

Collegedunia NCERT Notes

NCERT Notes for Class 7 Science (Curiosity), 2026-27 syllabus

Chapter 11: Light: Shadows and Reflections

For 7th-standard learners: clear explanations, safe investigations, source figures and revision practice.

Also see: [Official Chapter 11 PDF](#)

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1 Sources of light and seeing objects

Light makes the world visible. Begin by separating objects that produce light from objects that only reflect it.

1.1 Luminous and non-luminous objects

Based on NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, pp. 154.

A luminous object emits its own light. The Sun, other stars, lightning and glowing fireflies are natural examples. A burning candle, an electric lamp and a glowing LED are artificial light sources.

A non-luminous object does not emit visible light under ordinary conditions. A book, a chair and the Moon become visible when light from another source reaches them.

- **Sun:** produces its own light, so it is luminous.
- **Moon:** reflects sunlight, so it is non-luminous.
- **Mirror:** redirects light but does not create that light.
- **Switched-off bulb:** is not a light source merely because it can glow later.

Two different classifications

Natural or artificial describes the origin of a source. Luminous or non-luminous describes whether the object emits light.

An electric lamp is artificial and luminous when lit. A polished stone may shine strongly, but it remains non-luminous. Bright appearance alone does not prove that an object produces light.

Ask the right question

Ask, “Does this object emit its own light now?” Do not ask only whether it looks bright.



Fig. 11.1: Some natural sources of light

Fig. 11.1, NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, p. 154.



Fig. 11.2: Fire as a source of artificial light

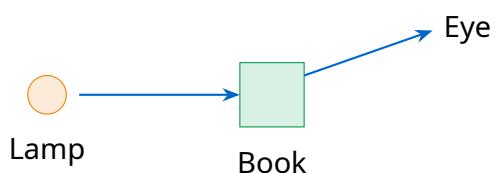
Fig. 11.2, NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, p. 154.

1.2 How a book reaches our eyes

Based on NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, pp. 153-154, 160. Book-to-eye explanation is an explanatory application.

We see a book when light falls on it and reflected light enters our eyes. The eye receives light; it does not send out a seeing beam.

1. A source such as a lamp emits light.
2. Some light falls on the book.
3. The book reflects some light in different directions.
4. Reflected light reaching the eyes allows us to see the book.



In a completely dark room, a non-luminous book cannot be seen. Letting daylight in through a window, or switching on a lamp that illuminates the book, supplies light. We

see the book when some reflected light reaches our eyes.

A common comparison

The Moon and a book are seen through reflected light. A glowing lamp is seen through light it emits.

Fireflies use their light to communicate. The chapter connects their decline with light pollution, habitat loss and excessive tourism. Observe insects without collecting or disturbing them.

Responsible lighting

Use lights where needed and switch off unnecessary outdoor lights. LEDs can reduce electricity use. Dispose of old lamps through suitable collection or recycling systems.

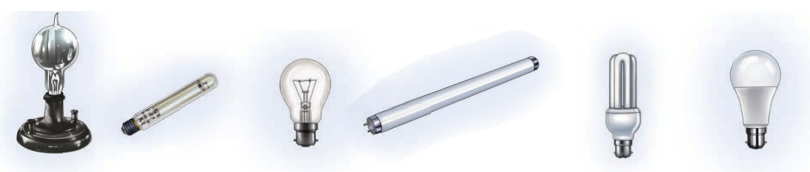


Fig. 11.3: Some sources of electric light

Fig. 11.3, NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, p. 154.

2 Straight-line travel of light

The chapter tests a simple idea through two activities. Light follows a straight path in the ordinary classroom situations studied here.

2.1 Three holes and one bright spot

Based on NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, pp. 155.

Activity 11.1 uses three matchbox trays with holes at the same height. A torch faces the holes and a screen stands beyond them.

1. Arrange all three holes along the same straight line.
2. Keep the torch lamp at the height of the holes.
3. Adjust the boxes until a bright spot appears on the screen.

4. Move just one tray slightly sideways or upwards.
5. Check whether the bright spot remains.

The spot appears when the holes line up. Moving one tray far enough out of alignment blocks the direct route and removes the transmitted spot. A smaller shift may leave some light passing through, so the spot can remain or weaken.

Evidence and conclusion

Evidence: the spot depends on aligned holes. **Conclusion:** the light reaching the screen followed a straight path.

Keep the torch, other trays and screen fixed while moving one tray. Changing several things at once makes the result harder to explain.

Alignment means more than equal height

Three holes can have equal height without lying on one straight line. Check their sideways positions as well.

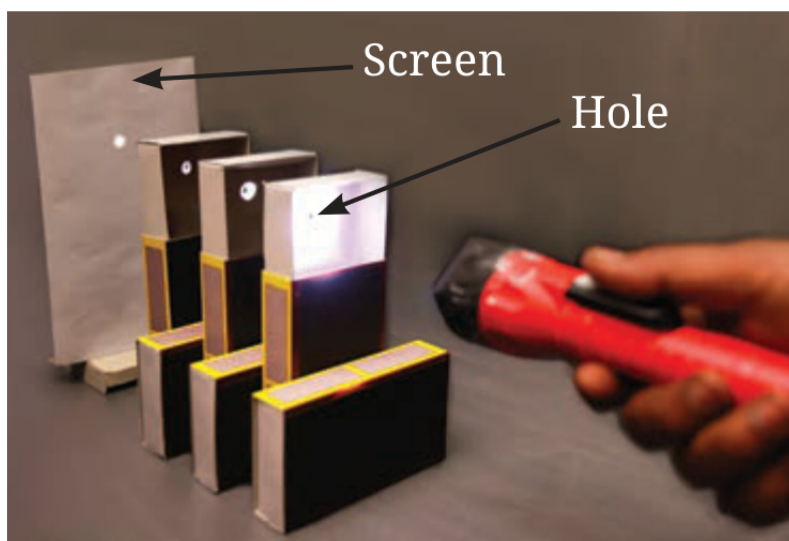
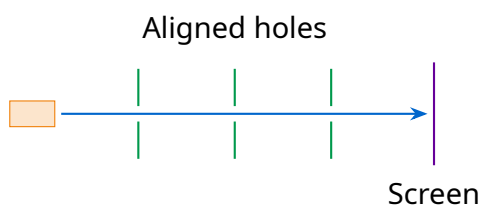


Fig. 11.4, NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, p. 155.

