NCERT Solutions for Class 7 Maths Chapter 15

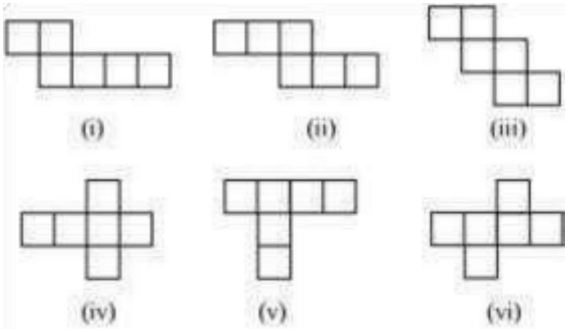
Visualising Solid Shapes Class 7

Chapter 15 Visualising Solid Shapes Exercise 15.1, 15.2, 15.3, 15.4 Solutions

Exercise 15.1 : Solutions of Questions on Page Number : **281**

Q1 :

Identify the nets which can be used to make cubes (cut out copies of the nets and try it):



Answer :

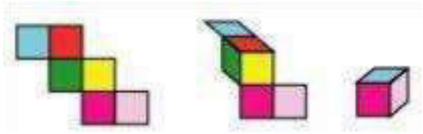
(i)The given net can be folded as follows.

When the faces that are in sky blue colour and in pink colour are folded to make a cube, they will be overlapping each other.

(ii) The given net can be folded as follows.

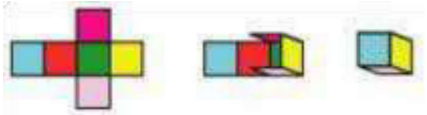
A cube can thus be formed in the above way.

(iii) The given net can be folded as follows.



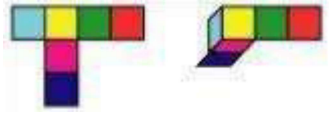
A cube can thus be formed in the above way. (iv)

The given net can be folded as follows.



A cube can thus be formed in the above way.

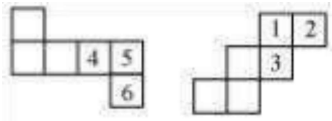
(v) The given net can be folded as follows.



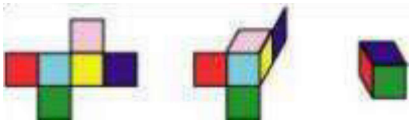
When the faces that are in blue colour and in red colour are folded to make a cube, they will be overlapping each other.

Dice are cubes with dots on each face. Opposite faces of a die always have a total of seven dots on them.

Here are two nets to make dice (cubes); the numbers inserted in each square indicate the number of dots in that box.



Insert suitable numbers in the blanks, remembering that the number on the opposite faces should total to 7.
(vi) The given net can be folded as follows.

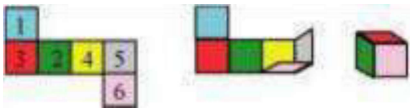


A cube can thus be formed in the above way.

Q2 :

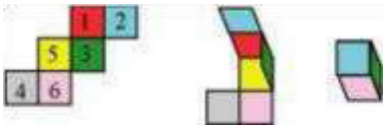
Answer :

(i) The numbers can be inserted as follows so as to make the given net into a net of a dice.



It can be observed that the sum of the opposite faces is 7.

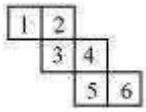
(ii)The numbers can be inserted as follows so as to make the given net into a net of a dice.



It can be observed that the sum of the opposite faces is 7.

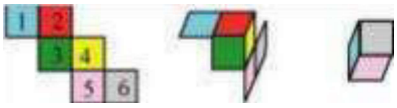
Q3 :
Can this be a net for a die?

Explain you answer



Answer :

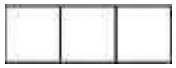
The given net can be folded as follows.



It can be observed that the opposite faces of the dice so formed have 2 and 5, 1 and 4, 3 and 6 on them. The sum of the numbers on the opposite faces comes to 7, 5, 9 respectively. However, in case of a dice, the sum of the numbers on the opposite faces should be 7. Hence, this net is not of a dice.

