

अनुक्रमांक / ROLL NO

सेट / SET: A

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केंद्रीय विद्यालय संगठन, जयपुर संभाग

KENDRIYA VIDYALAYA SANGATHAN ,JAIPUR REGION

PRACTICE PAPER : 2024-25

कक्षा / CLASS : 10

विषय / SUB: MATHEMATICS BASIC

(कोड / CODE : 241)

अधिकतम आवधि / Time Allowed: 3 Hours अधिकतम अंक/ Maximum Marks: 80

सामान्य निर्देश / General Instructions:

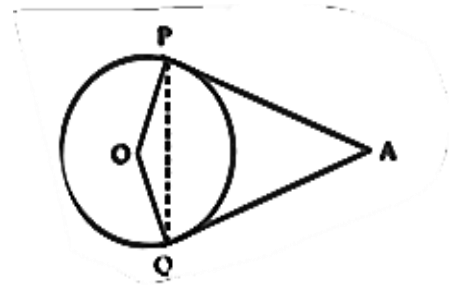
Read the following instructions carefully and follow them:

1. This question paper contains 38 questions.
2. This Question Paper is divided into 5 Sections A, B, C, D and E.
3. In Section A, Questions no. 1-18 are multiple choice questions (MCQs) and questions no. 19 and 20 are Assertion- Reason based questions of 1 mark each.
4. In Section B, Questions no. 21-25 are Very Short Answer (VSA) type questions, carrying 02 mark each.
5. In Section C, Questions no. 26-31 are Short Answer (SA) type questions, carrying 03 marks each.
6. In Section D, Questions no. 32-35 are Long Answer (LA) type questions, carrying 05 marks each.
7. In Section E, Questions no. 36-38 are case study based questions carrying 4 marks each with sub parts of the values of 1, 1 and 2 marks each respectively.
8. All Questions are compulsory. However, an internal choice in 2 Questions of Section B, 2 Questions of Section C and 2 Questions of Section D has been provided. An internal choice has been provided in all the 2 marks questions of Section E.
9. Draw neat and clean figures wherever required.
10. Take $\pi = 22/7$ wherever required if not stated.
11. Use of calculators is not allowed.

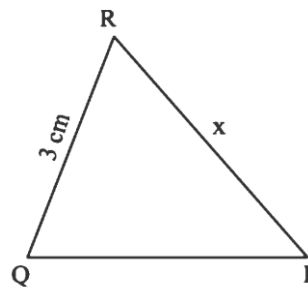
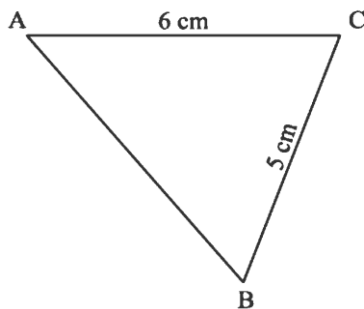
SECTION - A

1. The LCM of smallest 2- digit composite number and smallest composite number is..
 a) 12 b) 4 c) 20 d) 44
2. The pair of equations $y = 0$ and $y = -7$ has
 a) one solution b) two solutions c) infinitely many solutions d) no solution
3. A die is thrown once, then the probability of getting a prime number is
 a) $\frac{1}{6}$ b) $\frac{1}{2}$ c) 1 d) 0
4. HCF of $5^2 \times 3^2$ and $3^5 \times 5^3$ is.....
 a) $5^3 \times 3^5$ b) 5×3^3 c) $5^3 \times 3^2$ d) $5^2 \times 3^2$
5. Which of the following equations has no real roots?
 a) $x^2 - 4x + 3\sqrt{2} = 0$ b) $x^2 + 4x - 3\sqrt{2} = 0$
 c) $x^2 - 4x - 3\sqrt{2} = 0$ d) $3x^2 + 4\sqrt{3}x + 4 = 0$
6. The distance of $(-6, 8)$ from the origin is.....
 a) 8 units b) 27 units c) 10 units d) 6 units

7. In given fig. AP and AQ are tangents to the circle with O, from an external point A. If $\angle PAQ = 70^\circ$, then $\angle APQ$ is equal to ...
 a) 35° b) 55°
 c) 110° d) 125°

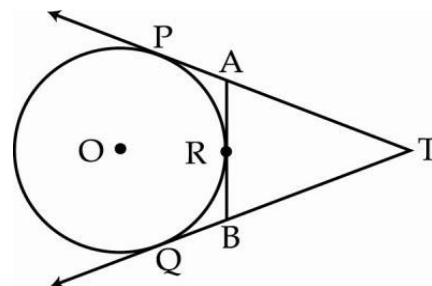


8. The value of $4 \sin^2 60^\circ + 3 \tan^2 30^\circ$ is
 a) 4 b) 1 c) 5 d) 2
9. In the given figure, $ABC \sim QPR$. If $AC = 6$ cm, $BC = 5$ cm, $QR = 3$ cm and $PR = x$; then the value of x is



