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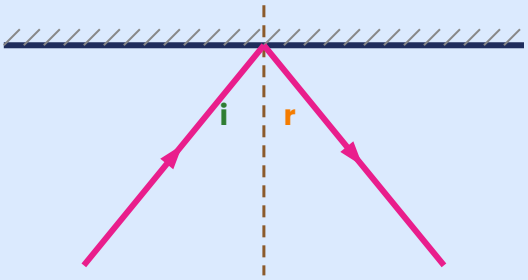
Year 8 · KS3 Physics · GCSE foundations

Reflection of Light

Mark Scheme

Answers and marking guidance for the Year 8 Reflection of Light homework worksheet. Total: 54 marks.



angle of incidence (i) = angle of reflection (r)

What's inside

Section A	Key words, types of waves & labelling a ray diagram	**Q1–Q4 · 19 marks**
Section B	The law of reflection: angles, drawing & common mistakes	**Q5–Q8 · 17 marks**
Section C	Exam-style & challenge: practicals, periscopes, echoes ★	**Q9–Q12 · 18 marks**

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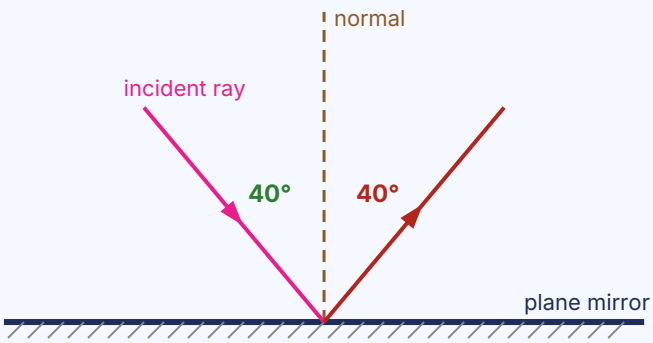
Section A — Key ideas & ray diagrams

19 marks

Q	Answer / marking guidance	Mark
1	**a) reflected, boundary b) medium c) mirror d) normal e) incidence, reflection f) equal** 1 mark per correct word (8 blanks)	8
2	**light, sound, water waves** (accept any other correct wave, e.g. microwaves, radio waves, seismic waves)	3
3	**A boundary (mirror) · B normal · C incident ray · D reflected ray · E angle of incidence · F angle of reflection**	6
4	**a) towards the boundary / mirror b) away from the boundary / mirror**	2

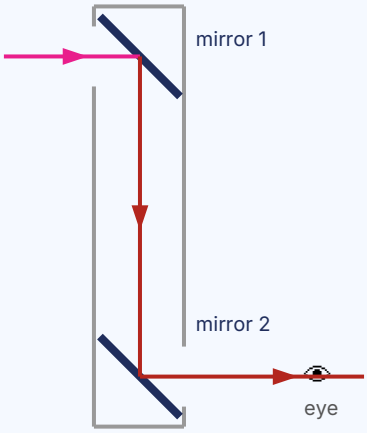
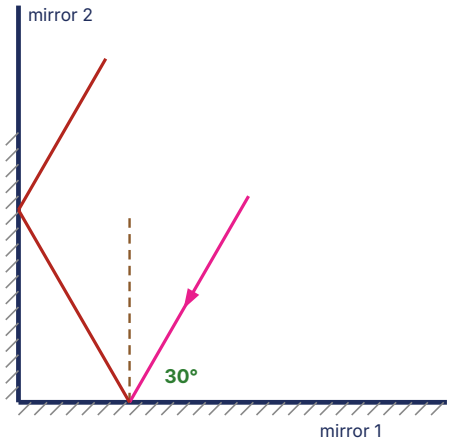
Section B — Using the law of reflection

17 marks

Q	Answer / marking guidance	Mark
5	**25° · 48° · 60° · 15° · 0° (the ray reflects straight back along the normal)**	5
6	**a) 60° b) 60° c) 120°** (90° − 30° = 60°; 60° + 60° = 120°)	3
7	**Reflected ray drawn on the other side of the normal (1), at 40° to the normal ±2° (1), arrow pointing away from the mirror and 40° marked (1).** 	3
8	**Angles are measured from the normal, not from the mirror (1). Sam's angle is 90° minus the real angle of incidence (1).**	2
8b	**A mirror is smooth, so light is reflected in one direction / regular reflection and an image forms (1). Paper is rough, so light is scattered in many directions / diffuse reflection, so no image (1).**	2
8c	**Drivers in front see the ambulance in their rear-view mirror (1). A mirror reverses the image left to right, so the word reads the correct way (1).**	2

Section C — Exam-style & challenge

18 marks

Q	Answer / marking guidance	Mark
9	**2 → 1 → 3 → 4 → 5** (i.e. draw mirror line & normal; shine ray; mark rays; measure; repeat) 4 marks all correct; 3 marks for one pair swapped; 2 marks for two steps correct	4
9b	**So the thin ray of light can be seen clearly / traced accurately.**	1
10	**a) 45° b) 90° c) ray drawn vertically down to mirror 2 (1), then horizontally out to the eye with arrows (1)**  Model answer: the ray turns 90° at each mirror, so it leaves travelling in the same direction it entered, but lower down.	4
11	**a) ray reflects off mirror 1 at 30° to the normal (1) and travels to mirror 2, then reflects off mirror 2 (1)** **b) 60°** (1) **c) final ray is parallel to the original ray but travelling in the opposite direction / goes back towards the source (1). Use: bicycle reflectors, cat's eyes, road signs (1)** 	5
12	**a) distance = 1500 × 0.4 (1) = 600 m (1)** **b) depth = 600 ÷ 2 (1) = 300 m (1)** Allow error carried forward from (a) in (b).	4

Teacher note: all angles must be measured from the **normal**. Accept ±2° for drawn angles. Suggested grade bands: 45–54 Excellent · 35–44 Good · 25–34 Developing · below 25 Revisit notes.