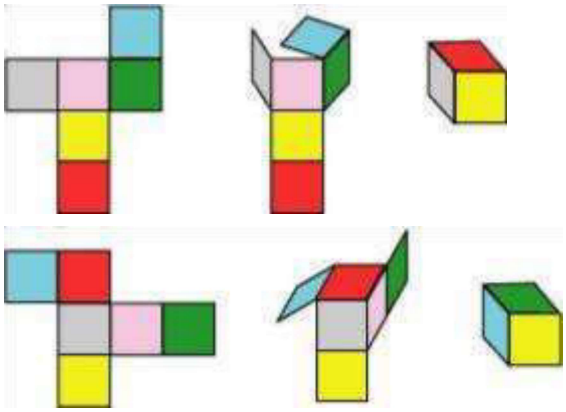
Q4 :

Here is an incomplete net for making a cube. Complete it in at least two different ways. Remember that a cube has six faces. How many are there in the net here? (Give two separate diagrams. If you like, you may use a squared sheet for easy manipulation.)



Answer :

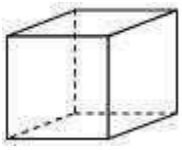
There are 3 faces in the given net. The given net can be completed as follows.

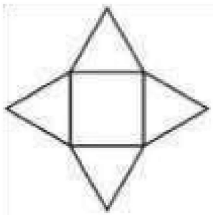


Q5 :

Match the nets with appropriate solids:

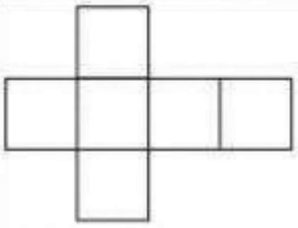
(a) (i)



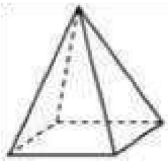


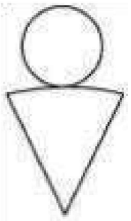
(b) (ii)

(c) (iii)



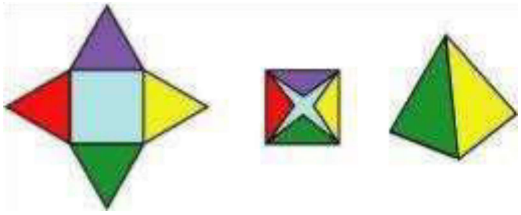
(d) (iv)





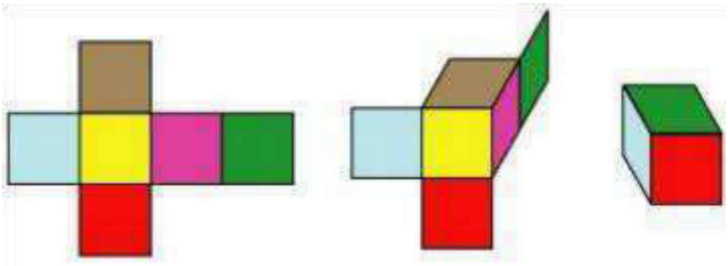
Answer :

Consider net (i). It can be folded as follows.



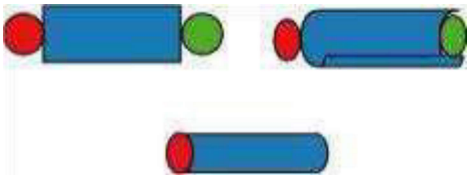
It is a net of a pyramid. Hence, (d) is the correct matching option.

Consider net (ii). It can be folded as follows.



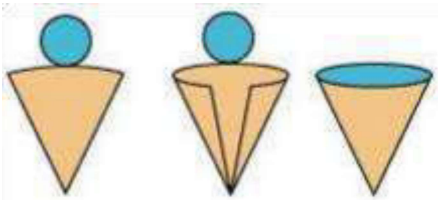
It is a net of a cube. Hence, (a) is the correct matching option.

Consider net (iii). It can be folded as follows.



It is a net of a cylinder. Hence, (b) is the correct matching option.

Consider net (iv). It can be folded as follows.

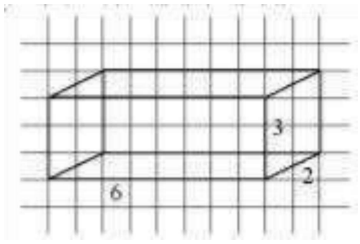


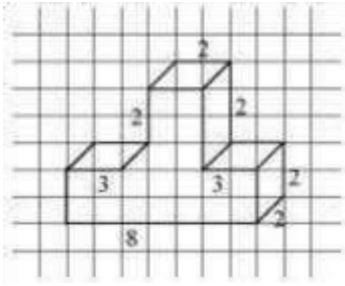
It is a net of a cone. Hence, (c) is the correct matching option.

