

Chapter 10: Motion and Measurement of Distances

NCERT Exemplar · Class 6 · Science

Multiple Choice Questions

Question 1

The distance between Delhi and Mumbai is usually expressed in units of

A.

decametre

B.

metre

C.

centimetre

D.

kilometre

Answer

Correct option: D

Solution

Ans: The correct answer is (d) kilometer.

Question 2

Which of the following does not express a time interval?

A.

A day

B.

A second

C.

A school period

D.

Time of the first bell in the school

Answer

Correct option: D

Solution

Ans: The correct answer is (d) Time of the first bell in the school.

Explanation: Time of the first bell signify a point of time, not a time interval.

Question 3

Fig. 10.1 shows a measuring scale which is usually supplied with a geometry box. Which of the following distance cannot be measured with this scale by using it only once?

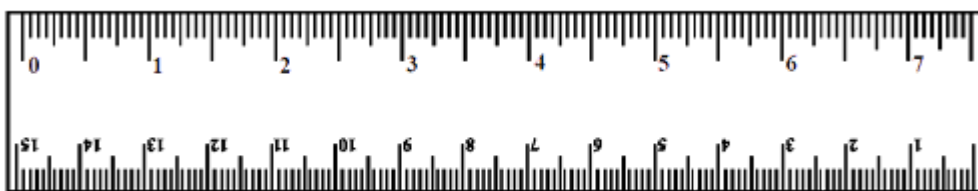


Fig 10.1

A.

$0.1m$

B.

$0.15m$

C.

$0.2m$

D.

$0.05m$

Answer

Correct option: C

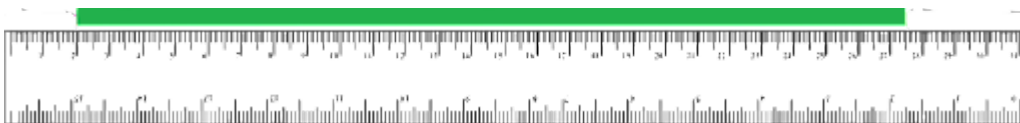
Solution

Ans: The correct answer is (c) $0.2m$

Explanation: $0.2m$ cannot be measured by using given scale only once because measuring scale is only $0.15m$ long.

Question 4

A piece of ribbon folded five times is placed along a $30cm$ long measuring scale as shown in Fig. 10.2.



The length of the ribbon is between

A.

$1.15m - 1.25m$

B.

$1.25m - 1.35m$

C.

$$1.50m - 1.60m$$

D.

$$1.60m - 1.70m$$

Answer

Correct option: B

Solution

Ans: The correct answer is (b) $1.25m - 1.35m$.

Explanation: The length of five times folded ribbon = $(27.5 - 2) \text{ cm} \times 5$
 $= 1.275m$

Which lies between $1.25m - 1.35m$.

Question 5

Paheli moves on a straight road from point A to point C. She takes 20 minutes to cover a certain distance AB and 30 minutes to cover the rest of distance BC. She then turns back and takes 30 minutes to cover the distance CB and 20 minutes to cover the rest of the distance to her starting point. She makes 5 rounds on the road the same way. Paheli concludes that her motion is

A.

Only rectilinear motion.

B.

Only periodic motion.

C.

Rectilinear and periodic both.

D.

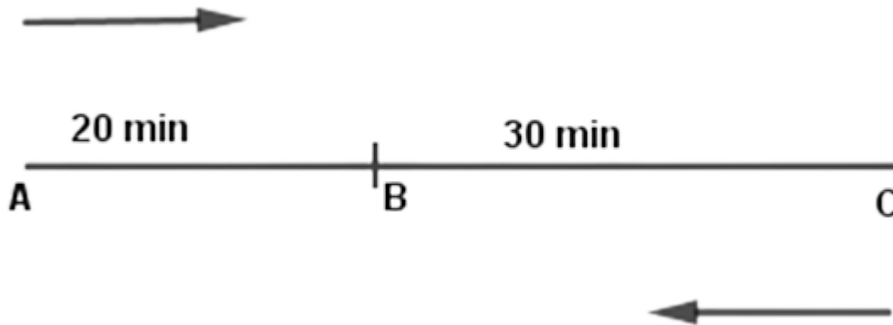
Neither rectilinear nor periodic.

