











ଓଡିଶା ସରକାର

ରାମେଶ୍ୱରମ-ମଦୁରାଳ ଅଭିମୂଳୀ

୯ମ “ବରିଷ୍ଠ ନାଗରିକ ତୀର୍ଥୟାତ୍ରା ଯୋଜନା” ତ୍ରେନ୍

ଏଥର ଶୁଭାରମ୍ଭ ହେଉଛି

ସମ୍ବଲପୁର ରୁ

ଓଡିଶାର ମାନ୍ୟବର ମୁଖ୍ୟମନ୍ତ୍ରୀ

## ଶ୍ରୀଯୁକ୍ତ ନବୀନ ପକ୍ଷନାୟକ

ତୀର୍ଥୟାତ୍ରାମାନଙ୍କୁ ଶୁଭବିଦ୍ୟ ଜଣାଇବା ସହିତ  
ସମସ୍ତଙ୍କ ପାଇଁ ଏକ ମଞ୍ଚଲମୟ ଯାତ୍ରାର  
କାହାମା କରୁଛନ୍ତି ।



# ବରିଷ୍ଠ ନାଗରିକ ତୀର୍ଥୟାତ୍ରା ଯୋଜନା

ଆଧ୍ୟାତ୍ମିକ ଯାତ୍ରାର ଦିବ୍ୟ ଅନୁଭବ

ସ୍ଥାନ:

ମୁଖ୍ୟମନ୍ତ୍ରୀଙ୍କ ସମ୍ମିଳନୀ ପ୍ରକୋଷ୍ଟ,  
ଓଡିଶା ସରକାର

୩ ଡିସେମ୍ବର ୨୦୧୮  
ଅପରାହ୍ନ ୧୨.୧୫ ମିନିଟ୍

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# Exam Mate



Mock Test Paper for Std X, XII CBSE Board, IIT - JEE Main &amp; Advanced.

FOR ANSWERS VISIT : [www.dharitri.com](http://www.dharitri.com)

## MOCK TEST PAPER # 1

### CLASS-X (MATHEMATICS)

Time Allowed : 3 hours

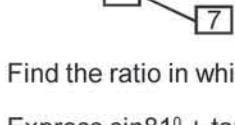
Maximum Marks: 80

#### GENERAL INSTRUCTIONS

- All questions are compulsory. There are 30 questions in all.
- This question paper has four sections : Section A, Section B, Section C and Section D.
- Section A contains 6 questions of one mark each, Section B contains 6 questions of two marks each, Section C contains 10 questions of three marks each, Section D contains 8 questions of four marks each.
- There is no overall choice. However, an internal choice has been provided in four questions of three marks each and three questions of four marks each. You have to attempt only one of the choices in such questions.
- Use of calculators is not permitted.

#### SECTION-A

1. Complete the missing entries in the following factor tree.



2. Find the ratio in which the line segment joining  $P(x_1, y_1)$  and  $Q(x_2, y_2)$  is divided by x-axis.  
 3. Express  $\sin 81^\circ + \tan 81^\circ$  in terms of trigonometric ratios of angle between  $0^\circ$  and  $45^\circ$ .  
 4. Find the value of  $\theta$  in each  $2\sin 2\theta = \sqrt{3}$   
 5. What is the probability that a number selected from the numbers 1, 2, 3, ..., 15 is a multiple of 4?  
 6. If the mean of first  $n$  natural numbers is 15, then find  $n$ .

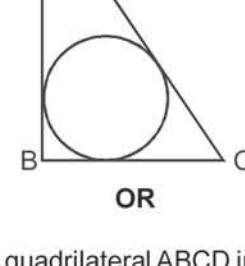
#### SECTION-B

7. Prove that there is no natural number  $n$  for which  $4^n$  ends with the digit zero.  
 8. If  $\alpha$  and  $\beta$  are the zeros of the polynomial  $f(x) = x^2 - 5x + k$  such that  $\alpha - \beta = 1$ , find the value of  $k$ .  
 9. Find a point on the y-axis which is equidistant from the points  $A(6, 5)$  and  $B(-4, 3)$ .  
 10. If  $\sin(A + B) = 1$  and  $\cos(A - B) = \frac{\sqrt{3}}{2}$ ,  $0^\circ < A + B \leq 90^\circ$ ,  $A > B$  then find  $A$  and  $B$   
 11. A jar contains 54 marbles each of which is blue, green or white. The probability of selecting a blue marble at random from the jar is  $\frac{1}{3}$ , and the probability of selecting a green marble at random is  $\frac{4}{9}$ . How many white marbles does the jar contain?  
 12. The mean of 1, 3, 4, 5, 7, 4 is  $m$ . The numbers 3, 2, 2, 4, 3, 3,  $p$  have mean  $m - 1$  and median  $q$ . Then find  $p + q$ .

#### SECTION-C

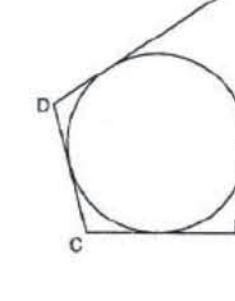
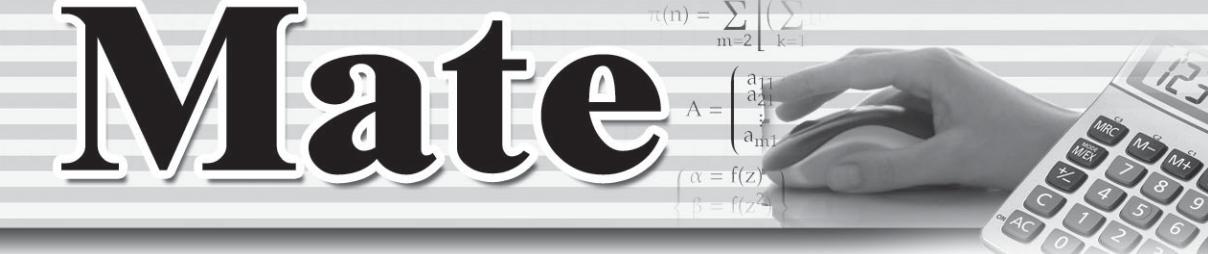
13. Prove that  $\sqrt{2} + \sqrt{5}$  is irrational.  
 14. Find the values of  $p$  and  $q$  for which the following system of equations has infinite number of solutions:  