2.2 Straight pipe, bent pipe and safe observation

Based on NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, pp. 155-156.

In Activity 11.2, a flame is visible through a straight hollow pipe. After the pipe bends, the flame cannot be seen through it. The pipe wall blocks the straight route.

- Keep the flame and eye in line with the straight pipe.
- Bend the flexible pipe without moving close to the flame.
- Compare what can be seen before and after bending.

Use a battery torch instead of a candle whenever possible. Any flame needs adult supervision. Do not place paper, cloth or hair near it.

What a light-path arrow means

A straight arrow represents the direction in which light travels. It is a drawing aid, not a solid thread in the air.

A teacher may demonstrate a low-power laser passing through water containing a tiny amount of milk. Scattered light makes the path visible from the side. Never aim a laser towards anyone's eyes.

Line up to light up

For the three-hole activity, remember: aligned holes give a clear route; one sufficiently displaced hole blocks that route.

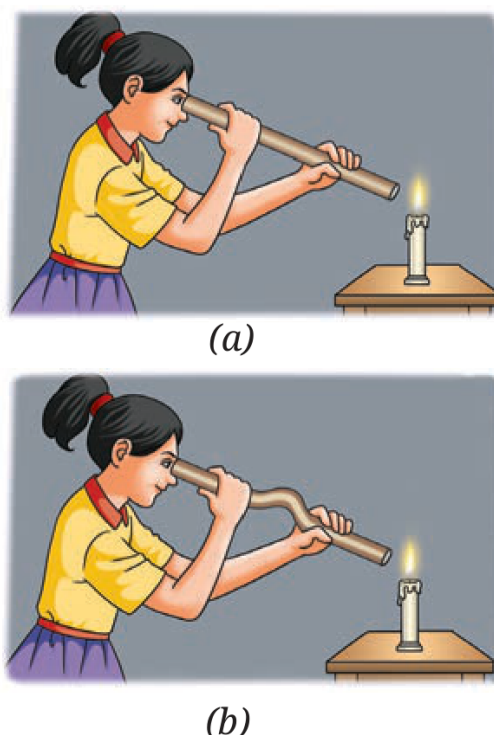


Fig. 11.5, NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, p. 155.

3 Materials in the path of light

Different materials transmit different amounts of light. Compare both the passage of light and the clarity of objects seen through them.

3.1 Transparent, translucent and opaque

Based on NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, pp. 156-157.

A transparent material lets most light pass through and allows objects to be seen clearly. Clear window glass is a familiar example.

A translucent material lets some light through, but objects behind it are not seen clearly. Tracing paper and frosted glass are common examples.

An opaque material does not let light pass through it. Cardboard, wood and a thick metal sheet are examples.

Type	Passage of light	Seeing an object behind it
Transparent	Most light passes	Usually clear
Translucent	Some light passes	Blurred or unclear
Opaque	Light is blocked	Not seen through the material

Classify the actual sample

Thickness, layers and surface condition matter. A thin cloth and a thick folded cloth may transmit different amounts of light.

A clean glass sheet and a muddy glass sheet should not be treated as identical samples. Describe exactly what you tested.

Use a two-part test

Ask whether light passes through. Then ask whether an object behind the sample can be seen clearly.

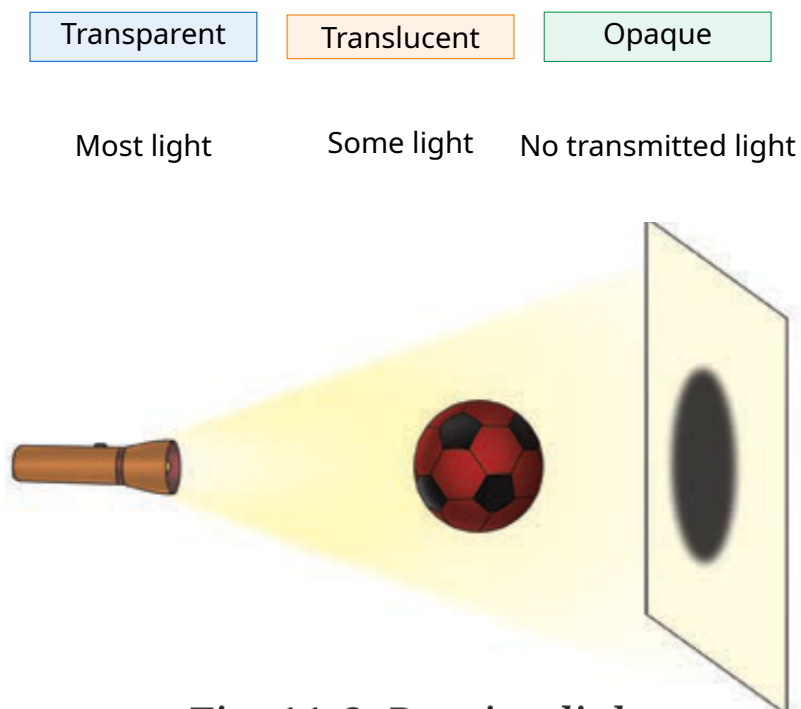


Fig. 11.6: Passing light through different materials

Fig. 11.6, NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, p. 157.

3.2 Prediction and observation table

Based on NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, pp. 156-157.

Activity 11.3 compares a prediction with a real observation. A wrong prediction is useful when it leads to a better explanation.

Use the torch, test material and screen arrangement in Fig. 11.6 in the preceding subsection. Place each sample between the torch and screen.

1. Fix a torch so it makes a bright spot on a screen.
2. Predict what will happen with one material in the light path.
3. Place that material between the torch and screen.
4. Record the brightness of the spot and the clarity of transmitted light.
5. Repeat without changing the torch position.

