- Projects are set to run for the next 30 years and beyond, offering long-term careers.
- The complexity and sophistication of the next generation of our nation's naval vessels requires the most advanced processes and cutting-edge engineering and technology in the world.

Resources for students and teachers

Shipbuilding Taster Course: Students can learn more about Australia's naval shipbuilding industry by undertaking the NSC's Shipbuilding Taster Course on the NSC's website. The course takes about 30 minutes and provides students with an overview of the work happening across Australia, career opportunities, common shipbuilding terminology and production processes. Visit **navalshipbuildingcollege.com.au/taster-course/**

Explore Careers: The NSC has partnered with Explore Careers, Australia's number 1 careers & employment program, designed to bring school students and their future employers together. On the NSC's Explore Careers page (**https://explorecareers.com.au/employers/naval-shipbuilding-college/**), you can find:

- testimonials & case studies
- videos
- events
- resources.

Star of the Sea & Marine Discovery Centre

Star of the Sea school is home to 500 plus students in the beachside suburb of Henley Beach, Adelaide. Being located on Sea View Road, we are immensely fortunate to have the beach on our front doorstep. We are also fortunate to have the Marine Discover Centre (MDC) as part of our school. Both the beach and the MDC are incorporated into our school days in a number of ways.

We love the beach! In terms 1 and 4 when the weather is nice, students have the opportunity to head to the beach during lunchtime for play in the sand. Some popular beach games activities are our sandcastle competitions, beach soccer and sand art. One morning each week, before school, we also offer beach running. Students meet with a teacher at the beach and have the opportunity to start their day with a jetty-to-jetty run. Beach running also serves as excellent practice for our cross-country runners! Our students also use the beach during lessons. For example, Year 4 students looked at how erosion has an impact on our local part of the beach. The beach is utilised for walks, creative play and building tasks. Last year we even had a book week parade on the beach!

The MDC has been part of Star of the Sea School for many years. Currently, students get to attend the MDC for lessons once a week. Here they learn valuable information about the animals that they care for and the environment we live in. A lot of the learning is focused on our area and beach. When students reach Year 6, some students are even given the opportunity to help feed some of the MDC animals and learn how to care for them. As a school, we are so thankful for these amazing resources that we are able to use each day!

Jess Stewart, Science Teacher
Star of the Sea School

The Marine Discovery Centre (MDC), located in Henley Beach, is the only coastal and marine educational facility for school-aged children and the broader community in South Australia.

The Marine Discovery Centre features interactive learning stations covering topics such as climate change, sustainable fishing, responsible water use, Aboriginal culture and the importance of preserving our marine environment. The aquariums feature local marine wildlife species and the team provide engaging beachside marine trails to complement the Centre's indoor educational activities.

The MDC hosts more than 7000 students from more than 100 schools each year, in addition to vacation care programs during the school holidays and public events on the weekend. Over the past 25 years, the Marine Discovery Centre has been a significant local institution, providing an interesting and innovative approach to education about marine life and conservation to school children - an education program that is not offered anywhere else in South Australia.

Our team at the Marine Discovery Centre hope to connect you and your students with the marine world through our interactive excursions and classroom activities. Learning experiences at the Marine Discovery Centre are facilitated by qualified Marine Scientists and an Aboriginal Cultural Educator.

Programs relate directly to themes in the Australian Curriculum in areas such as Science, Aboriginal and Torres Strait Islander Histories and Cultures, Geography and Sustainability. These educational resources are also available online: **https://www.marinediscoverycentre.com.au/education/teachers-educators**

Carmen Bishop
Marine Discovery Centre

Visit the SASTA blog for the full article: www.sasta.asn.au/about_us/sasta_blog

July | Sustainability

Why you should study Stage 1 Earth & Environmental Science

Our planet is the place we call home. It provides us with everything we could ever need and has been doing so since the beginning of life on Earth. We also know the Earth is in trouble. We are only now realising the cost to the Earth when we fulfill our every wish and desire. However, it is not too late to take action and save our home.

