

# AstroChallenge 2020

## *Project Round Infosheet*

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# 1. Project Round Rules and Regulations

Your team is to choose and answer one challenging question in the field of astronomy, cosmology and astrophysics. However, you are to convey the answer using an A3 poster, aimed at educating a typical member of the public. Hence, please ensure that your explanation is as concise and accurate as possible, while being extremely easy to understand.

You will find the list of questions below, of which your team is to select 1 out of the 20 questions.

## Instructions

1. Your task is to explain an astronomy/astrophysics concept simply in the form of an A3 poster.
2. You will first choose 1 out of the 20 questions to explain in the poster. If your school is fielding multiple teams for the respective age category, you should not pick the same question as other teams from the same school.
3. Following which, you will then submit this poster for assessment to be reviewed by the organisers of AC2020. The deadline of submission is on 3 Dec 2020, 2359H.
4. The expected target audience for the poster are members of the public, including students from secondary schools, polytechnics and junior colleges. Posters should thus be in an appropriate tone and mode of presentation.
5. In particular, the inclusion of excessive inside jokes that are not comprehensible to members of the public may lead to penalties.
6. Posters that are targeted to younger age-groups are more than welcome.
7. Should you wish to seek any clarifications, you may write in to [astrochallenge@gmail.com](mailto:astrochallenge@gmail.com).

## 2. Guidelines for Attempting the Project Round

Here are some suggestions on how you can produce a submission of good quality.

### How to start

- Begin with the end in mind. Choose a few interesting topics, and research widely to get an understanding of the key messages that you should include in your project. Ask yourself if you feel confident explaining these messages to others in a unique and easily accessible manner.

This process of research should help you pick a single question to focus on.

- Know your target audience: you are expected to convey concepts to a member of a public/your schoolmates. They may not be aware of astronomy terms, so do explain yourselves adequately!
- Be interesting! Like it or not, humans are easily distracted. Ensure that your poster can hold the attention of your audience. This also means that you should be concise – do not beat around the bush.
- Plan your time wisely. Hastily submitted projects tend to lead to poor quality.
- Plan your content wisely. You should not squeeze everything into your poster! While the poster may be your only avenue to explain your concepts, merely squeezing everything is detrimental to the readability and presentation of your poster.

### Project Poster Guidelines

- Do have the question your group has chosen placed prominently within your poster.
- Ensure that the words are readable at a reasonable zoom level. **For specificity, your poster should at maximum need 110% zoom to be readable.** Additionally, make sure the colours you have chosen aid the readability of your poster. A beautifully designed poster is useless if it is unreadable.
- Try to use vocabulary that is easily understandable. If you have to use difficult terms, ensure that it is explained properly within the poster.
- Consider your target audience to only have enough time to read your poster once. Ensure that your poster can explain all that you need to convey within this limited time. Excessive usage of statistics, while good as evidence, is detrimental to the presentation of your poster.

## Use of assets/materials

- Provide credits for all resources used, including credits for your own team members!
- Ensure fair use of copyrighted resources. To put simply, avoid lifting substantial chunks wholesale from whatever materials you find online even if it's Copylefted or has a Creative Commons License.

### 3. Questions

No.	Question Title
1	Advertise your astronomy/science club to your schoolmates. *
2	Show and tell: Choose a deep sky object. With the aid of public data from professional observatories and other sources, tell me more about its background, and specific interesting features of the object. **
3	Choose a planet in the Solar System. Tell us more about this planet and its moons (if any), and what do we still not know about it?
4	How do planets form? How has observing exoplanets helped us understand planet formation?
5	How can amateur astronomers help professional astronomical research? What equipment is needed?
6	Identify an astronomy misconception propagated by popular media and explain why it is wrong.
7	In 2019, the first image of a black hole was taken. How was this image taken?
8	Introduce some classical instruments relating to astronomy.
9	Promote a place to stargaze that is accessible to most Singaporeans.
10	What are lunar seas and how do they form?
11	What are meteor showers and how should I observe them?
12	What are planetary rings? How would Earth be affected if it had rings?
13	What are some leading theories of how black holes are formed?
14	What are some of the different calendars still in use around the world today and what are they based on?
15	What are some of the health risks associated with living in space?
16	What are the challenges of establishing a moon base?
17	What is a supernova and how is it essential for life?
18	What kind of scope should I buy if I want to do astrophotography?
19	Why do we bother to send telescopes up into space when we have so many observatories on Earth?
20	Why do we need to observe objects across the whole electromagnetic spectrum?