Sample	Likely group	Observation to check
Clear glass	Transparent	Bright transmitted light
Tracing paper	Translucent	Dimmer, spread-out light
Cardboard	Opaque	Dark patch behind the card
Thick cloth	Test the sample	Transmission depends on weave and layers

Fair comparison

Keep the torch, screen, room lighting and sample position unchanged. Change only the material.

Record observations before writing conclusions. "The light spread out, and objects behind the sample could not be seen clearly" reports observations. Together, these support the interpretation that the sample is translucent. Dimming alone is insufficient: tinted transparent glass can also dim light.

4 How shadows form

A shadow is a darker region where an object blocks light. A suitable surface makes the shadow easy to observe.

4.1 Source, object and screen

Based on NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, pp. 157-159.

To observe a clear shadow, arrange a light source, an opaque object and a screen. The object lies between the source and the part of the screen where light is blocked.

- **Source:** supplies light, such as a torch or the Sun.
- **Object:** blocks some of that light.
- **Screen:** receives the shadow, such as a wall, floor or sheet.

Light travels around the object's sides along straight paths. Behind the object, less light reaches the screen. This produces a darker patch compared with the lit surroundings.

A screen need not be special

The ground, a wall or the surface of another object can act as a screen. A white cardboard sheet simply makes comparison easier.

Removing the object restores the light spot. Switching off the torch removes the contrast created by that source. Removing the screen removes that surface for observing the shadow.

Shadow and dark room

Darkness everywhere after a torch is switched off is not the object's shadow. A shadow is linked to blocked light.

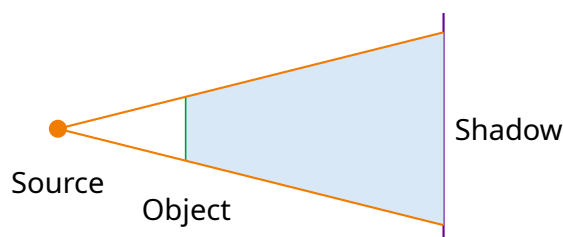




Fig. 11.7: Shadows around us

Fig. 11.7, NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, p. 157.

4.2 Darkness, colour and shape

Based on NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, pp. 158-159.

Opaque objects usually make dark shadows. Translucent objects can make lighter shadows because some light passes through. Some transparent objects can make faint shadows too.

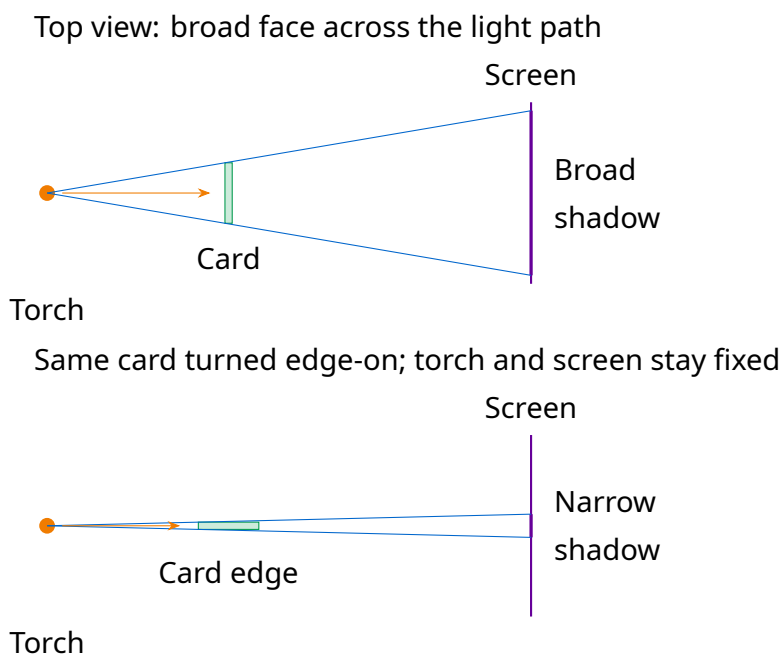
The chapter therefore does not support the rule that transparent objects never make any shadow. Real materials may reflect or redirect some light instead of transmitting all of it.

- A red opaque card and a blue opaque card need not make differently coloured shadows.
- A shadow mainly shows an outline rather than surface colours.
- A single object can produce different outlines when turned.
- Different objects can produce similar outlines.

What a shadow cannot reliably tell

A shadow alone usually cannot reveal an object's colour, surface writing or full three-dimensional shape.

Try turning a rectangular card edge-on to a torch. Its broad shadow becomes narrow. A ball can make a roughly circular outline from many directions.

**Shadow puppetry**

Puppeteers change the positions of flat cut-outs between a lamp and a screen. Their moving outlines tell stories without showing every surface detail.

5 Changing shadows systematically

A shadow changes when the positions or orientation change. Make one change at a time and state what stayed fixed.

5.1 Moving the object

Based on NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, pp. 158-159, 166.

Fix the torch and wall. Place a ball between them. Move the ball towards the torch, then towards the wall.

- Nearer the torch, the ball blocks a wider spreading bundle of light.
- Its shadow on the fixed wall generally becomes larger.
- Nearer the wall, its shadow generally becomes smaller and often sharper.

These comparisons refer to the same torch, ball and wall. Do not compare two unrelated arrangements and assume only distance caused the change.

Write complete comparisons

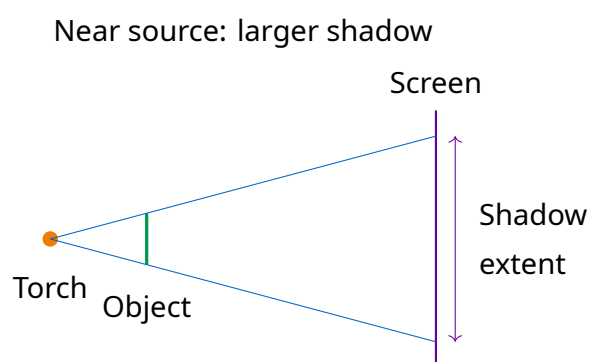
“The shadow becomes larger as the ball moves closer to the fixed torch, with the screen fixed” is clearer than “closer means larger.”

Tilting a flat object can change the outline even without changing its distance. Mark starting positions with tape before testing distance or orientation.

