

PRATAP PUBLIC SCHOOL KARNAL  
 TERM-II Practice Test - 1  
 Class -X  
 Subject - Mathematics

**Set-A**

Time Allowed: 2 hours

Maximum Marks: 40

**General Instructions:**

1. The question paper consists of 14 questions divided into 3 sections: A, B, C.
2. Section A comprises of 6 questions of 2 marks each. Internal choice has been provided in two questions.
3. Section B comprises of 4 questions of 3 marks each. Internal choice has been provided in one question.
4. Section C comprises of 4 questions of 4 marks each. An internal choice has been provided in one question. It contains two case study based questions.

**Section A**

Question no.	Question	Marks												
1.	Find the roots of the quadratic equation $3x^2 - 7x - 6 = 0$ OR Find the value of k , of quadratic equation $kx(x-2)+6=0$ ,so that the equation has two equal roots.	2												
2.	Two cones have their heights in the ratio 1:3 and radii in the ratio 3:1. What is the ratio of their volumes.	2												
3.	Find the median of the numbers 4,4,5,6,7,7,12,3,7.	2												
4.	Find the 20 <sup>th</sup> term from the last term of the A.P:3,8,13,.....,253.	2												
5.	If the mean of the following data is 20.6, find the value of P. <table border="1" style="margin-left: 20px; border-collapse: collapse;"> <tr> <td style="padding: 2px;">X</td> <td style="padding: 2px;">10</td> <td style="padding: 2px;">15</td> <td style="padding: 2px;">P</td> <td style="padding: 2px;">25</td> <td style="padding: 2px;">35</td> </tr> <tr> <td style="padding: 2px;">F</td> <td style="padding: 2px;">3</td> <td style="padding: 2px;">10</td> <td style="padding: 2px;">25</td> <td style="padding: 2px;">7</td> <td style="padding: 2px;">5</td> </tr> </table>	X	10	15	P	25	35	F	3	10	25	7	5	2
X	10	15	P	25	35									
F	3	10	25	7	5									

6.	<p>Prove that the tangents drawn at the ends of a diameter of a circle are parallel.</p> <p style="text-align: center;">OR</p> <p>Prove that the perpendicular at the point of contact to the tangent to a circle passes through the centre.</p>	2
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**SECTION B**

7.	<p>The first and the last terms of an A.P are 17 and 350 respectively. If the common difference is 9, how many terms are there and what is their sum?</p>	3
8.	<p>A man standing on the deck of a ship, which is 10 m above the water level, observes the angle of elevation of the top of a hill as <math>60^\circ</math> and the angle of depression of the base of the hill as <math>30^\circ</math>. Calculate the distance of the hill from the ship and height of the hill.</p> <p style="text-align: center;">OR</p> <p>A vertical tower stands on a horizontal plane and is surmounted by a flagstaff of height 5 m. From a point on the ground, the angle of elevation of the top and the bottom of the flagstaff are <math>60^\circ</math> and <math>30^\circ</math> respectively. Find the height of the tower and the distance of the point from base of the tower.</p>	3
9.	<p>Prove that opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the centre of the circle.</p>	3
10.	<p>A train travels a distance of 480 km at a uniform speed. If the speed had been 8km/h less, then it would have taken 3 hours more to cover the same distance. Find the speed of the train.</p>	3