Sustainability thinks not just about what we need now to survive but what future generations will need to survive. Like everything, sustainability must be learnt and practiced in order to be successful. Stage 1 Earth and Environmental Science provides students with the knowledge and skills required to build a sustainable future for themselves. Geoscience Pathways Project understands that this opportunity should be offered to all students in all schools and are willing to provide extensive free resources and support to make this happen.

To learn how to offer this subject at your school, please contact Kelly Sharrad at **ksharrad@gmail.com**

Visit the SASTA blog to view more articles to use in your classroom
www.sasta.asn.au/about_us/sasta_blog

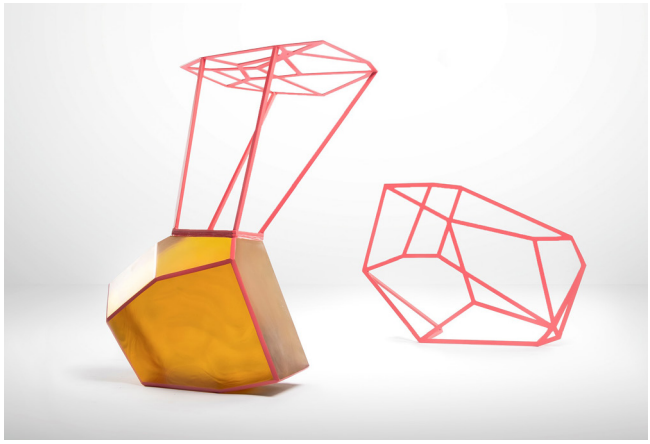
Interview with Madisyn Zabel

SASTA challenges the science behind the art form of glass making by asking Madisyn Zabel about her experiences.

Madisyn is a Canberra-based artist working with Glass and other mediums to create exciting pieces. We've asked Madisyn a few questions to help us get an idea about how Art meets Science in this year's National Science Week School Theme of Glass.

What experiences shaped your love of glass as an art medium?

Early in my practice, I was fascinated with illusion and perception. Glass has the incredible ability to appear two and three-dimensional through its refractive and reflective properties. During my undergraduate studies at ANU, I began creating geometric works that created similar illusionistic effects to Louis Albert Necker's bistable illusion, the Necker Cube. The Necker Cube challenges the perception of the viewer. The illusion creates a dual focus point, meaning it is impossible to tell which face of the cube is in front and which is behind.



I am still inspired by this illusion and continue to make my own bistable illusions in my current practice through a variety of glass techniques and mixed media.

I love working with glass because of its versatile and transparent nature, and I find that these qualities are great tools for me to explore themes of illusion and perception.

How often has your creation 'failed' (I'm trying to demonstrate the need for resilience in science and experimenting!)

I have had many failures in glass, with many pieces breaking in the process, especially during coldworking. This can be as small a setback as a chip or far worse like a whole work being dropped. Small chips can be fixed by grinding a new facet into the piece or grinding out the chips. Sometimes, depending on how big the original work was I can repurpose the broken pieces for other works. If a piece is unsalvageable, I try to learn from the mistake in some way, and try to adapt my practice to avoid the same error again in any future work.

As an artist, do you appreciate the science of glass? If so, to what extent (ie you need to know specific melting temperatures, colour addititves, ratios...it involves maths and physics...)

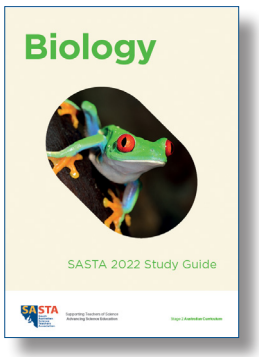
Without knowing the science behind glass making, it can be difficult to create any artwork. With glass many accidents can occur, which can be dangerous and costly. As glass is quite expensive, it is essential to understand the process to get the desired results without wasting too many resources (material, power and my own energy). Of course, sometimes, I want to experiment and try something new. To do this, I create small tests using my knowledge of the material and tweaking the processes slightly. I ensure to document each step thoroughly in case I want to explore the process further in the future.

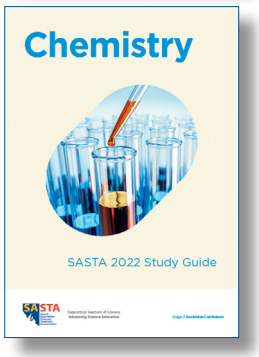
What science do you regularly use in your glass creating?