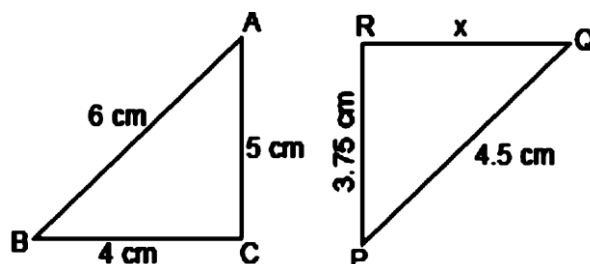
- a) 3.6 cm b) 2.5 cm c) 10 cm d) 3.2 cm
10. If the sum of 15 observations of a data is $(434 + x)$ and the mean of the observation is 'x,' then $x =$
 a) 25 b) 27 c) 31 d) 33
11. The ratio of the height of a tree and its shadow is $1 : \frac{1}{\sqrt{3}}$. The angle of a sun's elevation is....
 a) 30° b) 45° c) 60° d) 90°

23. In the given figure, TP and TQ are tangents from T to the circle with centre O and R is any point on the circle. If AB is a tangent to the circle at R,



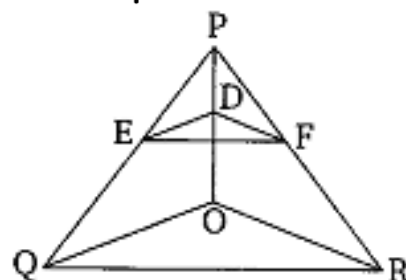
Prove that : $TA + AR = TB + BR$

24. (i) In the given figure, if $\Delta ABC \sim \Delta PQR$ then find the value of x.



OR

(ii) In the given figure, $DE \parallel OQ$ and $DF \parallel OR$. Show that $EF \parallel QR$



25. (i) If the perimeter of a semi-circular protractor is 108 cm, find the diameter of the protractor. (Take $22/7$)

OR

(ii) A chord of a circle of radius 10cm subtends a right angle at the centre. Find the area of minor segment. (Use $\pi = 3.14$)

SECTION -C

26. Prove that $\sqrt{5}$ is an irrational number.

27. (i) If $\sec \theta + \tan \theta = p$, prove that $\sin \theta = \frac{p^2 - 1}{p^2 + 1}$

OR

(ii) Prove that $\frac{\cos A}{1 + \sin A} + \frac{1 + \sin A}{\cos A} = 2 \sec A$

28. All red face cards are removed from a pack of playing cards. The remaining cards were well shuffled and then a card is drawn at random from them. Find the probability that the drawn card is

- i) a red card
- ii) a face card
- iii) a card of clubs.

29. Find the zeroes of the quadratic polynomial $4s^2 - 4s + 1$ and verify the relationship between the zeroes and the coefficients.

30. (i) From a bus stand in Bangalore, if we buy 2 tickets to Malleswaram and 3 tickets to Yeshwanthpur, the total cost is ₹ 46; but if we buy 3 tickets to Malleswaram and 5 tickets to Yeshwanthpur the total cost is ₹ 74. Find the fares from the bus stand to Malleswaram, and to Yeshwanthpur?

OR

(ii) Yash scored 40 marks in a test, getting 3 marks for each right answer and losing 1 mark for each wrong answer. Had 4 marks been awarded for each correct answer and 2 marks been deducted for each incorrect answer, then Yash would have scored 50 marks. How many questions were there in the test?

31. Prove that the parallelogram circumscribing a circle is a rhombus.

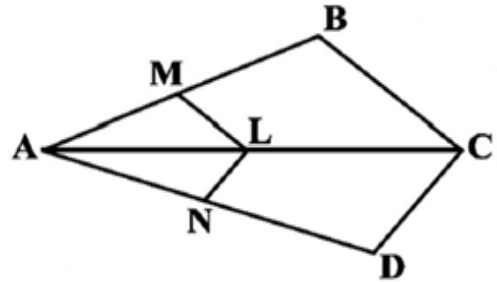
SECTION - D

32. (i) In a flight of 600 km, an aircraft was slowed due to bad weather. Its average speed for the trip was reduced by 200 km/hr and time of flight increased by 30 minutes. Find the original duration of flight.

