ABINGDON SCIENCE PARTNERSHIP

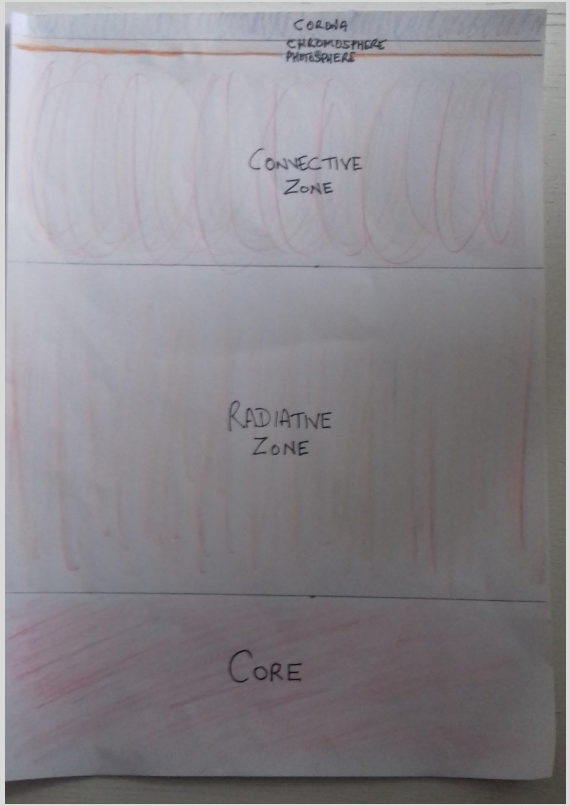
10.SOLAR ASTRONOMY Exercises

Edexcel GCSE Astronomy Course

10.2 Know the location and relative temperatures of the Sun's internal divisions, including:
a core b radiative zone c convective zone d photosphere
10.5 Know the location, temperature and relative density of components of the solar atmosphere, including: a **chromosphere b corona**

Make a scale diagram of the structure of the Sun on a sheet of A4 paper using the scale measurements in column 2. Then label each layer with its name, actual thickness and temperature. (See the next slide for an example showing you what to do).

Layer	Scale Thickness (cm)	Actual Thickness (km)	Temperature
Core	7	150,000	10,000,000 K
Radiative Zone	13	300,000	8,000,000 K
Convective Zone	9	200,000	500,000 K
Photosphere	0.1	500	5800 K
Chromosphere	0.4	10,000	4,000 to 400,000 K
Corona	(See photo on next slide)	5,000,000	1,000,000 K



An example scale drawing of the layers of the Sun and its atmosphere

Relative density of the corona and chromosphere:

Chromosphere - about 1/10000 x density of the photosphere (or 1/100 000 000 x density of Earth's atmosphere at sea level)

Corona - about 10 million times less dense than the photosphere

This page is designed to give specific information on items 10.2 and 10.5 in the GCSE Astronomy specification. You can find definitions of all the layers of the Sun and its atmosphere here to include in your notes:

https://www.space.fm/astronomy/earthmoonsun/structure.html

Carry out your own investigations of the Sun using these online exercises with real images and data:

Find out more about the parts of the sun using this game (select highest difficulty):
https://scied.ucar.edu/interactive/sun-space-weather-memory-game
Make notes from the answers - make sure you have definitions of each of the parts discussed.

Find out what is meant by a ‘solar maximum’ and a ‘solar minimum’ - play this game then make a note of what they mean:
https://scied.ucar.edu/interactive/sun-sorting-game

Do these more detailed exercises in turn from the link below:
1.Counting sunspots
2. Predicting solar storms
3. More open ended investigation
https://www.pbs.org/wgbh/nova/labs/lab/sun/research

The Sun looks different if it is observed with different wavelengths of light. Investigate this idea here and make notes on what you find out:
https://scied.ucar.edu/interactive/sun-compare-multispectral

Advanced self-study activities:
Find out in some more detail about the following features of the sun and sunspots:
What is its rotational period at its equator and its poles? What is the time period of a solar cycle? When is the next solar maximum predicted? What is a butterfly diagram (relating to sunspots)? What was the Maunder minimum?