Name the moving part

Begin an explanation with “keeping the torch and screen fixed”. Then name the object movement and resulting shadow change.

A sharp outline is not guaranteed with every lamp. Source size and surrounding light also affect how clear the shadow looks.



5.2 Sunlight, several sources and a high-flying bird

Based on NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, pp. 166-167.

The Sun's apparent position changes during the day. A person's shadow usually becomes shorter as the Sun rises higher. It becomes longer when the Sun is lower.

1. Choose a safe open spot on level ground.

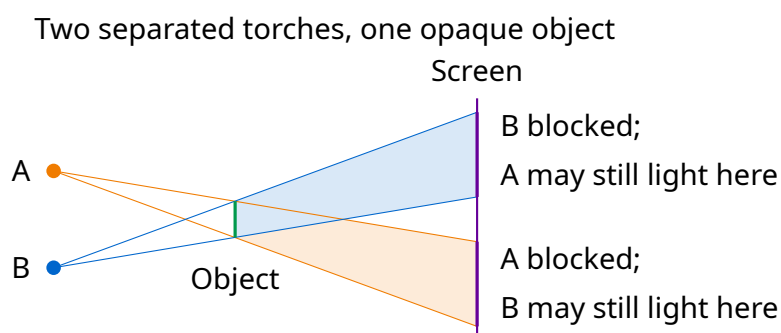
2. Mark one standing position and use the same posture.
3. Measure the shadow at 9 AM, 12 PM and 4 PM.
4. Record the time, length and direction each time.

Do not stare at the Sun. Noon is often the shortest among these observations, but exact solar noon varies with place and date.

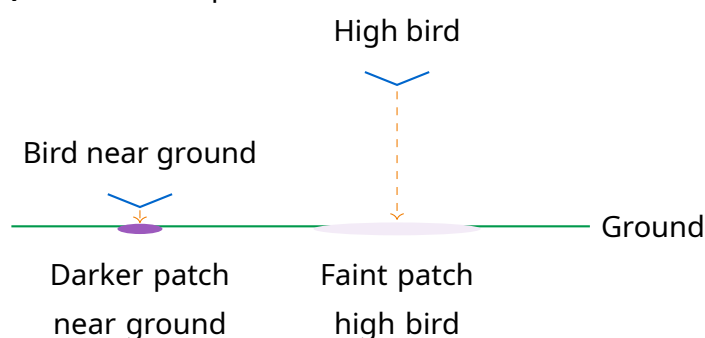
Two lamps, two light paths

Two separated torches can produce two displaced shadows. Each shadow marks light blocked from one source; the other source may partly light it.

A high-flying bird may have no distinct shadow visible on the ground. The Sun is an extended source. At a large distance, the shadow becomes spread out and faint. Near the ground, it is easier to distinguish.



Qualitative comparison under the extended Sun



Higher Sun, shorter shadow

Use this relation for a fixed upright object on level ground. Never replace an actual measurement with the memory aid.

[Download the Full NCERT Chapter PDF →](#)

6 Reflection changes the light path

A mirror can redirect light. Light still travels along straight segments before and after meeting the reflecting surface.

6.1 Sending a bright spot to a wall

Based on NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, pp. 159-160.

In Activity 11.5, sunlight falls on a plane mirror or polished flat steel plate. Tilting it sends a bright spot towards different positions on a nearby wall.

1. Hold the reflecting surface securely.
2. Let light fall on its shiny side.
3. Find the reflected spot on a safe surface.
4. Tilt the mirror slightly and observe the spot move.

The mirror changes the direction of light falling on it. This change in direction by a mirror is called reflection.

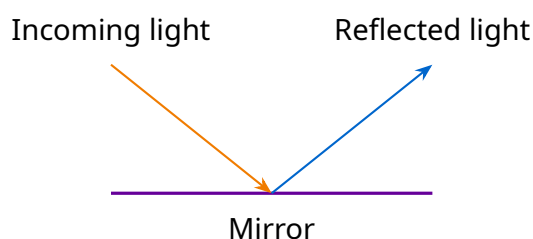
A mirror is not a source

The bright patch is reflected light from another source. The mirror does not produce the sunlight it sends towards the wall.

Do not direct reflected sunlight into eyes or towards traffic. A torch offers a safer classroom alternative. Do not concentrate sunlight using curved mirrors or lenses.

Reading without blocking the lamp

A shiny surface can send a glare patch towards the eyes. Changing its tilt can move the glare away while the lamp stays in place.



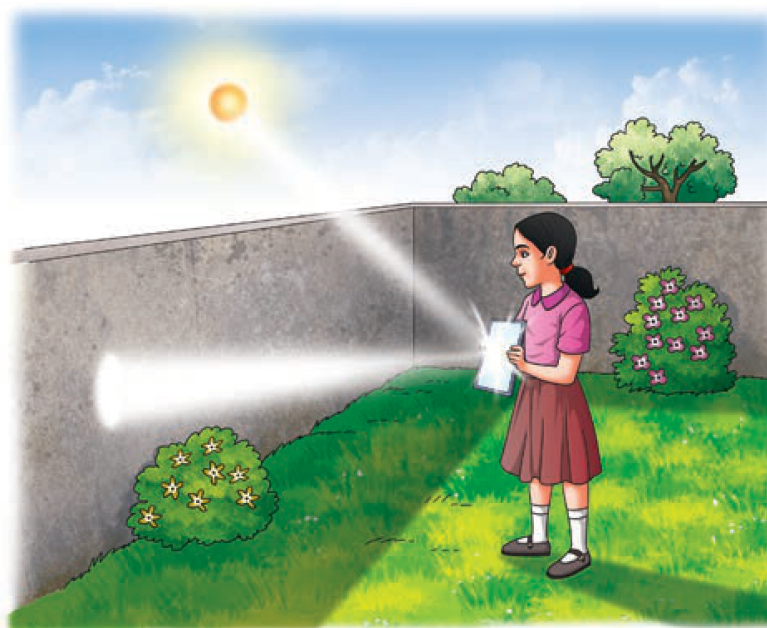


Fig. 11.8: Using mirror to redirect sunlight on a wall

Fig. 11.8, NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, p. 160.