Exercise 15.2 : Solutions of Questions on Page Number : **285**

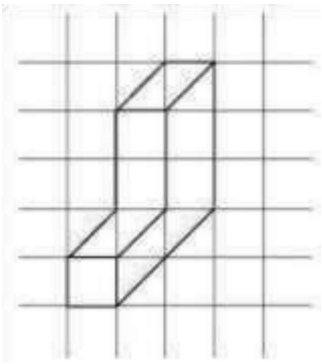
Q1 :

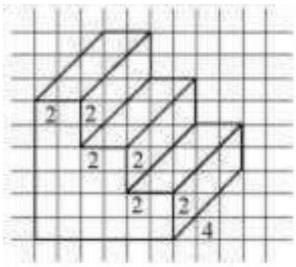
Use isometric dot paper and make an isometric sketch for each one of the given shapes:





(i) **(ii)**

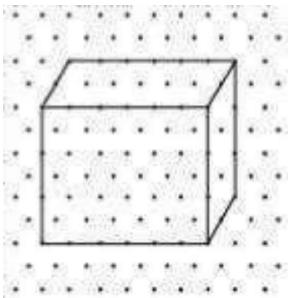


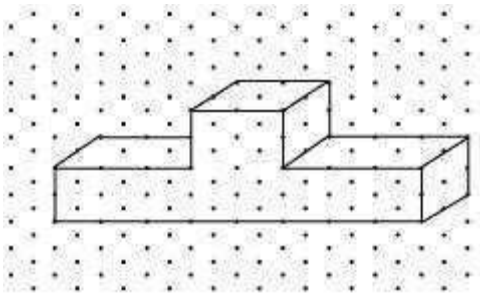


(iii) **(iv)**

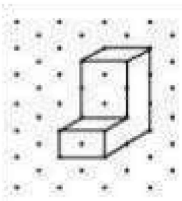
Answer :

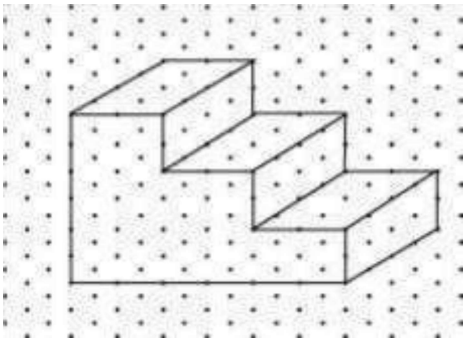
The isometric sketch of these figures can be drawn as follows.





(i) **(ii)**





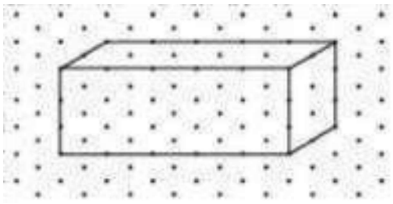
(iii) **(iv)**

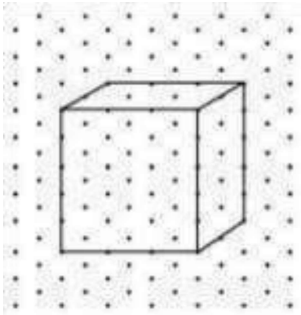
Q2 :

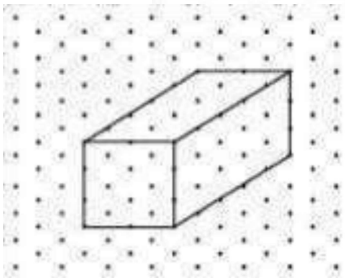
The dimensions of a cuboid are 5 cm, 3 cm and 2 cm. Draw three different isometric sketches of this cuboid.

Answer :

3 isometric sketches of the given cuboid can be drawn as follows.





