

Motion, Measurement, Light and Shadows

Science · Class 6 · 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

- The SI unit of length is the _____.
 (A) Metre (B) Centimetre
 (C) Kilometre (D) Millimetre
- The motion of a child on a swing is an example of _____ motion.
 (A) Rectilinear (B) Periodic
 (C) Circular (D) Random
- The motion of the blades of a ceiling fan is _____ motion.
 (A) Rectilinear (B) Random
 (C) Periodic only (D) Circular
- Light travels _____.
 (A) In straight lines (B) In curved paths
 (C) Only through water (D) In zig-zags
- A shadow is formed when light is blocked by a/an _____ object.
 (A) Transparent (B) Opaque
 (C) Translucent (D) Luminous
- Which of these is a **luminous** object?
 (A) The moon (B) A mirror
 (C) A white wall (D) The sun
- A pinhole camera forms an image that is _____.
 (A) Inverted and real (B) Erect and enlarged
 (C) Erect and virtual (D) Always the same size as the object
- Which of these was **not** a reliable early method of measuring length?
 (A) Using the length of a foot (B) Using a standard metre scale
 (C) Using the span of a hand (D) Using the length of a forearm

9. In the set-up shown, a ball is held between a lamp and a screen. If the **ball is moved closer to the lamp** while the screen stays fixed, the shadow will become _____.

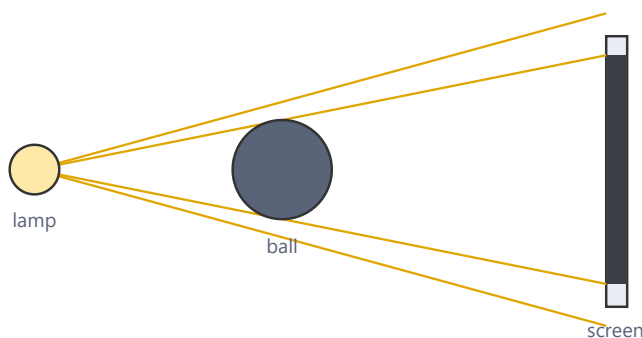


Fig. 9.1 — Formation of a shadow

- (A) Exactly the same
(B) Smaller
(C) Larger
(D) It will disappear
10. A car travels 90 km in 1 hour 30 minutes. What is its speed in km/h?
- (A) 45 km/h
(B) 135 km/h
(C) 75 km/h
(D) 60 km/h
11. In the table below, which row is **incorrectly** matched?

Row	Example	Type of motion
(A)	A moving train on a straight track	Rectilinear
(B)	The needle of a sewing machine	Periodic
(C)	A stone tied to a string and whirled	Rectilinear
(D)	The earth around the sun	Circular

Table 11.1 — Kinds of motion

- (A) Row (A)
(B) Row (B)
(C) Row (C)
(D) Row (D)
12. Why is a measuring tape better than a metre scale for measuring the girth of a tree trunk?
- (A) It is flexible and can be wrapped around a curved surface
(B) It is longer
(C) It is made of metal
(D) It is easier to read
13. The distance between two cities is 240 km. A bus takes 4 hours for the journey. How long would it take at 80 km/h?
- (A) 2 hours
(B) 3 hours
(C) 4 hours
(D) 5 hours
14. A pinhole camera is made with a **larger** hole than usual. What happens to the image?
- (A) It disappears
(B) It becomes sharper
(C) It becomes brighter but blurred
(D) It becomes erect
15. Why does a shadow always have the same colour, whatever the colour of the object?
- (A) Objects lose their colour in shadow
(B) The screen absorbs the colour
(C) Shadows reflect only black light
(D) A shadow is simply a region where light is absent

16. Consider the following statements.

- (i) A body can have circular and periodic motion at the same time.
- (ii) Light needs a material medium to travel through.
- (iii) The size of a shadow depends on the positions of the source, object and screen.