Answer

Correct option: C

Solution

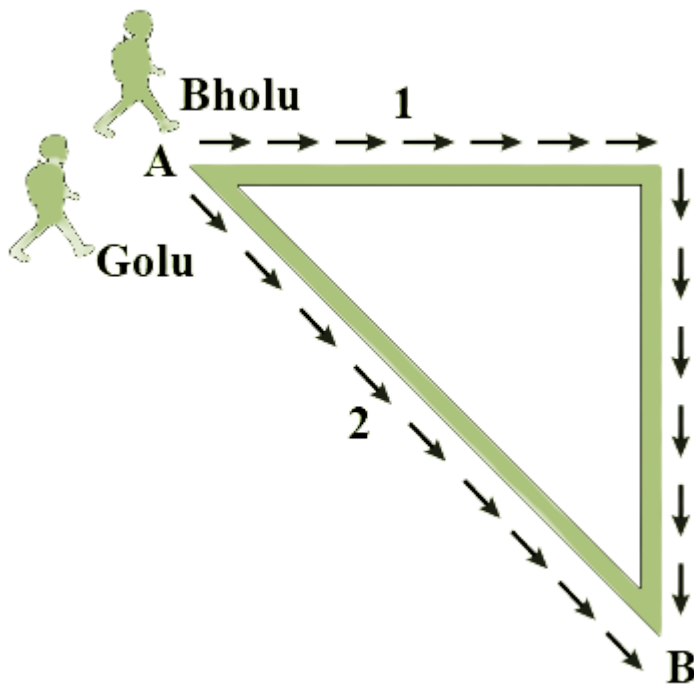
Ans: The correct answer is (c) rectilinear and periodic both.



Explanation: Paheli is moving along a straight line, so her motion is rectilinear and she is also moving with a fixed time period, so her motion is periodic. Therefore, the correct answer is both rectilinear and periodic.

Question 6

Bholu and Golu are playing in a ground. They start running from the same point A in the ground and reach point B at the same time by following the paths marked 1 and 2 respectively as shown in Fig. 10.3. Which of the following is/are true for the given situation.

**Fig 10.3**

As compared to Golu, Bholu covers a

A.

Longer distance but with a lower speed.

B.

Longer distance with a higher speed.

C.

Shorter distance with a lower speed.

D.

Shorter distance with a higher speed.

Answer

Correct option: B

Solution

Ans: The correct answer is (b) longer distance with a high speed.

Explanation: We can see in the given figure that path 1 is longer than 2, but both have reached point B at the same time. So, Bholu walked faster than Golu.

Question 7

Four pieces of wooden sticks A, B, C and D are placed along the length of 30cm long scale as shown in Fig. 10.4. Which one of them is 3.4cm in length?



Fig 10.4

A.

A

B.

B

C.

A

D.

D

Answer

Correct option: C

Solution

Ans: The correct answer is option (c) C.