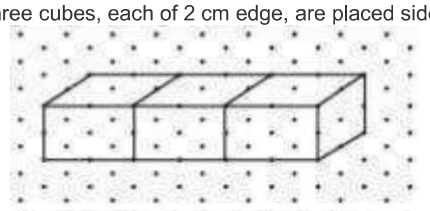


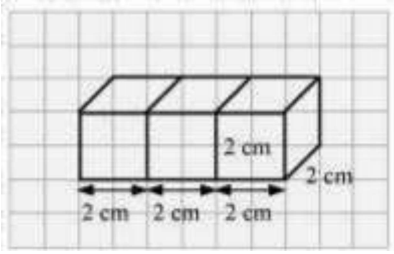
Q3 :

Three cubes each with 2 cm edge are placed side by side to form a cuboid. Sketch an oblique or isometric sketch of this cuboid.

Answer :

When three cubes, each of 2 cm edge, are placed side by side, a cuboid with dimensions as 6 cm, 2 cm, and 2 cm will be formed.

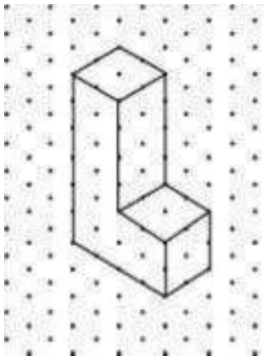


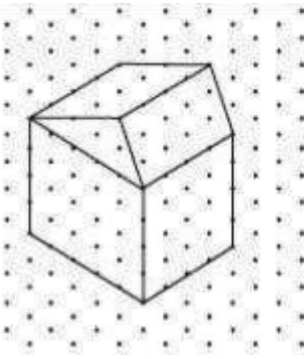


Isometric sketch Oblique sketch

Q4 :

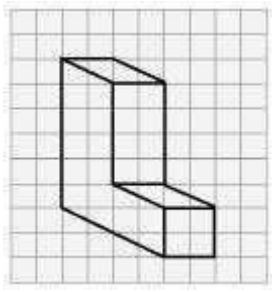
Make an oblique sketch for each one of the given isometric shapes:

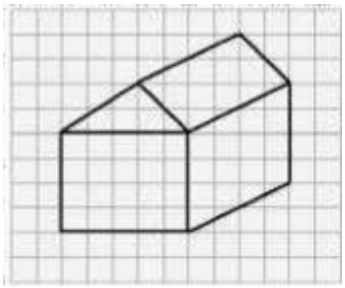




Answer :

The oblique sketch of these figures will be as follows.





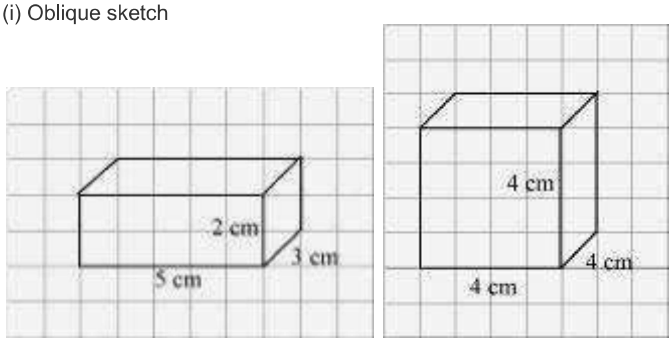
Q5 :

Give (i) an oblique sketch and (ii) an isometric sketch for each of the following:

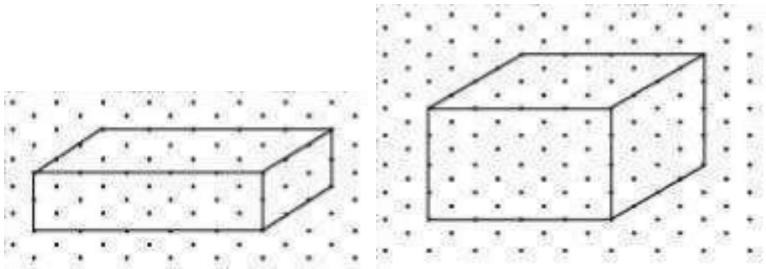
(a) A cuboid of dimensions 5 cm, 3 cm and 2 cm. (Is your sketch unique?) (b) A cube with an edge 4 cm long.

Answer :

(i) Oblique sketch



(ii) Isometric sketch



The sketch for the cuboid is not unique. The cuboid can also be drawn by taking the length as 3 cm or 2 cm. This will lead to a different view of the same cuboid.