OR

(ii) A train travels 360 km at a uniform speed. If the speed had been 5 km/h more, it would have taken 1 hour less for the same journey. Find the speed of the train.

33. Prove that if a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, the other two sides are divided in the same ratio. Using the above theorem. Prove that $\frac{AM}{MB} = \frac{AN}{ND}$, if $LM \parallel CB$ and $LN \parallel CD$ as shown in the figure.



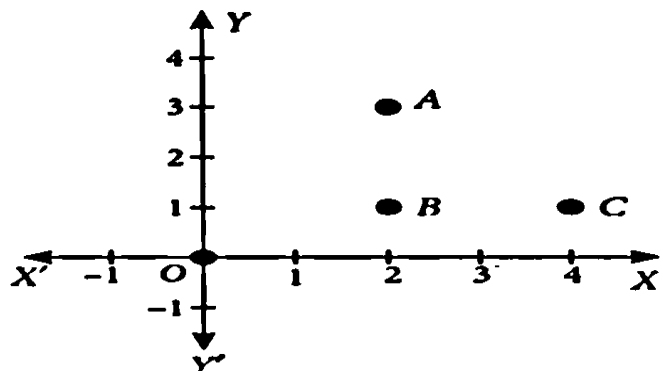
34. Find the mean and median of the following data. Then find the mode using empirical relationship.

Class	85 - 90	90 - 95	95 - 100	100 - 105	105 - 110	110 - 115
Frequency	15	22	20	18	20	25

35. A pen stand made of wood is in the shape of a cuboid with four conical depressions to hold pens. The dimensions of the cuboid are 15 cm by 10 cm by 3.5 cm. The diameter of each depression is 1 cm and the depth is 1.4 cm. Find the volume of the wood in the entire stand. (Use $\pi = 22/7$)

SECTION - E

Q36. Alia and Shagun are friends living on the same street in Patel Nagar. Shagun's house is at the intersection of one street with another street on which there is a library. They both study in the same school and that is not far from Shagun's house. Suppose the school is situated at the point 'O', i.e. the origin, Alia's house is at A. Shagun's house is at B and library is at C. Based on the above information, answer the following questions.

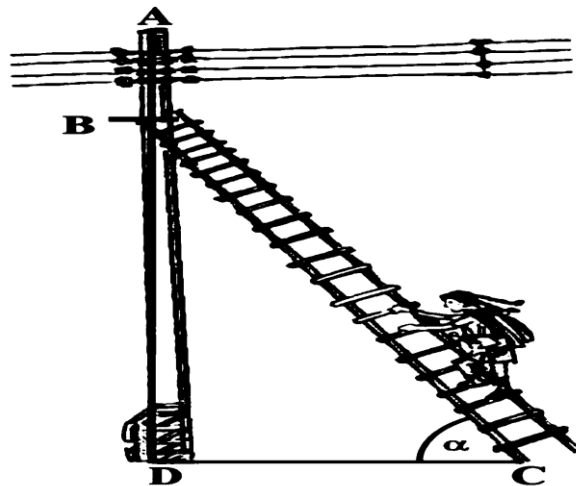


- (i) How far is Alia's house from Shagun's house? (1)
- (ii) How far is the library from Shagun's house? (1)
- (iii) (a) Show that for Shagun, school is farther compared to Alia's house and library. (2)

OR

(b) Show that Alia's house, Shagun's house and library form an isosceles right triangle.

Q37. Ram is an electrician in a village. One day power was not there in entire village and villagers called Ram to repair the fault. After thorough inspection he found an electric fault in one of the electric pole of height 5 m and he has to repair it. He needs to reach a point 1.3 m below the top of the pole to undertake the repair work.



Based on the above information, answer the following questions.

- (i) When the ladder is inclined at an angle of α such that $\sqrt{3} \tan \alpha + 2 = 5$ to the horizontal, find the angle α . (1)
- (ii) In the above situation if $BD = 3$ cm and $BC = 6$ cm. Find α (1)
- (iii) (a) How far from the foot of the pole should he place the foot of the ladder in case (i)? (2)
(Use $\sqrt{3} = 1.73$)

OR

- (b) Given $15 \cot \alpha = 8$, find $\sin \alpha$.

Q38. India is competitive manufacturing location due to the low cost of manpower and strong technical and engineering capabilities contributing to higher quality production runs. The production of TV sets in a factory increases uniformly by a fixed number every year. It produced 16000 sets in 6th year and 22600 in 9th year.

Based on the above information, answer the following questions:

- i) Find the production during first year. (1)
- ii) Find the production during 8th year. (1)
- iii) (a) Find the production during first 3 years. (2)

OR

- (b) Find the difference of the production during 7th year and 4th year.