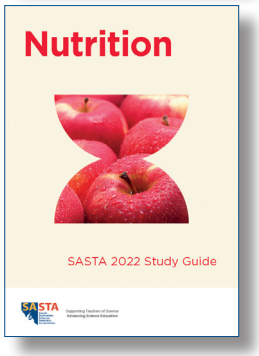
When creating cast glass work, I use compatible glasses that are produced by the same company and follow tried and tested heating and cooling schedules. It is never a good idea to try mixing glasses made in different factories as they usually have different coefficient of expansions (COE) meaning that their melting and cooling points and are incompatible with one another. When melting together incompatible glasses, it can cause stress in a piece. Stress in glass can result in cracks and breakages that don't show up immediately. They and can occur years down the track or when you begin coldworking the piece which can be highly dangerous.

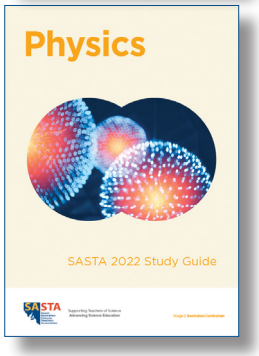
Visit the SASTA blog for the full article
www.sasta.asn.au/about_us/sasta_blog

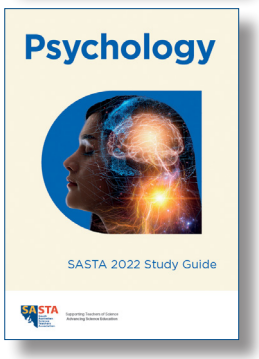
Preparing Students for Stage 2 Exams











2022 SASTA Study Guides

SASTA Study Guides are the complete resource for students preparing for Year 12 SACE exams. These guides include questions with worked solutions covering each topic in the subject outline and address all sections of the exam.

All guides include suggested solutions to the 2021 exams. The full range of new inclusions for each 2022 guide can be found on the SASTA website.

All SASTA Study Guides are $29 each (plus postage if applicable) and are currently available for schools and individuals to purchase.

Please order online at sasta.asn.au/resources/online_catalogue/study_guides_stage_2

Stage 2 Trial Exams

The SASTA SACE Stage 2 Trial Exams have been developed by leading teachers to support SACE Stage 2 Teachers. This vital resource will familiarise teachers and students with the SACE Stage 2 exam format. Teachers will be able to use the resource for students, a stand alone assessment tool or to develop exam preparation skills.

All exams are now available for purchase. $132.00 per exam

A fillable PDF version of the trial exam has been produced for Biology, Nutrition & Psychology.

Exams can only be ordered by emailing office@sasta.asn.au

Stage 2 Topic Tests

New Topic Tests are available for 2022 that may be used as formative or summative Skills and Applications Tasks (SATs) in Stage 2 Biology, Chemistry and Physics.

These tests are of the highest quality and feature a comprehensive range of original questions including science understanding, science inquiry skills and science as a human endeavour.

There are 4 tests available for each subject. Prices start from $100 for individual tests and bundles are available with SASTA Stage 2 Trial Exams.

For the full list of topics available, full price guide and purchase details visit sasta.asn.au/resources/online_catalogue/stage-2-topic-tests

Exam Prep Seminars

These seminars help students to get maximum benefit from their study time. Attendees will:

- meet the Study Guide editorial teams
- discuss exam techniques and receive hints for answering questions
- discuss the Chief Examiner's comments for last year's exam paper
- discuss the extended response requirements.

Attendees should bring their Study Guides with them.

Biology

Saturday 27 August 2022
2.30pm - 5.00pm
The University of Adelaide

Psychology

Saturday 3 September 2022
2.30pm - 5.00pm
The University of Adelaide

Chemistry

Saturday 10 September 2022
2.30pm - 5.00pm
The University of Adelaide

All seminars are $20 per attendee. Teachers accompanying a class group are free.

Register at www.sasta.asn.au/student_activities/exam_prep_seminar

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