Stars for Schools Questionnaire

The aim of this questionnaire is to see how the *Stars for Schools* programme contributes to your confidence and understanding of selected topics in astrophysics. This is not a graded assessment, it is only for us to determine whether the programme works well and how to improve it.

The questionnaire is in three parts.

Part 1 – General understating

- These are hopefully straightforward questions.
  For example, **"Have you ever used your computer's command line?"**
  If you have, just tick yes. If not, tick no.

Part 2 – Self assessment

- Score yourself between 1-5 using the criteria provided.
- If you have any topics here that interest you and you'd like to discuss them further, please make a note so we can follow up on this.

Part 3 – Looking ahead

- This is about how you feel about your future, particularly in regard to STEM.
- Write about all your feelings, concerns, and questions.
- Again, we're here to help, so if you have any questions just ask or make a note on the form.

General Understanding

1) Have you ever used the Python computer programming language?

☐ Yes ☐ No

2) Would you be able to use $PV = nRT$?

☐ Yes ☐ No

3) Have you ever used your computer's command line?

☐ Yes ☐ No

4) Are you able to write 6×10^{6} in decimals?

☐ Yes ☐ No

5) Are you able to write 1543×10^{-1} in decimals?

☐ Yes ☐ No

6) Can you name the first 10 elements in the periodic table?

☐ Yes ☐ No

7) Do you read any physics books outside of studying?

☐ Yes ☐ No

8) Can you make a graph with Python, with labelled axis?

☐ Yes ☐ No

9) Can you name three sub-atomic particles?

☐ Yes ☐ No

10) Have you ever used calculus, e.g. differentiation and integration?

☐ Yes ☐ No

Astrophysics Self-Assessment

Criteria

1- I do not understand this at all.

2- I understand the definition of the topic word.

3- I can give a basic explanation of the topic and list some related key words (e.g. prominent researchers, development, categories) and formulae, perhaps with the aid of a diagram. I can recognise some relevant formulae if shown.

4- I am able to explain the topic, including how prominent researchers contributed to its development, and/or define categories relating to the topic and its significance. I am able to use relevant formulae to make calculations.

5- In addition to category 4, I am able to derive one or more relevant formulae, and understand how this topic influences other areas of physics.

Score	Topic
	The chemical composition of stars
	Types of stars and their classifications
	The dynamic timescale
	The thermal timescale
	The nuclear timescale
	Using a shell model to describe pressure and temperature inside a star
	The role of hydrostatic equilibrium in a star
	Gravity between two masses separated by a distance r
	Nuclear fusion and fission
	The history of stellar evolution codes
	The Hertzsprung Russel Diagram (HRD)
	3D surface-colour data plots
	Specific Heat Capacity (SHC)
	The negative feedback process that regulates a star’s temperature
	Magnitudes of star luminosity
	Parallax when observing stars
	Measuring distances with Gaia
	Measuring distances with cephids
	Star evolution without the presence of nuclear reactions
	The Proton-Proton Chain (PP Chain)
	The CNO cycle
	How a star is formed
	How a star dies
	Star Clusters
	The Electromagnetic Spectrum
	The Raspberry Pi

Looking Ahead

1) Do you plan on pursuing a future in STEM (Science, Technology, Engineering, and Mathematics)?

   ☐ Yes ☐ No

   If “Yes” please specify (if possible) your desired area of study/work

   If “No” please tell us why

2) Do you have any concerns about studying a STEM subject?

   For example: scary calculations, prefer another subject, types of jobs available, not enough support from school/parents/resources.

3) What are you hoping to get out of the *Stars for Schools* programme?