If your question has asterisk(s) on it, please refer to Section 4 for further instructions or guidance.

## 4. Footnotes for Questions

\*: If your school does not have an Astronomy Club, you may promote your Science Club (or similar) on what the club does relating to Astronomy. Feel free to email us should you have any queries especially on cases where your school does not have an Astronomy Club but you would still wish to attempt this question.

\*\* : Your poster MUST at least explicitly refer to raw data from the [ESA/Gaia Archive \(https://gea.esac.esa.int/archive/\)](https://gea.esac.esa.int/archive/), to obtain parallaxes and associated distance to the object, if the object is within the GAIA catalogue.

You may also consider sourcing for raw image data from the [NASA/IPAC Infrared Science Archive \(https://irsa.ipac.caltech.edu/frontpage/\)](https://irsa.ipac.caltech.edu/frontpage/) and the [Hubble Legacy Archive \(https://hla.stsci.edu/\)](https://hla.stsci.edu/).

- While image processing will be a plus, you are not required to process the raw FITS images – both websites provide a quick image viewer. You may also look for final processed works based on this raw image data, but accord proper credit where it is due.

As always, you should credit the sources of your data by providing appropriate links. Feel free to email us should you have any queries regarding these data sources. To reiterate, you can try to process raw FITS images and incorporate it into your poster, but this is strictly optional.

## 5. Project Round Weightage

Poster Segment (40%)

Content	35%
Delivery (organisation of content and ease of understanding)	45%
Aesthetic appeal	20%



## 6. Project Round Grading Rubrics

Criterion	Weightage	Approaching Expectations 0 – 3	Meeting Expectations 4 – 7	Exceeding Expectations 8 – 10
Accuracy and Depth of Content	35%	Content captured in infographic is inaccurate with grave conceptual errors; content fails to go beyond the superficial or is plagiarised from source materials. Narrow scope with limited variety of concepts and ideas.	Content captured in infographic is somewhat accurate with few factual errors. Analysis of topic is limited or paraphrased from source materials, with a fair variety of concepts and ideas.	Content captured in infographic is largely accurate with negligible factual errors; Analysis of content boasts originality with an excellent presentation portraying a large variety of concepts and ideas.
Organisation and Delivery	45%	Filled with jargon that makes it difficult to understand in first glance. Organisation of information is haphazard and is a detriment to, rather than helping, the engagement factor. Information is illegible in an A3-sized infographic. If the text in the poster requires zooming in more than 110% to be legible to any judge, a 0 will be given in this criterion.	Information had been broken down from complex concepts although some parts still employ unnecessary amount of jargon. Information is mostly organised to follow a logical path but may not engage the reader. Information is legible and readable for an A3-sized infographic.	Easy to read, information has been simplified without affecting the content's logic and meaning. Organisation of information enhances the delivery and engagement potential of the infographic and guides the reader through a logical thinking path. Information is very clear and easily understandable for an A3-sized infographic.
Creativity and Aesthetic Appeal	20 %	The use of images distracts from the content rather than enhancing its delivery. Choice of images is jarring and may put off the reader.	Images used may be bland but are appropriate to the topic. While they may not enhance the appeal of the infographic, they nevertheless do not distract from it.	Images used help to illustrate the points the infographic is trying to convey. They help the reader visualise the concepts being delivered more easily and potentially attract the reader to the infographic.