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. A student measures the length of a table as 1.25 m using a metre scale, but starts measuring from the 10 cm mark instead of the zero mark and forgets to allow for it. What is the true length of the table?

- | | |
|------------|------------|
| (A) 1.15 m | (B) 1.25 m |
| (C) 1.35 m | (D) 1.10 m |

18. A cyclist covers 1.8 km in 6 minutes. What is her speed in metres per second?

- | | |
|------------|------------|
| (A) 3 m/s | (B) 5 m/s |
| (C) 18 m/s | (D) 30 m/s |

Answer Key

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

Solutions

1. Answer: (A) Metre

The SI (standard international) unit of length is the **metre**. Centimetres, millimetres and kilometres are all derived from it.

2. Answer: (B) Periodic

A swing repeats the same to-and-fro movement at regular intervals, which is **periodic** motion. A pendulum and a vibrating string show it too.

3. Answer: (D) Circular

Each point on a fan blade traces a circle around the fixed centre, so this is **circular** motion.

4. Answer: (A) In straight lines

Light travels **in straight lines**. This is why we cannot see round corners and why sharp shadows are formed.

5. Answer: (B) Opaque

An **opaque** object stops light completely, so a dark shadow forms behind it. Transparent objects let light straight through and cast almost no shadow.

6. Answer: (D) The sun

A luminous object gives out its own light. The **sun** does; the moon, a mirror and a wall are non-luminous and only reflect the light falling on them.

7. Answer: (A) Inverted and real

Light travels in straight lines, so rays from the top of the object reach the bottom of the screen and vice versa. The image in a pinhole camera is therefore **inverted and real**.

8. Answer: (B) Using a standard metre scale

Body parts vary from person to person, so the foot, hand span and forearm all gave different results. A **standard metre scale** is precisely the reliable method that replaced them.

9. Answer: (C) Larger

The rays that just graze the edges of the ball spread apart as they travel on to the screen. Moving the ball nearer the lamp means it blocks the light closer to the source, so those edge rays have further to spread — and the shadow becomes **larger**.

10. Answer: (D) 60 km/h

1 hour 30 minutes = 1.5 hours.

Speed = distance ÷ time = $90 \div 1.5 = 60$ km/h.

11. Answer: (C) Row (C)

A whirled stone traces a circle, so its motion is **circular**, not rectilinear. Rectilinear motion is movement along a straight line. The other three rows are correct.

12. Answer: (A) It is flexible and can be wrapped around a curved surface

A rigid metre scale cannot follow a curve. A measuring tape **is flexible and can be wrapped around a curved surface**, giving the correct length along the curve.

13. Answer: (B) 3 hours

Time = distance ÷ speed = $240 \div 80 = 3$ hours. (Its original speed was $240 \div 4 = 60$ km/h, so going faster saves an hour.)

14. Answer: (C) It becomes brighter but blurred

A larger hole lets in more light, so the image is **brighter**, but rays from a single point on the object now reach a small patch instead of a single point, so it also becomes **blurred**. A tiny hole gives a sharp but dim image.

15. Answer: (D) A shadow is simply a region where light is absent

A shadow is not an image — it is simply the **region where light has been blocked and is absent**. Since no light reaches there, no colour can be seen and it always appears dark.

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

Statement (i) is true — the hands of a clock move in circles and repeat at regular intervals, so their motion is both circular and periodic. Statement (ii) is false; light travels perfectly well through the vacuum of space, which is how sunlight reaches us. Statement (iii) is true. Hence **(i) and (iii)**.

17. Answer: (A) 1.15 m

Starting from the 10 cm mark means every reading is 10 cm too large.

True length = 1.25 m – 0.10 m = **1.15 m**.

This is why a scale should be read from the zero mark, or the starting reading subtracted from the finishing one.

18. Answer: (B) 5 m/s

Convert both quantities to SI units.

Distance = 1.8 km = 1,800 m.

Time = 6 minutes = 360 s.

Speed = $1,800 \div 360 = \mathbf{5\ m/s}$. (That is 18 km/h.)