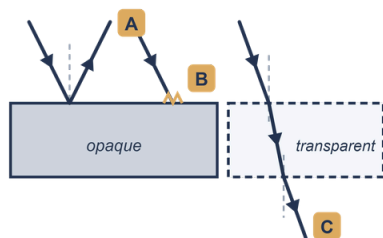


Visible Light and Colour *(Physics only)*

Light and objects — each colour has its own wavelength

REFLECTED, ABSORBED OR TRANSMITTED?

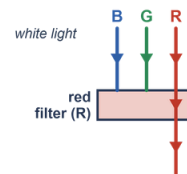


A _____ B _____ C _____

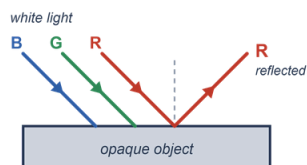
WHAT DECIDES THE COLOUR OF AN OBJECT?



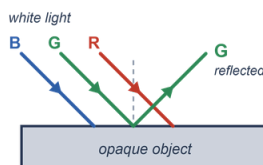
WHAT DOES A COLOUR FILTER DO?



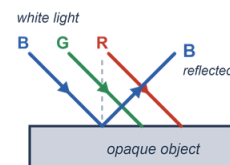
State and explain what colour each object looks in white light



The object looks _____ because only _____ light is reflected. _____ and _____ light are absorbed.

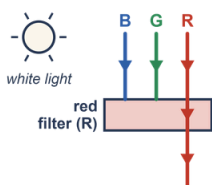


The object looks _____ because only _____ light is reflected. _____ and _____ light are absorbed.

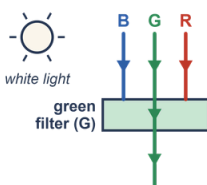


The object looks _____ because only _____ light is reflected. _____ and _____ light are absorbed.

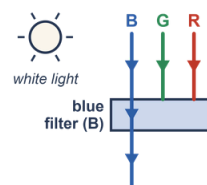
A filter goes in front of the white room light — what colour does the room look?



A red filter only t _____ light. _____ and _____ light are absorbed. The white room looks _____.



A green filter only t _____ light. _____ and _____ light are absorbed. The white room looks _____.



A blue filter only t _____ light. _____ and _____ light are absorbed. The white room looks _____.

Exam-style question — white, black and a tricky one

A student looks at objects in a room lit by **white light**.

- A shirt looks **white**. Explain why. [2]
- A pair of shoes looks **black**. Explain why. [2]
- The student looks at a **green** leaf through a **red filter**. State what colour the leaf looks. Explain your answer. [3]

[Total: 7 marks]

ANSWER

Black Body Radiation *(Physics only)*

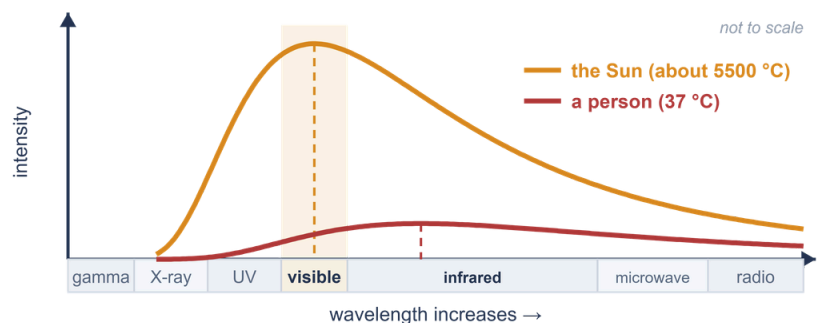
Perfect black bodies, and how temperature changes the radiation

What is a perfect black body?

CHECK YOU HAVE SAID

- ☐ absorbs all incident radiation
- ☐ does not reflect or transmit
- ☐ good absorber = good emitter
- ☐ best possible emitter

INTENSITY AND PEAK WAVELENGTH DEPEND ON TEMPERATURE

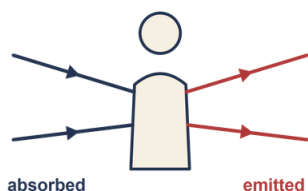


A person's peak is in the _____. The Sun's peak is in the _____. The hotter the object, the _____ the peak wavelength and the _____ the intensity.

Absorbing, emitting and temperature

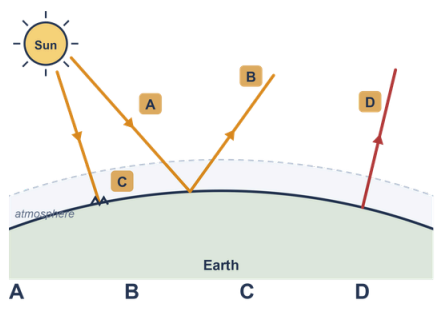
Earth: Higher only

A PERSON IN A WARM ROOM



The temperature stays constant when radiation is _____ at the same _____ as it is _____.

LABEL A, B, C AND D ON THE EARTH

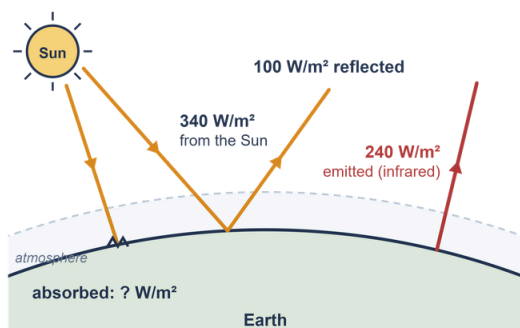


EXPLAINING A TEMPERATURE — TICK WHAT YOU SAY

- ☐ absorbed at the **same rate** as emitted → temperature stays **constant**
- ☐ absorbs **faster** than it emits → temperature **rises** (the Earth in the day)
- ☐ emits **faster** than it absorbs → temperature **falls** (the Earth at night)
- ☐ clouds, ice and snow **reflect** radiation, so less is absorbed
- ☐ greenhouse gases **absorb** the infrared the Earth emits, so less escapes to space

Exam-style question — the Earth's temperature

Higher



The diagram shows the average rates of radiation for each square metre of the Earth.

- (a) Calculate the rate at which radiation is **absorbed** by each square metre. [1]
- (b) Explain why the Earth's average temperature stays constant. [2]

- (c) The ice at the poles is melting and the amount of greenhouse gas in the atmosphere is increasing. Use the diagram to explain how these changes affect the temperature of the Earth. [6]

[Total: 9 marks]

ANSWER