6.2 The comb-slit investigation

Based on NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, pp. 160.

Activity 11.6 makes a narrow beam using a torch, a comb and black paper. Cover all comb openings except one. Place white paper on the table to show the beam's path.

- Hold the comb upright on the paper.
- Adjust the torch until a thin light path appears.
- Place a standing plane mirror in the path.
- Compare the incoming and outgoing straight segments.

The beam changes direction at the mirror surface. Light does not turn before meeting the mirror. The reflected beam is also a straight segment in this setup.

Draw only what the activity supports

Label the source, slit, mirror and reflected path. Arrows should show light travelling from the source towards the mirror and then away.

This chapter introduces reflection through observation. It does not require curved-mirror

formulae, lens calculations or advanced angle rules.

Reflection does not mean a curved route

Draw two straight light-path segments meeting at the mirror. Do not draw a gently bending path through empty air.

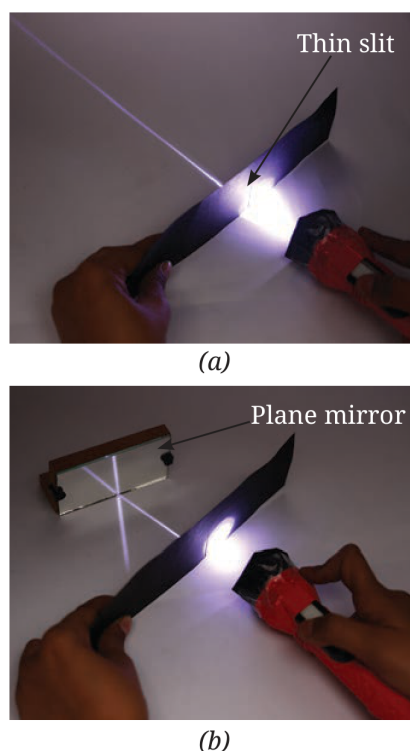


Fig. 11.9, NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, p. 160.

7 Images in a plane mirror

A plane mirror has a flat reflecting surface. Its image differs from a shadow in both appearance and formation.

7.1 Image size, orientation and screen test

Based on NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, pp. 161.

Place a pen in front of a plane mirror. The pen is the object. The pen seen apparently behind the mirror is its image.

- The image is the same size as the object.

- It is erect, meaning upright.
- It appears behind the mirror.
- It cannot be caught on a screen.

Move the pen nearer and farther. The image remains the same size as the pen itself. Its apparent position changes with the object position.

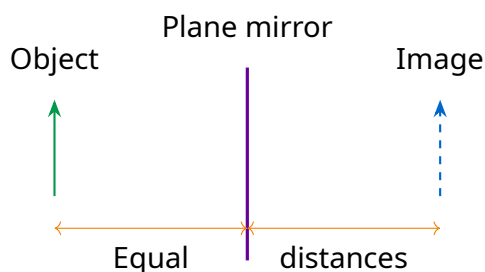
Seeing is different from catching

The eye can see a plane-mirror image. A plain screen placed near the mirror does not receive that same image as a projected picture.

A plane-mirror image is called virtual because it cannot be obtained on a screen. This word describes the image's behaviour; it does not mean that no light reaches the eyes.

Four checks before answering

For a plane mirror, recall equal size, erect orientation, apparent position behind the mirror and failure of the screen test.



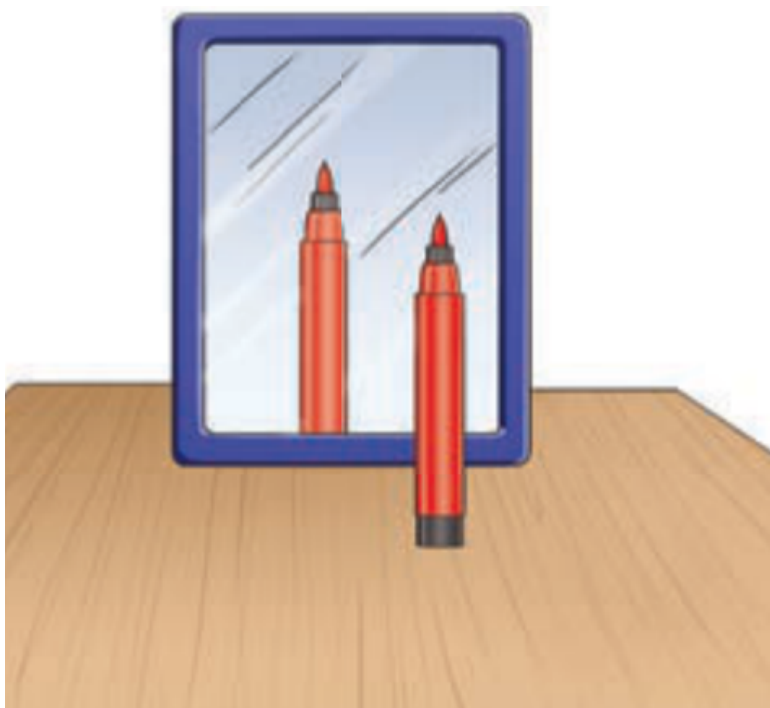


Fig. 11.10, NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, p. 161.



Fig. 11.11, NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, p. 161.

7.2 Distance and lateral inversion

Based on NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, pp. 161-162, 164, 167.

The image appears as far behind a plane mirror as the object is in front. Moving closer makes the image appear closer to the mirror too.

Use the labelled Object, Plane mirror and Image sketch in the preceding subsection. Its arrows mark equal perpendicular distances. Compare the raised arms in Fig. 11.11: the observer is viewed from behind, while the image faces the observer.

Ideal plane mirror: distance rule, result only

Measure perpendicular distances from the flat mirror surface. Distance of object from mirror = apparent distance of image behind mirror.

Supporting check: NCERT Science Kit Manual, Activity 10.9.5, printed p. 159 (teacher reference).

If a pen is 20 cm in front of the mirror, its image appears 20 cm behind it. The apparent separation between pen and image is therefore 40 cm.

