

Light, Natural Phenomena and Pollution

Science · Class 8 · Topic-wise Practice Worksheet

TIME 45 minutes	QUESTIONS 18	TOTAL MARKS 24	MAX. SCORE ___ / 24
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Name: _____ Class/Sec: _____ Date: _____

INSTRUCTIONS

- There are **18 questions** in this worksheet. All questions are compulsory.
- Each question has four options (A), (B), (C) and (D). Exactly **one** option is correct.
- Questions 1–15 carry **1 mark** each. Questions 16–18 (Achievers Section) carry **3 marks** each.
- There is no negative marking. Study every diagram and table carefully.

Section A — Scientific Reasoning

Q1–Q8 · 1 mark each

- According to the laws of reflection, the angle of incidence is _____ the angle of reflection.

(A) Equal to	(B) Less than
(C) Greater than	(D) Twice
- Reflection from a rough, uneven surface is called _____ reflection.

(A) Regular	(B) Diffused
(C) Total	(D) Partial
- The part of the eye that controls the amount of light entering it is the _____.

(A) Cornea	(B) Lens
(C) Retina	(D) Iris
- The image in the human eye is formed on the _____.

(A) Retina	(B) Iris
(C) Cornea	(D) Pupil
- Lightning is caused by _____.

(A) The burning of gases in clouds	(B) The sudden discharge of accumulated electric charges between clouds or between a cloud and the ground
(C) The friction of raindrops with the ground	(D) The reflection of sunlight
- A lightning conductor protects a building by _____.

(A) Repelling the lightning	(B) Reflecting the lightning upward
(C) Absorbing all the electricity	(D) Providing an easy metal path for the charge to pass safely into the ground
- The instrument used to record the magnitude of an earthquake is the _____.

(A) Seismograph	(B) Barometer
(C) Hygrometer	(D) Anemometer

8. Which gas released by vehicles is a major cause of the greenhouse effect?

- (A) Nitrogen (B) Carbon dioxide
(C) Oxygen (D) Helium

Section B — Applying What You Know

Q9–Q15 · 1 mark each

9. A ray of light strikes a plane mirror at an angle of incidence of 35° . What is the angle between the incident ray and the reflected ray?

- (A) 35° (B) 55°
(C) 70° (D) 110°

10. In the table below, which row is **incorrectly** matched?

Row	Part of the eye	Function
(A)	Cornea	Transparent front through which light enters
(B)	Iris	Controls the size of the pupil
(C)	Retina	Focuses light onto the lens
(D)	Optic nerve	Carries signals to the brain

Table 10.1 — Parts of the eye

- (A) Row (A) (B) Row (B)
(C) Row (C) (D) Row (D)

11. Why can we see a non-luminous object such as a book?

- (A) The book produces its own light (B) The book absorbs all the light
(C) Our eyes send out light (D) Light from a source falls on the book and is reflected into our eyes

12. During an earthquake drill, students are told to move to open ground. Why is this the safest action?

- (A) There is nothing overhead that can collapse or fall on them (B) Open ground shakes less
(C) The earth is softer there (D) Sound travels less in the open

13. A person with a visual impairment reads using a script of raised dots. This script is called _____.

- (A) Morse (B) Braille
(C) Roman (D) Devanagari

14. Which of these is the most effective long-term way to reduce air pollution in a city?

- (A) Burning waste in the open (B) Using more private cars
(C) Using public transport and cleaner fuels such as CNG, and planting trees (D) Building taller chimneys only

15. Why does the water of a lake near a fertiliser factory sometimes turn green and the fish die?

- (A) The fertiliser colours the water green (B) The water becomes too warm
(C) Fertilisers are poisonous to fish only (D) Nutrients in the run-off cause excessive algal growth, which later decays and uses up the dissolved oxygen

16. Consider the following statements.

- (i) The image formed by a plane mirror is virtual and laterally inverted.
- (ii) The greenhouse effect is entirely harmful and should be eliminated.
- (iii) A seismograph records the vibrations produced during an earthquake.

Which of the statements is/are correct?

- (A) (i) and (ii) only
- (B) (ii) and (iii) only
- (C) (i) and (iii) only
- (D) All three

17. Two plane mirrors are placed at right angles to each other and an object is placed between them. How many images are formed?