Exercise 15.3 : Solutions of Questions on Page Number : **288**

Q1 :

What cross-sections do you get when you give a

(i) vertical cut (ii) horizontal cut to the

following solids?

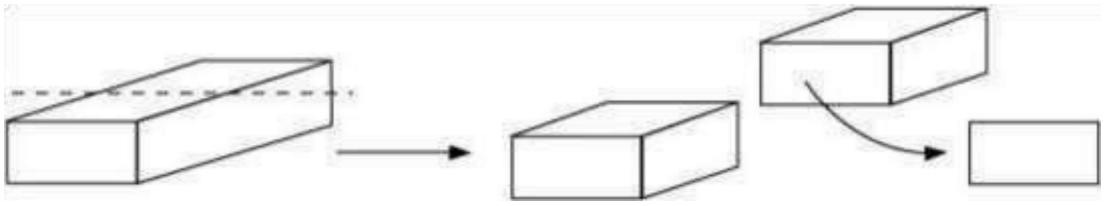
(a) A brick (b) A round apple (c) A die

(d) A circular pipe (e) An ice cream cone

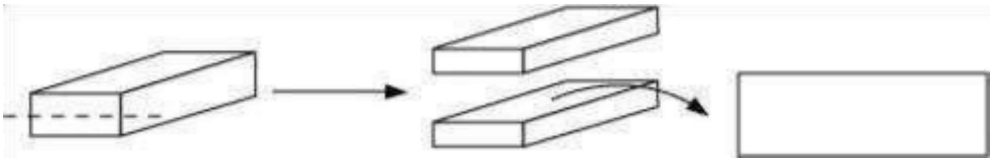
Answer :

(a) A brick

We can give a vertical cut to a brick in the following way.

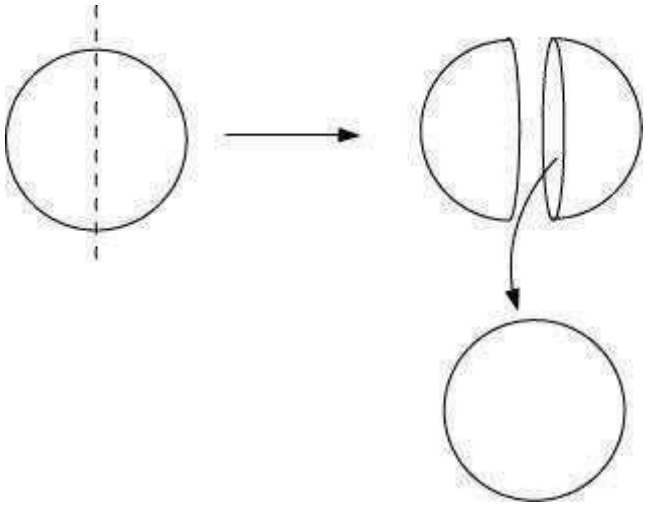


We can give a horizontal cut to a brick in the following way.

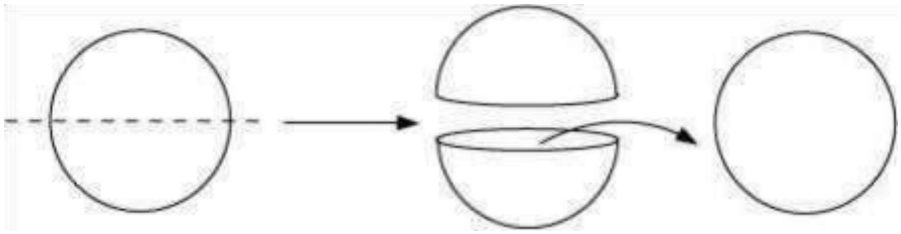


(b) A round apple

We can give a vertical cut to a round apple in the following way.

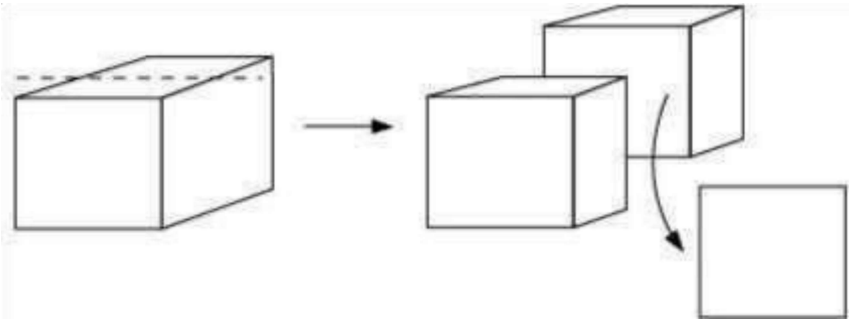


We can give a horizontal cut to a round apple in the following way.