Raise your left arm while facing a mirror. The raised arm stays on your left side of the view. The facing image appears to raise its own right arm. This perceived left-right reversal is called lateral inversion.

- The image remains upright; head and feet do not exchange places.
- Written words often look reversed sideways.
- Symmetric capital letters, such as T and O, can look unchanged.

Lateral is not upside down

A plane-mirror image is laterally inverted. A pinhole-camera image is upside down. Do not exchange these descriptions.

Ambulances may carry mirror writing at the front. Drivers ahead can read the word correctly through their rear-view mirrors.

8 The pinhole camera

A tiny hole can form an image without a lens. The explanation uses the straight-line paths of light from different parts of an object.

8.1 Why the image is upside down

Based on NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, pp. 162-163.

Place a bright object in front of a small hole in opaque cardboard. Put a screen on the other side. In dim surroundings, a faint image may appear on the screen. **Full qualitative derivation.**

1. Light from the top of the object travels through the pinhole.
2. Continuing straight, it reaches the lower part of the screen.
3. Light from the bottom reaches the upper part of the screen.
4. The resulting image is inverted, or upside down.

The hole does not turn individual rays around. Rays from different parts cross at the hole, then continue along their straight paths.

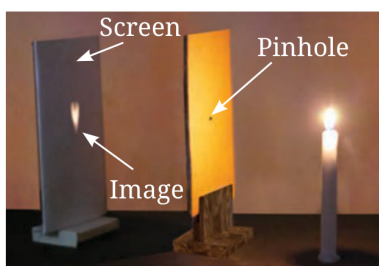
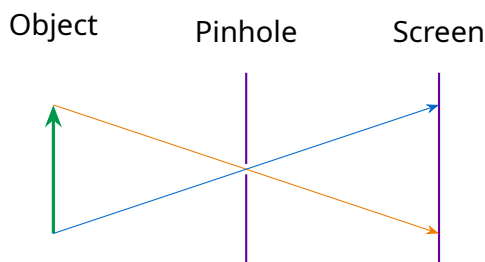
An image, not merely an outline

A pinhole camera can show object colours and details. A shadow mainly marks blocked light. Both depend on straight-line travel, but they form differently.

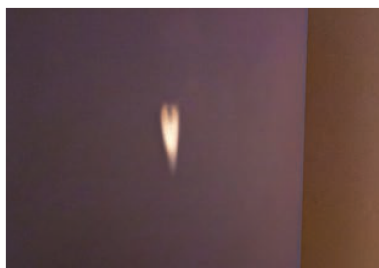
The pinhole image can be received on a screen. This distinguishes it from a plane-mirror image. A small hole helps keep light from different object parts from overlapping too much.

An early camera idea

A dark enclosure, small opening and screen make a simple camera. The school model uses no electronic sensor, lens or battery.



(a)



(b)

Fig. 11.12: (a) A simple pinhole camera
(b) Image of a candle flame on screen

Fig. 11.12, NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, p. 163.

8.2 Constructing and improving the sliding camera

Based on NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, pp. 163.

Activity 11.10 uses two cardboard boxes, one sliding inside the other. The larger box carries a tiny hole. Tracing paper covers a square opening in the smaller box.

1. Cut the boxes as directed by an adult or teacher.
2. Make a small clean hole in the outer box.
3. Fix tracing paper smoothly over the inner screen opening.
4. Slide the smaller box inside so the screen faces the pinhole.
5. Point the hole at a bright tree or building.
6. View the screen from the open rear side under a dark cloth.

Slide the boxes gently to change the pinhole-to-screen distance. Keep stray light out. A loosely fitted lid can wash out a faint image.

Troubleshooting

No image: check hole direction and light leaks. Blurred image: check whether the hole is too large. Very dim image: use a brighter safe scene.

Never look directly at the Sun through the hole or any optical device. Use trees or buildings as targets. Keep cutting tools and sharp pins under adult control.

Hole, dark box, screen

These three parts explain the simple camera. A lens is not one of its required parts.

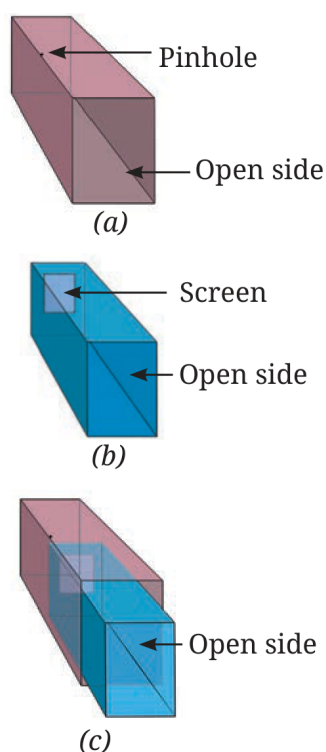


Fig. 11.13, NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, p. 163.

9 Useful devices and careful projects

Two or more mirrors let light follow several connected straight paths. Reflection supports both useful viewing devices and changing patterns.

9.1 Periscope: seeing beyond an obstacle

Based on NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, pp. 164.

A simple periscope uses two plane mirrors inside a box or tube. They are placed near opposite ends so the first mirror sends light towards the second.

1. Light from an object enters the top opening.
2. The upper mirror reflects it along the tube.
3. The lower mirror redirects it towards the observer's eye.

In the usual school design, the two mirrors are parallel and each is tilted about 45 degrees to the tube. Their reflecting faces must point towards the light route.

Follow the arrows

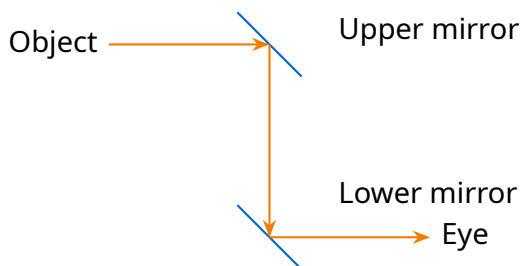
A working model needs a continuous route: object, upper mirror, lower mirror, eye. Merely placing two mirrors inside a box is not enough.

Periscopes help people look above obstacles. The chapter gives submarines, tanks and bunkers as examples. A classroom version can show an object behind a higher cardboard wall.