- (A) 3
- (B) 2
- (C) 1
- (D) Infinitely many

18. The Taj Mahal's marble has been yellowing and losing its shine. Which explanation is best supported by science?

- (A) Marble naturally turns yellow with age
- (B) Acid rain, formed when sulphur and nitrogen oxides from nearby industry dissolve in rainwater, reacts with the marble
- (C) Tourists' footsteps wear the marble away
- (D) The river water splashes onto it

Answer Key

1	A	2	B	3	D	4	A	5	B
6	D	7	A	8	B	9	C	10	C
11	D	12	A	13	B	14	C	15	D
16	C	17	A	18	B				

Solutions

1. Answer: (A) Equal to

The first law of reflection states that the angle of incidence is **equal to** the angle of reflection. The second states that the incident ray, the reflected ray and the normal all lie in the same plane.

2. Answer: (B) Diffused

Diffused (irregular) reflection scatters light in many directions, which is why we can see a wall from every angle but cannot see our image in it. A smooth mirror gives regular reflection.

3. Answer: (D) Iris

The **iris** is the coloured part of the eye. It adjusts the size of the pupil, widening it in dim light and narrowing it in bright light.

4. Answer: (A) Retina

The lens focuses light onto the **retina** at the back of the eye, where light-sensitive cells send signals to the brain along the optic nerve.

5. Answer: (B) The sudden discharge of accumulated electric charges between clouds or between a cloud and the ground

Charges build up in storm clouds until the air can no longer keep them apart. The **sudden discharge of these accumulated electric charges** is seen as lightning and heard as thunder.

6. Answer: (D) Providing an easy metal path for the charge to pass safely into the ground

A lightning conductor is a metal rod running from above the roof down into the earth. It **gives the charge an easy conducting path safely into the ground**, so the building is not damaged.

7. Answer: (A) Seismograph

A **seismograph** records the vibrations of the ground during an earthquake. The magnitude is expressed on the Richter scale.

8. Answer: (B) Carbon dioxide

Carbon dioxide traps heat radiated by the earth, warming the atmosphere. Its rising level from burning fossil fuels is the main driver of global warming.

9. Answer: (C) 70°

The angle of reflection also equals 35°, and both are measured from the normal.
Angle between the two rays = $35^\circ + 35^\circ = 70^\circ$.

10. Answer: (C) Row (C)

It is the **lens** that focuses light; the **retina** is the screen on which the image is formed and which contains the light-sensitive cells. The other three rows are correct.

11. Answer: (D) Light from a source falls on the book and is reflected into our eyes

A non-luminous object gives out no light of its own. We see it because **light from a source falls on it and is diffusely reflected into our eyes**. In a completely dark room the book is invisible.

12. Answer: (A) There is nothing overhead that can collapse or fall on them

Most earthquake injuries are caused by falling walls, roofs and objects rather than by the shaking itself. In open ground **there is nothing overhead that can collapse onto a person**. Indoors, sheltering under a strong table is advised for the same reason.

13. Answer: (B) Braille

Braille uses patterns of raised dots that are read by touch. Each character is formed within a cell of six dot positions.

14. Answer: (C) Using public transport and cleaner fuels such as CNG, and planting trees

Using public transport and cleaner fuels such as CNG, together with planting trees, reduces the pollutants actually released. Taller chimneys merely disperse pollution further away without reducing it, and open burning adds to it.

15. Answer: (D) Nutrients in the run-off cause excessive algal growth, which later decays and uses up the dissolved oxygen. Fertiliser run-off is rich in nitrates and phosphates. These **cause algae to multiply enormously, turning the water green; when the algae die, the bacteria that decompose them use up the dissolved oxygen**, and the fish suffocate. This process is called eutrophication.

16. Answer: (C) (i) and (iii) only

Statement (i) is true. Statement (ii) is false — without a natural greenhouse effect the earth would be far too cold for life; the problem is the *enhanced* effect caused by extra carbon dioxide. Statement (iii) is true. Hence **(i) and (iii)**.

17. Answer: (A) 3

The number of images formed by two mirrors at an angle θ is $(360 \div \theta) - 1$.

Here $\theta = 90^\circ$, so the number of images = $(360 \div 90) - 1 = 4 - 1 = 3$.

(If the mirrors were parallel, θ would be 0 and infinitely many images would form.)

18. Answer: (B) Acid rain, formed when sulphur and nitrogen oxides from nearby industry dissolve in rainwater, reacts with the marble

Marble is calcium carbonate, which reacts readily with acids. Industrial emissions release **sulphur and nitrogen oxides that dissolve in rainwater to form sulphuric and nitric acids**. This acid rain corrodes the marble surface — an effect known as marble cancer — which is why polluting industries around Agra have been restricted.