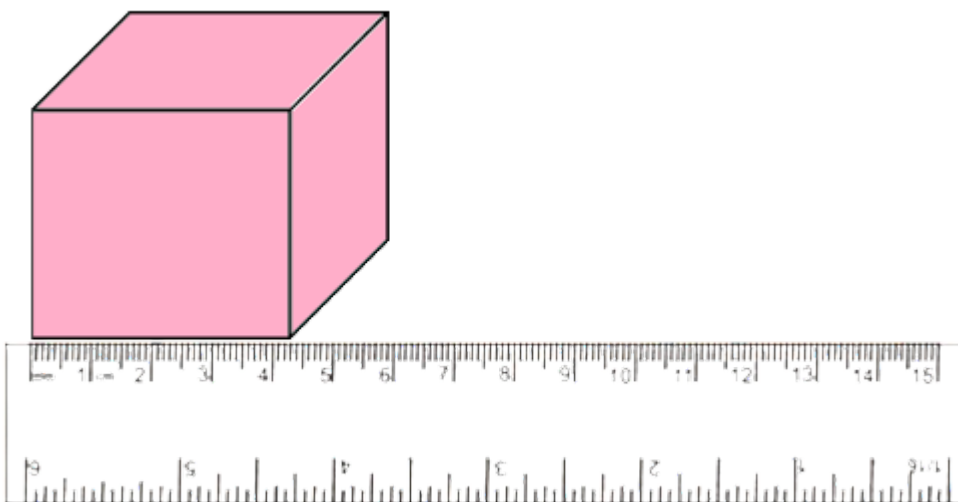
Explanation: Length of a wooden stick = Final reading of scale – Initial reading of scale.

Name of wooden stick	Length of a wooden stick = Final reading of scale – Initial reading of scale.
A	$2.7 - 0.3 = 2.4\text{cm}$
B	$6.5 - 3.4 = 3.1\text{cm}$
C	$10.4 - 7 = 3.4\text{cm}$
D	$14.4 - 10.7 = 3.7\text{cm}$

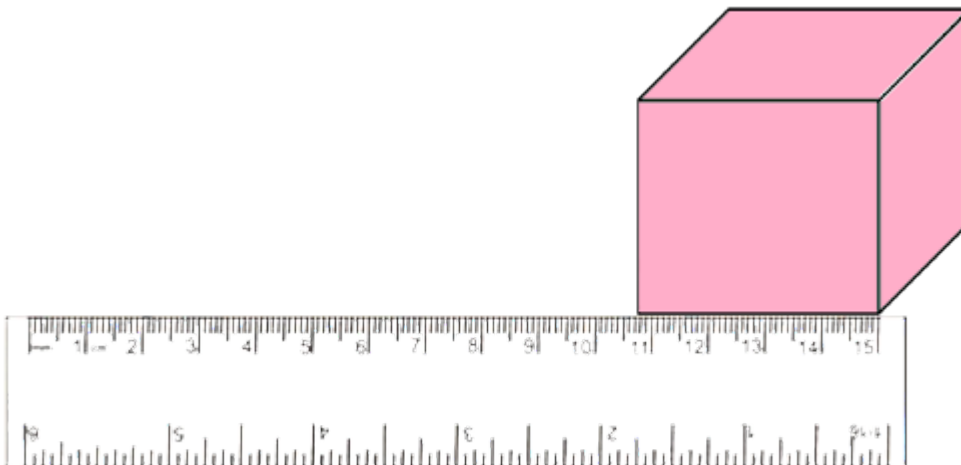
Question 8

Which of the following figure shows the correct placement of a block along a scale for measuring its length?

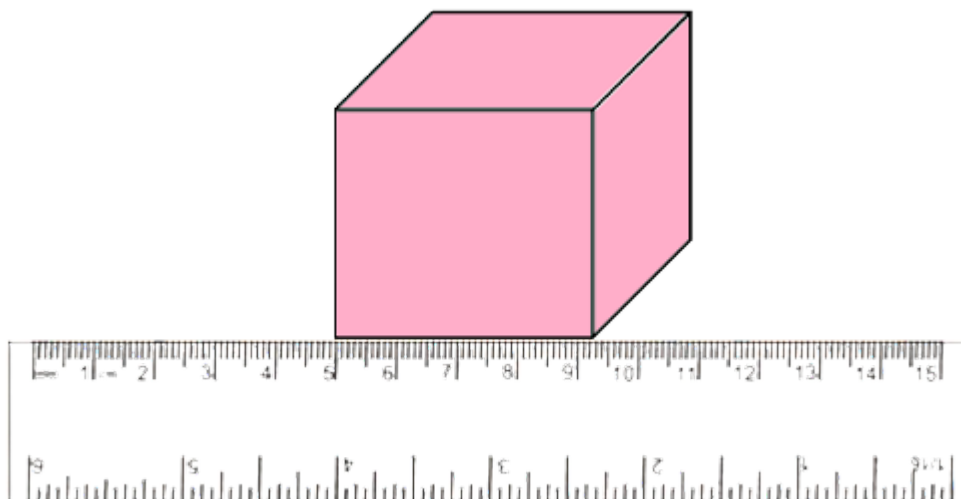
a)



