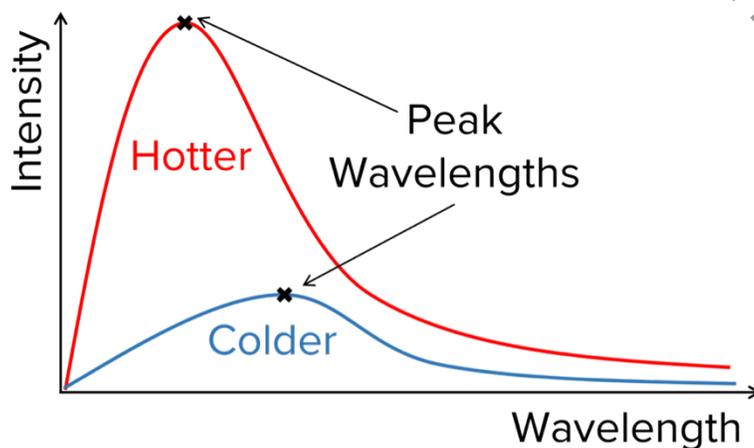


Black Bodies radiation

- A black body is an object that absorbs all incident radiation, regardless of frequency. There are no known perfectly black bodies on Earth or anywhere in the universe.
- A perfect black body is a theoretical object, but if it existed, it would have these properties:
 - It absorbs all light and electromagnetic radiation that falls on it
 - It is unable to reflect or transmit any radiation
- A good absorber of radiation is also a good emitter of radiation, so a perfect black body is the best emitter of radiation. An object that perfectly absorbs infrared radiation must be black because a black surface absorbs all wavelengths of visible light.
- Thermal radiation emitted by hot objects is called **black body radiation**. Objects emit black body radiation in the form of electromagnetic waves. These electromagnetic waves typically lie in the infrared region of the electromagnetic spectrum.
- The hotter an object, the more thermal radiation it emits, and the wavelength of that thermal radiation decreases.
- However, the intensity of the shorter wavelengths increases more than the longer wavelengths. Therefore, each curve skews more to the left.

Example : This explains why Bunsen burner flame colours change with increasing temperature. A blue flame is hotter than a red one and emits light with a shorter wavelength.

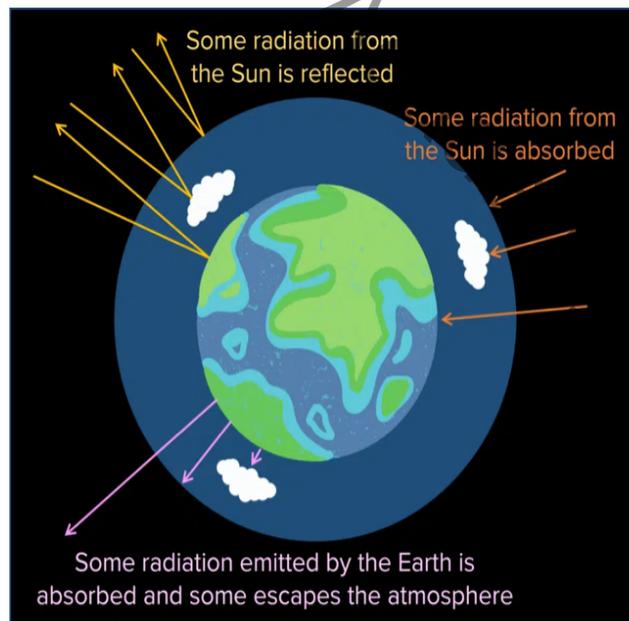


Temperature Balance

- The **temperature** of an object depends on the amount of **heat energy** the object has. The heat energy increases when energy is **transferred** into the object and decreases when the object emits **radiation**.
- If an object is at a **constant temperature**, then the heat energy going in to the object is equal to the energy lost by the object via radiation.
- When an object emits radiation faster than it gains energy, it **cools down**.
- When an object gains energy faster than it emits radiation, it **heats up**.

The Temperature of the Earth

- The **temperature of the Earth** depends on a range of factors. These include:
 - The rate of **absorption** of radiation from the Sun.
 - The rate of **emission** of radiation.
 - The amount of radiation that is **reflected** back into space.
- Radiation may be **absorbed** or **reflected** by the **atmosphere**, **clouds** and the **surface of the Earth**.



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