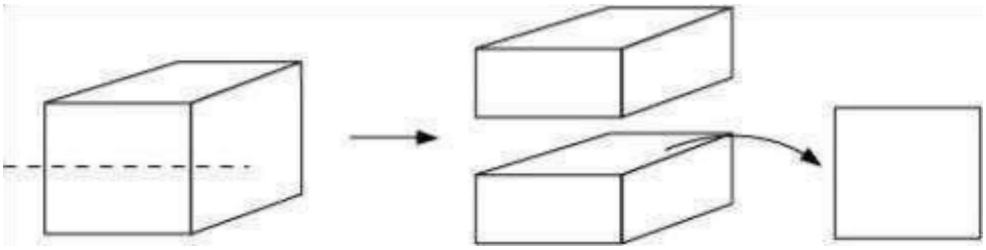


(c) A die

We can give a vertical cut to a dice in the following way.

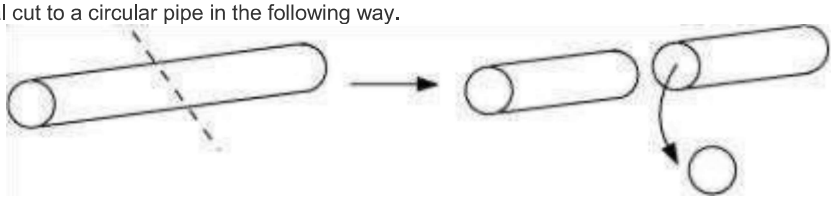


We can give a horizontal cut to a dice in the following way.

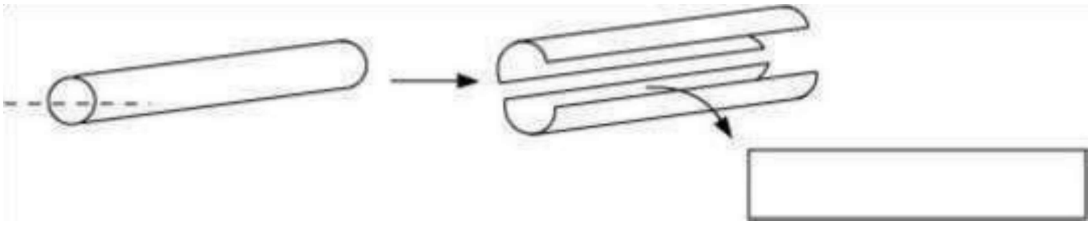


(d) A circular pipe

We can give a vertical cut to a circular pipe in the following way.

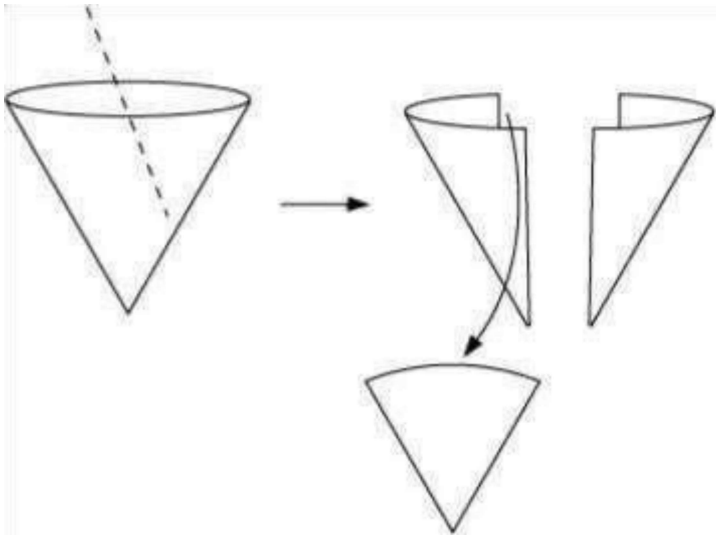


We can give a horizontal cut to a circular pipe in the following way.

