Mathematical Association of South Australia

Government of South Australia
Department for Education

Junior Secondary Mathematics Enrichment Project (JSMEP)

Answering your questions

What is the Junior Secondary Mathematics Enrichment Project?

The focus of the JSMEP is on the processes of mathematical investigation. Open to all junior secondary students, the JSMEP aims to promote interest in mathematics and foster positive attitudes amongst students, teachers and parents. The JSMEP is an annual activity organised by the Student Activities Committee of the Mathematical Association of South Australia.

Looking at real life situations and finding that mathematics is everywhere helps capture the imagination of both teachers and students alike. The JSMEP allows students to investigate mathematics on an individual, group or class basis with the opportunity to have fun exploring mathematics.

All JSMEP entrants will receive a certificate. Prizes will be awarded to winners for each year level at the JSMEP Awards Ceremony held in October 2018. The entries that are outstanding at state level are forwarded for judging at the National Mathematics Talent Quest.

Why participate in the Junior Secondary Mathematics Enrichment Project?

The Mathematics Enrichment Project:

- Promotes an interest in and increases the awareness of mathematics.
- Facilitates the integration of learning outcomes across the mathematics and across other curriculum areas within the Australian Curriculum.
- Develops student research and communication skills.
- Encourages students to verify and justify the results of an investigation.
- Encourages students to use a range of problem solving strategies.
- Provides students with the opportunity to discover the practical applications of mathematics.
- Supports independent and collaborative learning.
- Creates avenues for extension for the more able students.
- Allows all students to achieve some measure of success.
- Caters for mixed ability teaching and a variety of learning styles and preferences.

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The Australian Curriculum problem-solving proficiency strand indicates that:

Students develop the ability to make choices, interpret, formulate, model and investigate problem situations, and communicate solutions effectively. Students formulate and solve problems when they use mathematics to represent unfamiliar or meaningful situations, when they design investigations and plan their approaches, when they apply their existing strategies to seek solutions, and when they verify that their answers are reasonable.

Students are typically required to research, design, explore, create, question, articulate, communicate, think, solve problems, collaborate and communicate whilst completing their JSMEP projects.

This project is designed to align with the DECD implementation of the Australian Curriculum and with the goals and challenges of the B-18 Numeracy and Literacy Strategy: ***Great Start - Strong Foundations - Powerful Learners,*** focusing on building the learning power of students, increasing their ability to use high-level thinking skills and apply what they have learned in new and increasingly complex situations.

Digital technology is frequently used as a tool during JSMEP for both mathematics and communication. Real-world applications, historical research and working models completed either individually, in groups or as a class are all part of the JSMEP process.

Projects and investigations cater for student diversity. They not only provide gifted and talented students with the opportunity to show their ability and to follow interests; they also allow students from diverse backgrounds (particularly those from different cultures and rural centres) to demonstrate how mathematics relates to their lives.

The JSMEP engages students in mathematics project work and investigations, as well as providing them with an opportunity to use ICT and communicate to their peers, and a state-wide and national audience. In addition, participating in the JSMEP rewards student's efforts.

JSMEP supports teachers with professional learning and resources on how to implement and manage investigative projects, and how to assess and report student achievement.

JSMEP investigations can become an ongoing resource for the students addressing the Australian Curriculum and support them in their Years 11 and 12 where mathematical investigations contribute significantly to their assessment.

Who can enter the JUNIOR SECONDARY MATHEMATICS ENRICHMENT PROJECT (JSMEP)?

All students from Years 8 to 10 can enter the Mathematics Enrichment Project.

Entries can be received from:

- Individuals
- Groups of no more than 5 students or;
- Classes.

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What can be entered?

All entries should be some form of a mathematical investigation and include an introduction (a brief description of what you did and what you achieved); mathematical aims; observations and results; discussion on relevance of results; conclusion; references, bibliography and acknowledgements.

- Entries may be in whatever format students desire.

However, fragile projects do risk being damaged in transit if they are sent interstate for the National Mathematics Talent Quest.

