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CLASS 10 MATH TEST PAPER 30 (CASE STUDY & 4 MARKER)

Class 10 - Mathematics

Time Allowed: 1 hour

Maximum Marks: 32

Section A

1. A takes 3 hours more than B to walk a distance of 30 km. but, if a double his pace (speed) he is ahead of B by [5] $1\frac{1}{2}$ hours, find their speed of walking.

OR

Solve graphically system of linear equations.

2x + y - 11=0,

x - y - 1 = 0

Also find the coordinates of the points where the lines meet y-axis.

2. If cosec θ + cot θ = p, then prove that cos $\theta = \frac{p^2 - 1}{p^2 + 1}$.

OR

Prove that : $(\sin A + \sec A)^2 + (\cos A + \csc A)^2 = (1 + \sec A \csc A)^2$.

3. The following table gives the monthly consumption of electricity of 100 families:

[5]

Monthly Consumption (in units)	130 - 140	140 - 150	150 - 160	160 - 170	170 - 180	180 - 190	190 - 200
Number of families	5	9	17	28	24	10	7

Find the median of the above data.

4. In figure, PA and PB are two tangents drawn from an external point P to a circle with centre O. Prove that OP is **[5]** the right bisector of line segment AB.



OR

In figure, O is the centre of the circle and TP is the tangent to the circle from an external point T. If $\angle PBT = 30^{\circ}$, prove that BA : AT = 2:1.



Section B

5. **Read the following text carefully and answer the questions that follow:**

Kamla and her husband were working in a factory in Seelampur, New Delhi. During the pandemic, they were

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asked to leave the job. As they have very limited resources to survive in a metro city, they decided to go back to their hometown in Himachal Pradesh. After a few months of struggle, they thought to grow roses in their fields and sell them to local vendors as roses have been always in demand. Their business started growing up and they hired many workers to manage their garden and do packaging of the flowers.



In their garden bed, there are 23 rose plants in the first row, 21 are in the 2nd, 19 in 3rd row and so on. There are 5 plants in the last row.

- i. How many rows are there of rose plants? (1)
- ii. Also, find the total number of rose plants in the garden. (1)
- iii. How many plants are there in 6th row. (2)

OR

If total number of plants are 80 in the garden, then find number of rows? (2)

6. **Read the following text carefully and answer the questions that follow:**

Priyanshu is very intelligent in maths. He always try to relate the concept of maths in daily life. One day he is walking away from the base of a lamp post at a speed of 1 m/s. Lamp is 4.5 m above the ground.



- i. If after 2 second, length of shadow is 1 meter, what is the height of Priyanshu? (1)
- ii. What is the minimum time after which his shadow will become larger than his original height? (1)
- iii. What is the distance of Priyanshu from pole at this point? (2)

OR

What will be the length of his shadow after 4 seconds? (2)

7. Read the following text carefully and answer the questions that follow:

One day Vinod was going home from school, saw a carpenter working on wood. He found that he is carving out a cone of same height and same diameter from a cylinder. The height of the cylinder is 24 cm and base radius is 7 cm. While watching this, some questions came into Vinod's mind.



- i. Find the slant height of the conical cavity so formed? (1)
- ii. Find the curved surface area of the conical cavity so formed? (1)
- iii. Find the external curved surface area of the cylinder? (2)

OR

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