

SECTION - 6

Mensuration and Probability

1. Probability
2. Cylinder, Cone and Sphere

Submission Date : / /

**Mensuration and Probability
Assignment Sheet**

2003

1. A vessel is in the form of an inverted cone. Its height is 11 cm and the radius of its top which is open, is 2.5 cm. It is filled with water upto the rim. When lead shots, each of which is a sphere of radius 0.25 cm are dropped into the vessel, $\frac{2}{5}$ of the water flows out. Find the number of lead shots dropped into vessel.

2004

1. A sheet is 11 cm long and 2 cm wide. Circular pieces 0.5 cm in diameter are cut from it to prepare discs. Calculate the number of discs that can be prepared.
2. A girl fills a cylindrical bucket 32 cm in height and 18 cm in radius with sand. She empties the bucket on the ground and makes a conical heap of the sand. If the height of the conical heap is 24 cm, find :
 - (i) its radius and
 - (ii) its slant height (Leave your answer in square root form)

2005

1. A metallic sphere of radius 10.5 cm is melted and then recast into small cones, each of radius 3.5 cm and height 3 cm. Find the number of cones thus obtained.

2006

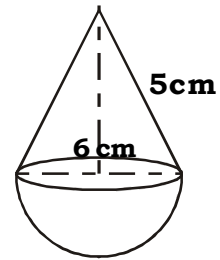
1. A vessel in the form of an inverted cone is filled with water to the brim. Its height is 20 cm and diameter is 16.8 cm. Two equal solid cones are dropped in it so that they are fully submerged. As a result, one third of the water in the original cone overflows. What is the volume of each of the solid cones submerged?

2007

1. The surface area of a solid metallic sphere is 616 cm². It is melted and recast into smaller spheres of diameter 3.5 cm. How many such spheres can be obtained?

2009

1. The given figure represents a hemisphere surmounted by a conical block of wood. The diameter of their bases is 6 cm each and the slant height of the cone is 5 cm.



Calculate :

- (i) The height of the cone
 - (ii) The volume of the solid
2. A dice is thrown once. What is the probability that the
- (i) number is even
 - (ii) number is greater than 2?

2010

1. A hemisphere bowl of diameter 7.2 cm is filled completely with chocolate sauce. This sauce is poured into an inverted cone of radius 4.8 cm. Find the height of the cone.
2. Cards marked with numbers 1, 2, 3, 4 20 are well shuffled and a card is drawn at random. What is the probability that the number on the card is
- (i) a prime number
 - (ii) divisible by 3
 - (iii) a perfect square ?

2011

1. From a pack of 52 playing cards all cards whose numbers are multiples of 3 are removed. A card is now drawn at random. What is the probability that the card drawn is :
- (i) a face card (King, Jack or Queen)
 - (ii) an even numbered red card?
2. A solid cone of radius 5 cm and height 8 cm is melted and made into small spheres of radius 0.5 cm. Find the number of spheres formed.

2012

1. Two coins are tossed once. Find the probability of getting :
- (i) 2 heads
 - (ii) at least 1 tail
2. A hollow sphere of internal and external radii 6 cm and 8 cm respectively is melted and recast into small cones of base radius 2 cm and height 8 cm. Find the number of cones.

2013

1. A solid sphere of radius 15 cm is melted and recast into solid right circular cones of radius 2.5 cm and height 8 cm. Calculate the number of cones recast.
2. A box contains some black balls and 30 white balls. If the probability of drawing a black ball is two-fifth of a white ball, find the number of black balls in the box.

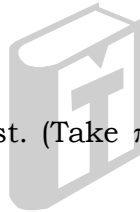
2014

1. A die has 6 faces marked by the given numbers as shown below:

1 **2** **3** **-1** **-2** **-3**

The die is thrown once. What is the probability of getting

- (i) a positive integer.
 - (ii) an integer greater than -3.
 - (iii) the smallest integer.
2. The surface area of a solid metallic sphere is 2464 cm^2 . It is melted and recast into solid right circular cones of radius 3.5 cm and height 7 cm. Calculate :
 - (i) the radius of the sphere.
 - (ii) The number of cones recast. (Take $\pi = \frac{22}{7}$)

**2015**

1. Two solid spheres of radii 2 cm and 4 cm are melted and recast into a cone of height 8 cm. Find the radius of the cone so formed.
2. A bag contains 5 white balls, 6 red balls and 9 green balls. A ball is drawn at random from the bag. Find the probability that the ball drawn is :
 - (i) a green ball
 - (ii) a white or a red ball
 - (iii) is neither a green ball nor a white ball.

2016

1. A certain number of metallic cones, each of radius 2 cm and height 3 cm are melted and recast into a solid sphere of radius 6 cm. Find the number of cones.
2. A game of numbers has cards marked with 11, 12, 13, ... 40. A card is drawn at random. Find the Probability that the number on the card drawn is :
 - (i) A perfect square
 - (ii) Divisible by 7

2017

1. Sixteen cards are labelled as $a, b, c, \dots, m, n, o, p$. They are put in a box and shuffled. A boy is asked to draw a card from the box. What is the probability that the card drawn is :
 - (i) a vowel.
 - (ii) a consonant
 - (iii) none of the letters of the word median.

2. A conical tent is to accommodate 77 persons. Each person must have 16 m^3 of air to breathe. Given the radius of the tent as 7 m find the height of the tent and also its curved surface area.

