

How light bounces, bends and is absorbed

Grade 7 science (Year 8 · Class 7) · Test

Name: _____ Date: _____ Class: _____ Mark: ____ / 20

This test covers reflection, plane mirrors, refraction and absorption of light. Measure all angles from the normal, show each step of a calculation and give units. Explanations should be short sentences that name the effect and give its cause.

Level: Grade 7 science (Year 8 · Class 7) · **Curriculum:** MS-PS4-2

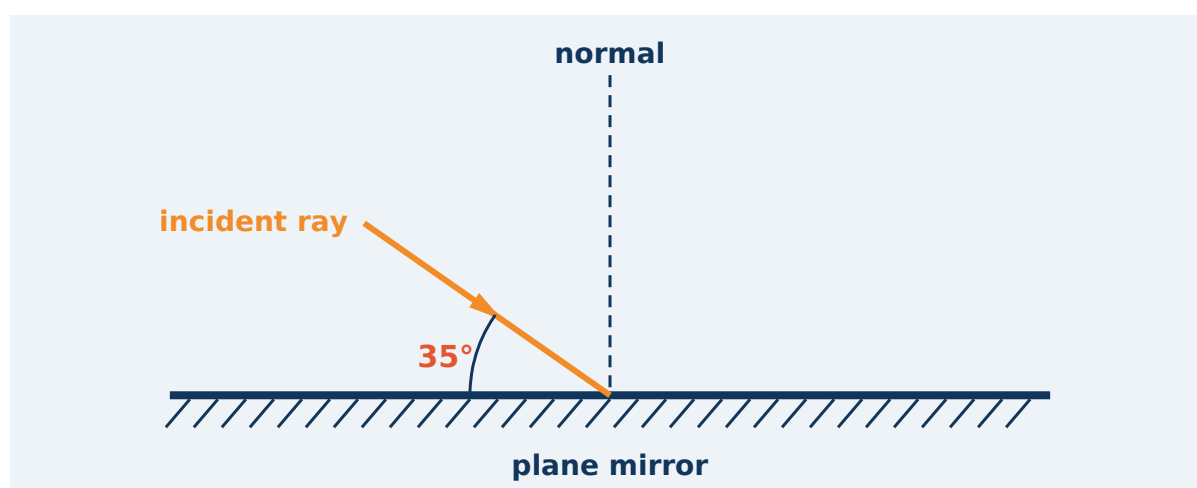
Time: 45 minutes · 8 questions · Total: 20 marks · Calculator allowed

Question 1 Key terms (3 marks)

- State what the normal is. (1 mark)
- State the law of reflection. (1 mark)
- Name the effect that makes a pencil look bent in a glass of water. (1 mark)

Question 2 Ray at a mirror (3 marks)

The figure shows a ray hitting a plane mirror at 35° to the surface.



A ray reaches a plane mirror.

- Calculate the angle of incidence. (1 mark)
- State the angle of reflection. (1 mark)
- Calculate the angle between the incident and reflected rays. (1 mark)

Question 3 Mirror and image (3 marks)

Wanjiru in Nairobi stands 1.8 m in front of a plane mirror.

- State how far behind the mirror her image appears. (1 mark)
- Calculate the distance between Wanjiru and her image. (1 mark)
- She steps back 0.6 m. Calculate the new distance between her and her image. (1 mark)

Question 4 Light entering a block (3 marks)

A ray of light goes from air into a glass block at an angle.

- State whether the ray bends towards or away from the normal. (1 mark)
- Explain this using the speed of light. (2 marks)

Question 5 Rough and smooth (2 marks)

Explain why you can see a white wall from anywhere in a room but a mirror hung on it shows an image only from certain positions.

Question 6 A red book (2 marks)

A book looks red in white light. Explain how the colour of the book is produced.

Question 7 Sunlight to Earth (2 marks)

Light from the Sun travels 1.5×10^{11} m to the Earth at 3.0×10^8 m/s. Calculate the time taken in seconds.

Question 8 Dark clothes (2 marks)

Explain why a person wearing black clothes feels hotter in sunlight than a person wearing white clothes.