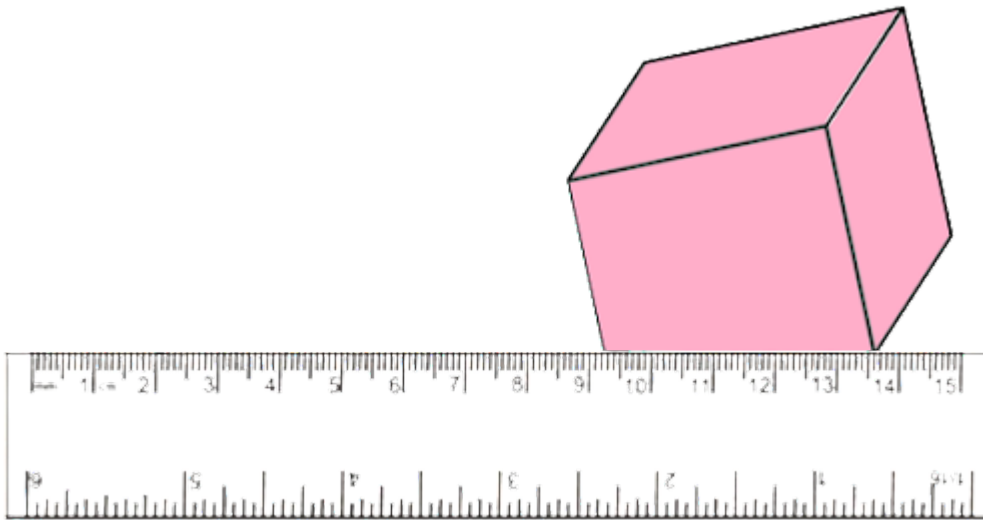
b)



c)



d)



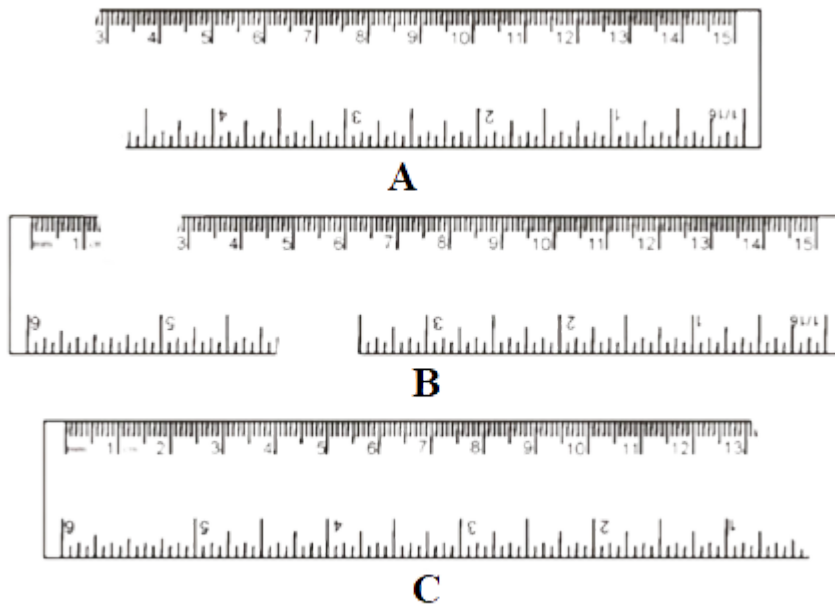
Solution

Ans: The correct answer is (c).