$$\begin{aligned} 2x + 3y &= 7 \\ (p+q)x + (2p-q)y &= 21 \end{aligned}$$
  
 15. Find four numbers in A.P. whose sum is 20 and the sum of whose squares is 120.  
 16. If the point  $(x, y)$  is equidistant from the points  $(a+b, b-a)$  and  $(a-b, a+b)$ , prove that  $bx = ay$ .  
 17. ABC is a right triangle right angled at B such that  $BC = 6$  cm and  $AB = 8$  cm. Find the radius of its incircle.



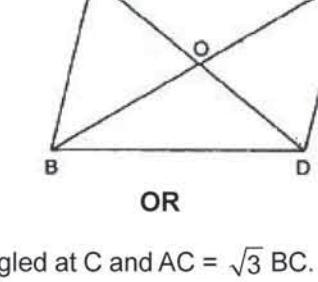
OR

In figure, a circle is inscribed in a quadrilateral ABCD in which  $\angle B = 90^\circ$ . If  $AD = 23$ ,  $AB = 29$  cm and  $DS = 5$  cm, find the radius  $r$  of the circle.



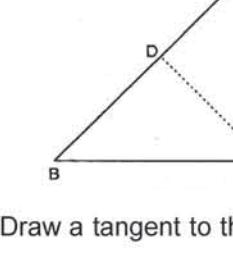
18. In figure,  $\Delta ABC$  and  $\Delta DBC$  are on the same base BC. If AD and BC intersect at O, prove that  

$$\frac{\text{Area } (\Delta ABC)}{\text{Area } (\Delta DBC)} = \frac{AO}{DO}$$

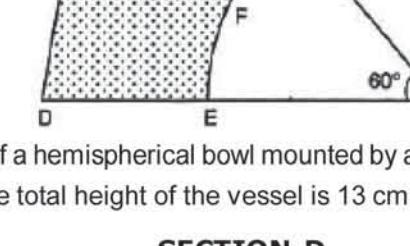


OR

ABC is a right triangle right angled at C and  $AC = \sqrt{3} BC$ . Prove that  $\angle ABC = 60^\circ$ .



19. Draw a circle of radius 6 cm. Draw a tangent to this circle making an angle of  $30^\circ$  with a line passing through the centre.  
 20. Prove that  $\frac{1}{\cosec A - \cot A} - \frac{1}{\sin A} = \frac{1}{\sin A} - \frac{1}{\cosec A + \cot A}$   
 21. In figure, ABCD is a trapezium with  $AB \parallel CD$  and  $\angle BCD = 60^\circ$ . If BFEC is a sector of a circle with centre C and  $AB = BC = 7$  cm and  $DE = 4$  cm, then find the area of the shaded region (Use  $\pi = 22/7$  and  $\sqrt{3} = 1.732$ )



22. A vessel is in the form of a hemispherical bowl mounted by a hollow cylinder. The diameter of the sphere is 14 cm and the total height of the vessel is 13 cm. Find its capacity (Take  $\pi = 22/7$ )

#### SECTION-D

23. A shopkeeper buys a number of books for Rs. 80. If he had bought 4 more books for the same amount, each book would have cost Rs. 1 less. How many books did he buy?  
 24. The sum of the first  $p, q, r$  terms of an A.P. are  $a, b, c$  respectively. Show that  

$$\frac{a}{p}(q-r) + \frac{b}{q}(r-p) + \frac{c}{r}(p-q) = 0$$
  
 25. The sum of a two-digit number and the number obtained by reversing the order of its digits is 165. If the digits differ by 3, find the number.  
 26. D and E are points on the sides AB and AC respectively of a  $\triangle ABC$  such that  $DE \parallel BC$  and divides  $\triangle ABC$  into two parts, equal in area, find  $BD/AB$ .

OR

The perpendicular AD on the base BC of a  $\triangle ABC$  intersects BC at D so that  $DB = 3CD$ . Prove that  $2AB^2 = 2AC^2 + BC^2$ .

27. If  $\sec \theta = x + \frac{1}{4x}$ , prove that  $\sec \theta + \tan \theta = 2x$  or  $\frac{1}{2x}$   
 28. A man on a cliff observe a boat at an angle of depression of  $30^\circ$  which is approaching the shore to the point immediately beneath the observer with a uniform speed. Six minutes later, the angle of depression of the boat is found to be  $60^\circ$ . Find the time taken by the boat to reach the shore.  
 29. Water flows at the rate of 10 meters per minute through a cylindrical pipe 5 mm in diameter. How long would it take to fill a conical vessel whose diameter at the base is 40 cm and depth 24 cm?

OR

The interior of a building is in the form of cylinder of a diameter 4.3 m and height 3.8 m, surmounted by a cone whose vertical angle is a right angle. Find the area of the surface and the volume of the building. (Take  $\pi = 3.14$ )

30. If the median of the following frequencies distribution is 46, find the missing frequencies.

Class	10-20	20-30	30-40	40-50	50-60	60-70	70-80	Total
Frequency	12	30	?	65	?	25	18	229

For Answers visit: [www.dharitri.com](http://www.dharitri.com)

