Use reflective card or safe plastic mirrors where possible. Cover sharp edges. Check both mirror positions before closing the tube.

Find a faulty periscope

If no image appears, trace the path from each opening. Adjust the mirrors so light reaches both mirrors and then the eye.



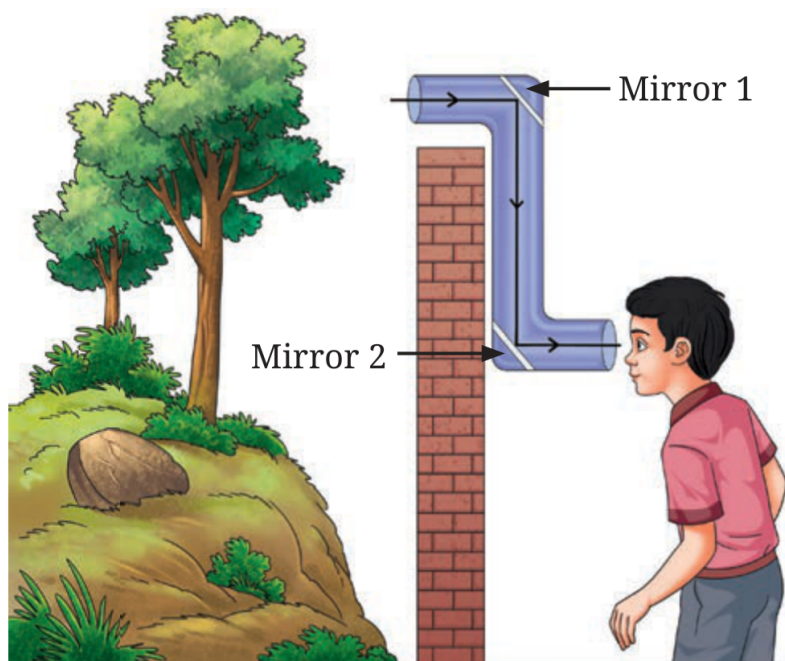


Fig. 11.14: A periscope

Fig. 11.14, NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, p. 164.

9.2 Kaleidoscope, two mirrors and a small mirror

Based on NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, pp. 164-165, 168.

A kaleidoscope uses three equal-width mirror strips arranged as a triangular tube. Small coloured pieces at one end create patterns through repeated reflections.

- The mirrors form many repeated views of the pieces.
- Turning the tube changes the positions of the coloured pieces.
- The changed arrangement produces a new pattern.

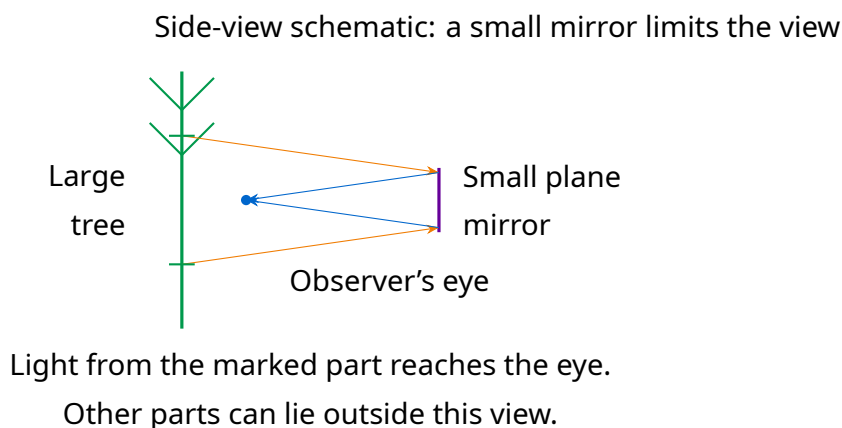
Use coloured beads or paper instead of broken glass bangles. Keep the viewing end smooth and the pieces safely enclosed.

Two devices, different aims

A periscope redirects a view around an obstacle. A kaleidoscope produces decorative repeated patterns through multiple reflections.

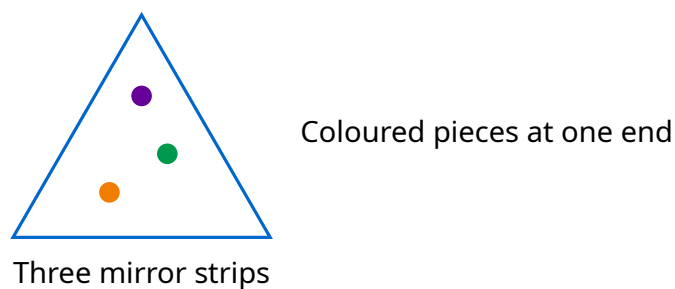
Try two mirrors placed at an angle. Predict the number and arrangement of images before observing. Keep the object fixed while changing the angle. No counting formula is needed here.

A small plane mirror can show parts of a large tree. What is visible depends on the observer's position and the mirror's position. A small mirror does not automatically make a reduced-size image of the whole tree.



Periscope path, kaleidoscope pattern

Associate each device with its purpose. Both depend on reflection, but their mirror arrangements and results differ.



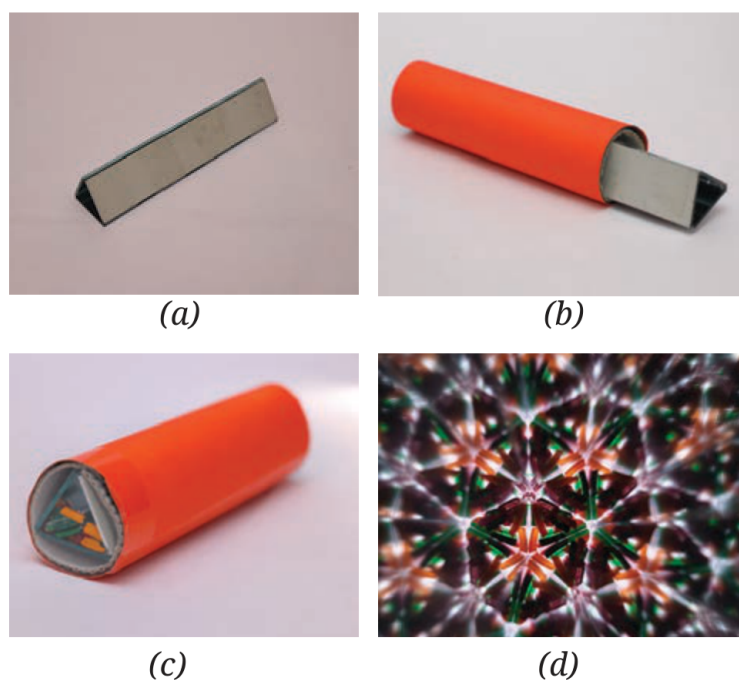


Fig. 11.15: A kaleidoscope

Fig. 11.15, NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, p. 164.