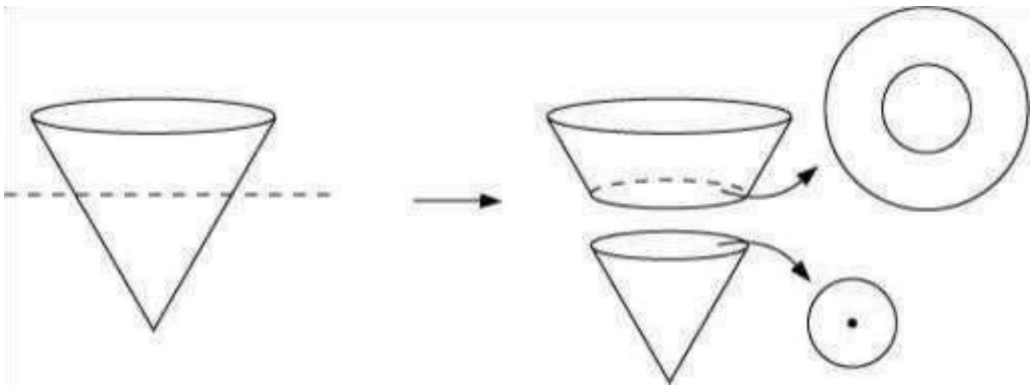


(e) An ice cream cone

We can give a vertical cut to an ice cream cone in the following way.



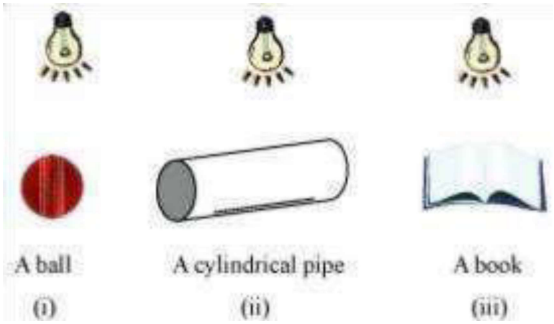
We can give a horizontal cut to an ice cream cone in the following way.



Exercise 15.4 : Solutions of Questions on Page Number : **289**

Q1 :

A bulb is kept burning just right above the following solids. Name the shape of the shadows obtained in each case. Attempt to give a rough sketch of the shadow. (You may try to experiment first and then answer these questions).



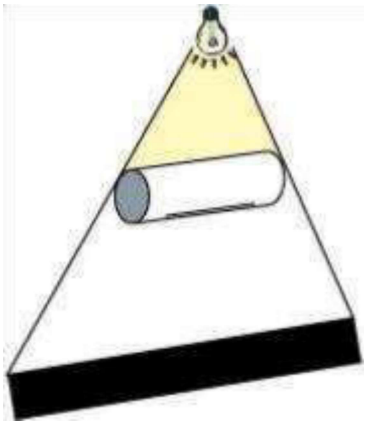
Answer :

The shapes of the shadows of these figures will be as follows.

(i) A ball

The shape of the shadow of a ball will be a circle.

(ii) A cylindrical pipe



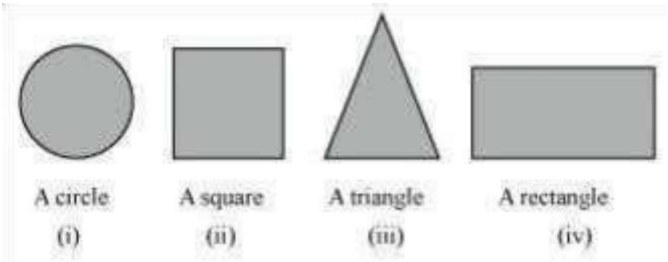
The shape of the shadow of a circular pipe will be a rectangle.

(iii) A book

The shape of the shadow of a book will be a rectangle.

Q2 :

Here are the shadows of some 3-D objects, when seen under the lamp of an overhead projector. Identify the solids (s) that match each shadow. (There may be multiple answers for these!)



Answer :

The given shadows can be obtained in case of the following objects.

i. Compact disk ii.
A dice iii.
Triangular pyramid
iv. Note Book

Q3 :
Examine if the following are true statements:

(i) The cube can cast a shadow in the shape of a rectangle.

(ii) The cube can cast a shadow in the shape of a hexagon.

Answer :

A cube can cast shadow only in the shape of a square. Therefore, any other shapes are not possible.