Possible formats include:

Written:	Should be typed or **neatly** handwritten, pages should be numbered and securely bound - **no loose sheets**. Entries can be in the form of: essays, play scripts, collection of poems or letters, booklet-text with illustrations, newspaper format or anything else that the students choose.
Posters:	Should convey an idea briefly and clearly, and generally *not* contain a great deal of written information. Should have visual impact. It may be necessary to provide a separate written component if it is felt that the poster does not contain enough information.
Film, Video or Audio Tape:	Entries must have appropriate documentation, be entertaining to listen to or watch, and reinforce a mathematical concept or principle.
Photographic Essay:	A collection of photographs which tell a story or display a mathematical idea. Each entry should be accompanied by a written description explaining the student's thoughts.

Models: May be either static or working. Models requiring construction must have clear instructions for doing so. Models should be original, skilfully constructed and demonstrate a mathematical principle.

NB: Kit models should **not** be entered, unless there is substantial, original student input as well.

Explanatory notes should accompany all models.

Games: Should have clear directions and be of relatively sturdy construction, allowing for ease of transport.

Computing Applications: It is the responsibility of the entrants to supply all required hardware & software for judging purposes.

Entrants may use programming, spreadsheets, data base, word processing or any other multimedia formats.

What is involved in a mathematics investigation?

A mathematics investigation allows students to examine a situation originating in mathematics or the real world which lends itself to inquiry. It involves a series of steps:

- getting to know the situation and formulating questions
- exploring systematically
- making and testing conjectures
- explaining or justifying results
- extending the situation by formulating further questions
- summarising the findings

Investigations require students to use mathematical processes to understand the problem or situation. The types of processes developed by work on investigations include:

- data collection
- symbolising
- classifying
- simplifying
- abstracting
- following and extending patterns
- conjecturing
- communicating

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- justifying and proving
- generalising and hypothesising
- predicting

For a mathematical investigation, students should be encouraged to formulate their own questions for a given situation. By formulating their own questions, students give their teachers a clear indication of their level of knowledge and understanding of their chosen topic.

How to enter the Junior Secondary Mathematics Enrichment Project

Complete and submit the online registration form by Friday 6 July 2018.

Delivery of JSMEP Entries

All entries must be delivered or posted to the MASA by 10 August 2018. All entries hand delivered or couriered, must be received between 8:30am and 4:30pm to the MASA Office at

80 Payneham Road, Stepney SA 5069

If delivering entries by post, please address to: MASA PO Box 94 Stepney SA 5069

PLEASE NOTE: Whilst great care is taken when handling entries, the Mathematical Association of South Australia cannot accept responsibility for loss or damage to entries.

Notification of Results

Schools will be notified of winning entries. The judge's decision is final and no correspondence will be entered into.

Prizes Awarded

Prizes are awarded to individual, group and class entries at Years 8, 9 and 10.

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The judges reserve the right not to award any prizes if the standard of entries is not sufficiently high. The judge's decision is final and no correspondence will be entered into. The top entries from each year level will be judged and if considered to be of a sufficiently high standard will be forwarded for judging in the National Mathematics Talent Quest.

Hints to get you started:

- Discuss the benefits of students entering the Mathematics Enrichment Project.
- Show JSMEP PowerPoint to mathematics staff which is available at MASA website
- Discuss the JSMEP process with a team of interested teachers.
- Include a mathematical investigation at each year level as an essential element of your assessment plan
- Appoint an JSMEP Coordinator for your school.
- Teachers can give students ideas and inspiration for a mathematical investigation.
- Initiate brainstorming with the students.
- Excursions to various places can initiate valuable ideas for a practical project.
- Investigation of the mathematical content in a hobby or sport could also be encouraged.

Judging entries

JSMEP entries are to be judged in three stages:

1. School Judging

The JSMEP School Coordinator is required to gather a group of teachers within the school to judge and select the entries to be sent to MASA for judging.

2. State Judging

Occurs from the 13 – 19 August 2018 at MASA. The judging Rubric can be found at the MASA website.

3. National Judging

Occurs on the 6 September 2018 at The Mathematical Association of Victoria, Brunswick. Entries into the national level are selected by MASA.