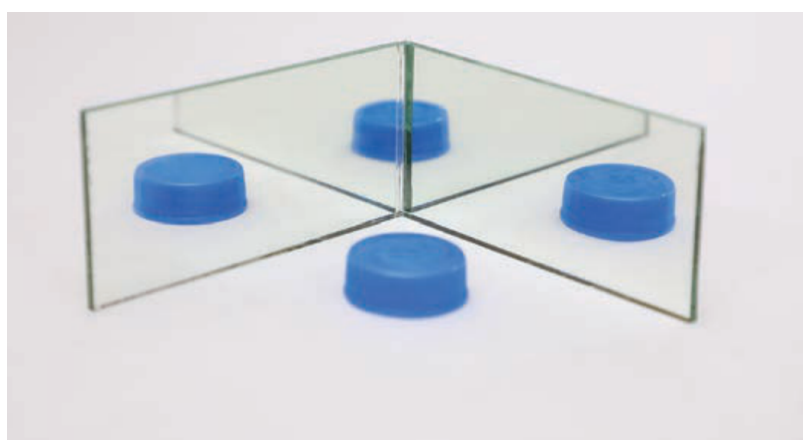


Fig. 11.21: Observing images in two mirrors

Fig. 11.21, NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, p. 168.

Related Collegedunia Resources

Same chapter, other resources:

Use the official chapter PDF for the source text.

Official NCERT source:

- [Official Chapter 11 PDF](#)

10 Practice, investigations and quick reference

Use explanations, diagrams and fair tests together. The practice below checks reasoning rather than isolated memory words.

10.1 Worked reasoning practice

Based on NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, pp. 154-167. Questions here are original revision practice.

1. A torch shines on a red card. What colour information does its shadow provide?

The shadow does not normally identify the red colour. It marks the region where the opaque card blocks light. A blue card of the same outline can give a similar shadow.

2. A ball moves towards a fixed torch while the wall remains fixed. What changes?

The shadow generally grows larger. A wider spreading bundle is blocked before it reaches the wall. Name the fixed parts when giving this explanation. Compare the labelled Torch, Object, Screen and Shadow extent diagram in subsection 5.1.

3. Why can the flame not be seen through a bent opaque pipe?

The pipe wall blocks the straight route between flame and eye. Light in this setup does not follow the pipe's bend. Compare Fig. 11.5 in subsection 2.2: the straight pipe provides a route, while the bent pipe blocks it.

4. A child stands 50 cm from a plane mirror. Where does the image appear?

It appears 50 cm behind the mirror. Child-to-image separation is 100 cm. The mirror lies between the two apparent positions. Use the labelled Object, Plane mirror and Image diagram in subsection 7.1; apply 50 cm to each equal-distance arrow.

5. Is an upside-down image on tracing paper necessarily a shadow?

No. A pinhole camera forms an upside-down image on its screen. Light passes through the hole from the object.

Answer with a reason

State the conclusion, name the relevant property and connect it to the situation. One unexplained word rarely shows full understanding.

10.2 A safe observation notebook

Based on NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, pp. 156-158, 167-168.

Choose one investigation and make a record. Do not copy a predicted result into the observation column before testing.

Heading	What to record
Question	One thing you want to find out
Materials	Exact samples and equipment
Prediction	Expected change and reason
Method	Ordered steps and safety measures
Kept fixed	Source, screen, position or room lighting
Observation	What was actually seen or measured
Conclusion	What the observation supports

Try the coloured-light project from the chapter. Put transparent coloured paper over a torch and compare shadows on a white wall. Do not place paper over a hot lamp.

An opaque object blocks the coloured light too. The blocked region does not acquire the object's surface colour. Other room lights may affect the appearance, so describe the setup.

Separate evidence from explanation

"The wall looked red except behind the card" reports an observation. "The card blocked red light" explains that observation.

Class 7 assessments vary between schools. The questions here are revision practice, not a claimed collection of previous-year examination questions.

10.3 Quick reference summary

Based on NCERT Curiosity, Grade 7, Chapter 11, Reprint 2026-27, pp. 154-165.

Key idea	Recall in one line
Luminous object	Emits its own light
Non-luminous object	Seen when suitable light is reflected towards the eyes
Transparent	Transmits most light; clear view
Translucent	Transmits some light; unclear view
Opaque	Blocks transmitted light
Shadow	Darker region caused by blocked light
Reflection	Change in light direction at a reflecting surface
Plane-mirror image	Erect, equal size, laterally inverted, not caught on a screen
Pinhole image	Inverted and received on a screen
Periscope	Uses two reflections to redirect a view
Kaleidoscope	Uses repeated reflections to form changing patterns

Ideal plane-mirror distance: result only

For an ideal plane mirror, object distance from mirror equals apparent image distance behind mirror. Measure both distances perpendicular to the mirror. Use the labelled Object, Plane mirror and Image sketch in subsection 7.1 for the equal-distance arrows.

- Draw straight arrows with clear direction.
- Label the source, object, mirror, hole and screen where relevant.
- Distinguish an erect image from an inverted image.
- Compare predictions with observations.
- Keep flames, lasers, sharp tools and mirrors under suitable supervision.

Primary source: NCERT Curiosity, Grade 7, Chapter 11, pages 153-168, reprint 2026-27. Source illustrations retain their NCERT figure numbers. Diagrams added here explain the same school-level concepts.