Explanation: Object should be placed on a scale in such a way that its vertices lie in between the readings marked on the scale.

Question 9

You are provided three scales A, B and C as shown in Fig. 10.6 to measure a length of 10cm.

**Fig 10.6**

For the correct measurement of the length you will use the scale

A.

A only

B.

B only

C.

C only

D.

Any of the three scales

Answer

Correct option: D

Solution

Ans: The correct answer is (d) any of the three scales.

Explanation: Length of 10cm is available in all the scales.

Very Short Answer Questions

Question 10

Correct the following.

i. The motion of a swing is an example of rectilinear motion.

ii. $1m = 1000cm$

Solution

Ans: During the movement of swing periodic motion is shown rather than rectilinear motion. As, the swing is repeating its motion after a certain period of time.

Ans: A cm is a $\frac{1}{100}$ th part of a metre. So, $1m = 100cm$

Question 11

Fill in the blanks

i. Motion of an object or a part of it around a fixed point is known as motion.

ii. A body repeating its motion after certain interval of time is in motion.

iii. In rectilinear motion, object moves..... a line.

iv. SI unit of length is

Solution

Ans: Circular

Ans: Periodic

Ans: Along; straight

Ans: Metre

Question 12

Write one example for each of the following type of motion.

i. Rectilinear

ii. Circular

iii. Periodic

iv. Circular and periodic

Solution

Ans: Parade of army.

Ans: Moving blades of a fan.

Ans: Motion of a swing.

Ans: Tip of minute hand of a clock.

Short Answer Questions

Question 13

The photograph given as Fig. 10.7 shows a section of a grille made up of straight and curved iron bars. How would you measure the length of the bars of this section, so that the payment could be made to the contractor?

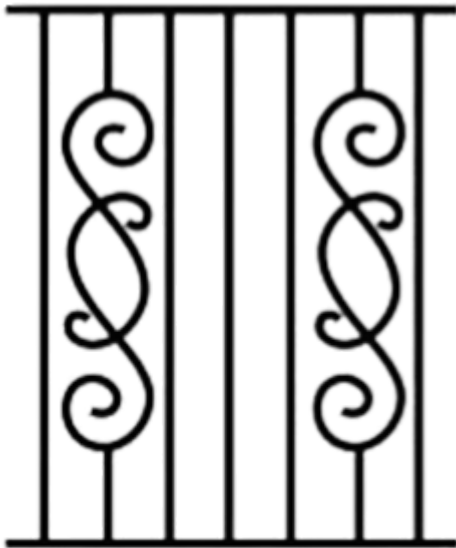


Fig. 10.7

Solution

Ans: We can see in the given figure that the grille is made up of two types of iron bars, straight and curved. We can use a measuring tape to measure straight iron bars and to measure curved iron bars, we can use thread first and then we can evaluate the result on a scale.

Question 14

Identify the different types of motion in the following word diagram given as Fig. 10.8.

Y	O	U	N	G	C	C	N	T	E	R
L	E	V	E	L	P	I	E	E	A	R
A	L	L	O	T	O	P	P	E	A	I
N	O	T	E	P	A	D	N	E	C	K
O	W	O	N	E	W	I	Y	Z	S	E
I	E	V	O	R	L	O	A	D	W	P
T	R	G	N	I	C	E	D	R	I	L
A	Z	H	T	O	N	G	U	E	N	A
T	X	C	R	D	E	P	T	H	G	R
O	E	Y	C	I	R	C	U	L	A	R
R	T	L	C	C	O	P	P	E	R	T

Fig. 10.8**Solution**

Ans:

Y	O	U	N	G	C	C	N	T	E	R
L	E	V	E	L	P	I	E	E	A	R
A	L	L	O	T	O	P	P	E	A	I
N	O	T	E	P	A	D	N	E	C	K
O	W	O	N	E	W	I	Y	Z	S	E
I	E	V	O	R	L	O	A	D	W	P
T	R	G	N	I	C	E	D	R	I	L
A	Z	H	T	O	N	G	U	E	N	A
T	X	C	R	D	E	P	T	H	G	R
O	E	Y	C	I	R	C	U	L	A	R
R	T	L	C	C	O	P	P	E	R	T

Question 15

Four children measure the length of a table which was about $2m$. Each of them used different ways to measure it.

i. Sam measured it with a half metre long thread.

ii. Gurmeet measured it with a 15cm scale from her geometry

iii. Reena measured it using her hand span.

iv. Salim measured it using a 5m long measuring tape.

Which one of them would get the most accurate length? Give reason for your answer.

Solution

Ans: Option (iv) is the correct answer.

Explanation: As Salim is using a standard instrument that is a 5m long measuring tape. The measurement will be accurate and it will be easy for Salim to measure the table quickly.

Question 16

Match the events related to motion in Column I with the types of motions given in Column II.

Column I	Column II
a) A moving swing.	i. Periodic motion
b) A movement of tip of the minute hand of a clock in one hour.	ii. Rotational motion
c) A moving wheel of a sewing machine.	iii. Circular motion

Solution

Ans: The correct match is given below:

Column I	Column II
a) A moving swing.	ii. Rotational motion
b) A movement of tip of the minute hand of a clock in one hour.	iii. Circular motion

c) A moving wheel of a sewing machine.	i. Periodic motion

Long Answer Questions

Question 17

While travelling in a train, it appears that the trees near the track are moving whereas co-passengers appear to be stationary. Explain the reason.

Solution

Ans: The trees near the track appear to be moving in direction opposite to us because the position of these trees keeps changing with respect to us. Whereas, the position of our co-passengers doesn't change with respect to us and that is why they seem to be stationary.

Question 18

How are the motions of a wheel of a moving bicycle and a mark on the blade of a moving electric fan different? Explain.

Solution

Ans: When the wheels of a bicycle start rotating, the bicycle moves forward (unless we apply breaks). So we can see both circular and rectilinear motion in the wheels of a bicycle. On the other hand, only circular motion can be seen when fan blades are in motion as the movement of blades doesn't change the position of the fan.

Question 19

Three students measured the length of a corridor and reported their measurements. The values of their measurements were different. What could be the reason for difference in their measurements? (Mention any three)

Solution

Ans: Reasons for difference in their measurements could be-

1. Non standardized instrument.
2. Wrong method of measurement.
3. Use of different scales or devices.

Question 20

Boojho was riding in his bicycle along a straight road. He classified the motion of various parts of the bicycle as

i. Rectilinear motion

ii. Circular motion and

iii. Both rectilinear as well as circular motion.

Can you list one part of the bicycle for each type of motion? Support your answer with reason.

Solution

Ans:

S. No.	Type of motion	Part of bicycle	Reason
i.	Rectilinear	Handle s	Rectilinear motion is observed during the movement of handles.
ii.	Circular	Pedals	The pedals cannot move in any other direction except circular because they are fixed to a chain.
iii.	Both rectilinear and circular	Wheels	When the wheel rotates the bicycle moves forward too. So, rectilinear and circular motions are both shown in the wheels of a moving bicycle.

Motion and Measurement of Distances – Class 6, Science, Chapter 10 (CBSE)

In this chapter, students will learn about motion and ways to measure distances using different formulas. Measurements, SI units of measurement, concepts related to motions will be discussed in this chapter. Motion in a straight line, circular and rectilinear motion, and periodic motion will be learned by the students. This will be an introduction to all the important concepts of physics which will be helpful for students in their higher classes.

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