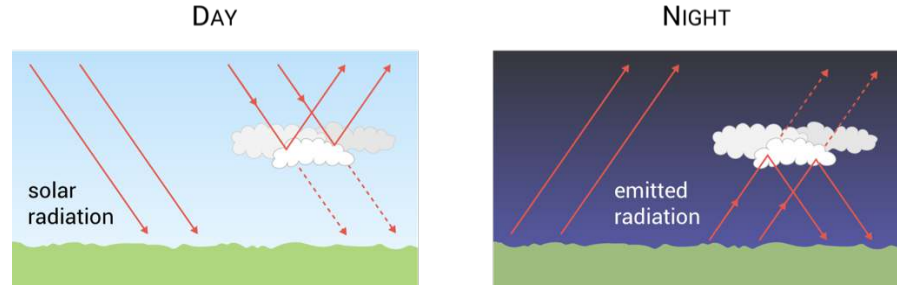


0 1

The below diagram shows the same region of the surface of the Earth during both the day and the night. The arrowed lines represent the paths of rays of thermal (infrared) radiation. The dotted lines represent radiation which has been partially transmitted through clouds.



0 1 . 1

In general, daytime temperatures tend to be higher when there is little to no cloud cover. Explain why. You may refer to the above diagram in your answer.

[2 marks]

0 1 . 2

After the sun has set, surface temperatures tend to fall more rapidly when there is a clear sky. Explain why.

[2 marks]

0 2

One of the ways in which astronomers categorise stars is by measuring their colour (or *spectral type*). The way in which the colour of a star depends on its surface temperature is shown in the below diagram. Temperatures have been quoted in kelvin (K).



0 2 . 1

Describe the relationship between the colour of a star and its surface temperature, then explain why a star which appears blue appears hotter than one which appears white.

[2 marks]

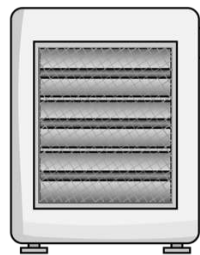
0 2 . 2

A star is very close to being a perfect **black body**. Explain what is meant by the term *perfect black body*.

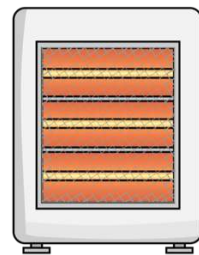
[2 marks]

0 3

An electric heater is placed into a completely dark room, before being turned on.



Heater turned OFF



Heater turned ON

0 3 . 1

Jeff tells you that he believes that the heater was not emitting any electromagnetic radiation before it was turned on. Write down one thing you could do which would prove that he was incorrect.

[1 mark]

0 3 . 2

Describe how the radiation emitted by the heater changes once it is turned on.

[2 marks]