Year 8 Science: How we see: light sources, reflection and refraction

Name: _____ Date: _____

Try these without your notes first, then check the answer key.

Practice

1. Is the Moon a light source? Explain how we see it.

2. A ray hits a mirror with an angle of incidence of 25°. What is the angle of reflection?

3. A ray makes an angle of 70° with a mirror surface. What is the angle of reflection?

4. A ray of light passes from air into a glass block at an angle. Does it bend towards or away from the normal?

5. What evidence did Ibn al-Haytham use against the idea that sight comes from rays leaving the eye?

Fix the mistake

6. Correct this statement: "We see a book because light comes out of our eyes and hits it."

7. Correct this statement: "The angle of incidence is measured between the ray and the mirror."

8. Correct this statement: "Refraction is when light bounces off water."

9. Correct this statement: "A ray going into glass always bends."

Answer key (for parents and tutors)

1. Is the Moon a light source? Explain how we see it.
   No; sunlight reflects off the Moon and travels to our eyes.
2. A ray hits a mirror with an angle of incidence of 25°. What is the angle of reflection?
   25°, because the angle of reflection always equals the angle of incidence.
3. A ray makes an angle of 70° with a mirror surface. What is the angle of reflection?
   20°: the angle of incidence is 90° − 70° = 20°, and reflection matches it.
4. A ray of light passes from air into a glass block at an angle. Does it bend towards or away from the normal?
   Towards the normal, because light slows down in glass.
5. What evidence did Ibn al-Haytham use against the idea that sight comes from rays leaving the eye?
   Looking at the bright Sun hurts the eyes, which makes sense only if light is entering them; he also tested ideas with experiments in darkened rooms.
6. Correct this statement: "We see a book because light comes out of our eyes and hits it."
   Light from a source reflects off the book and travels into our eyes; arrows on a ray diagram point towards the eye.
7. Correct this statement: "The angle of incidence is measured between the ray and the mirror."
   Both angles are measured from the normal, the line at 90° to the mirror.
8. Correct this statement: "Refraction is when light bounces off water."
   Bouncing off is reflection; refraction is light changing direction as it passes into a new material.
9. Correct this statement: "A ray going into glass always bends."
   A ray that hits the surface along the normal slows down but carries straight on.