**Section C**

11.	<p>Draw a pair of tangents to a circle of radius 5 cm which are inclined to each other at an angle of <math>60^\circ</math>.</p> <p style="text-align: center;">OR</p> <p>Draw a line segment AB of length 8 cm. Taking A as centre, draw a circle of radius 4 cm and taking B as centre draw another circle of radius 3 cm. Construct tangents to each circle from the centre of the other circle.</p>	4
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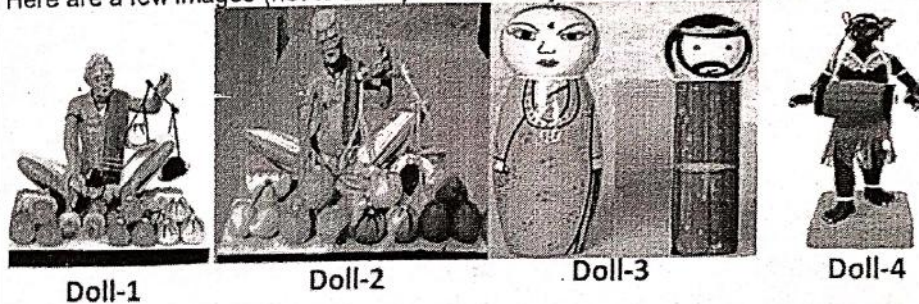
12	<p>A survey regarding the heights (in cm) of 51 girls of class X of a school was conducted and the following data was obtained:</p> <table border="1" data-bbox="335 268 1340 604"> <thead> <tr> <th data-bbox="335 268 829 324">Heights (in cm)</th> <th data-bbox="829 268 1340 324">Number of girls</th> </tr> </thead> <tbody> <tr> <td data-bbox="335 324 829 369">Less than 140</td> <td data-bbox="829 324 1340 369">4</td> </tr> <tr> <td data-bbox="335 369 829 414">Less than 145</td> <td data-bbox="829 369 1340 414">11</td> </tr> <tr> <td data-bbox="335 414 829 459">Less than 150</td> <td data-bbox="829 414 1340 459">29</td> </tr> <tr> <td data-bbox="335 459 829 504">Less than 155</td> <td data-bbox="829 459 1340 504">40</td> </tr> <tr> <td data-bbox="335 504 829 548">Less than 160</td> <td data-bbox="829 504 1340 548">46</td> </tr> <tr> <td data-bbox="335 548 829 604">Less than 165</td> <td data-bbox="829 548 1340 604">51</td> </tr> </tbody> </table> <p data-bbox="335 604 1340 645">Find the median height.</p>	Heights (in cm)	Number of girls	Less than 140	4	Less than 145	11	Less than 150	29	Less than 155	40	Less than 160	46	Less than 165	51	4
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Less than 165	51															
13.	<p data-bbox="526 649 893 705" style="text-align: center;">Case Study Questions</p> <p data-bbox="319 705 1356 1176">A group of students of class X visited India Gate on an educational trip. The teacher and students had interest in History as well. The teacher narrated that India Gate, officially named Delhi Memorial, originally called All India War Memorial, monumental sandstone arch in New Delhi, dedicated to the troops of British India who died in wars fought between 1914 and 1919. The teacher also said that India Gate, which is located at the eastern end of the Rajpath (formerly called the Kingsway), is about 138 feet (42 metres) in height.</p>	2+2														
	<div data-bbox="327 1176 813 1489" data-label="Image"> </div> <p data-bbox="319 1500 1356 1702">(i) Students want to see the tower at an angle of <math>60^\circ</math>. At what distance the students should stand?  (ii) What is the angle of elevation if they are standing at a distance of 42 m away from the monument.</p>															

14.

2+2

Krishna Nagar is a small town in Nadia District of West Bengal. Krishna Nagar clay dolls are unique in their realism and quality of their finish. They are created by modelling coils of clay over a metal frame. The figures are painted in natural colours and their hair is made either by sheep's wool or jute. Artisans make models starting from fruits, animals, God, goddess, farmer, fisherman, weavers to Donald Duck and present comic characters. These creations are displayed in different national and international museums.

Here are a few images (not to scale) of some clay dolls of Krishnanagar.



The ratio of diameters of red spherical apples in Doll-1 to that of spherical oranges in Doll-2 is 2:3. In Doll-3, male doll of blue colour has cylindrical body and a spherical head. The spherical head touches the cylindrical body. The radius of both the spherical head and the cylindrical body is 3cm and the height of the cylindrical body is 8cm. Based on the above information answer the following questions:

- i) What is the ratio of the surface areas of red spherical apples in Doll-1 to that of spherical oranges in Doll-2.?
- ii) The blue doll of Doll-3 is melted and its clay is used to make the cylindrical drum of Doll-4. If the radius of the drum is also 3cm, find the height of the drum

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4. Section C comprises of 4 questions of 4 marks each. An internal choice has been provided in one question. It contains two case study based questions.

**Section A**

Question no.	Question	Marks
1.	Find the median of the numbers 4,4,5,6,7,7,12,3,7.	2
2.	Prove that the tangents drawn at the ends of a diameter of a circle are parallel. OR Prove that the perpendicular at the point of contact to the tangent to a circle passes through the centre.	2
3.	Find the roots of the quadratic equation $3x^2 - 7x - 6 = 0$ OR Find the value of k, of quadratic equation $kx(x-2)+6=0$ , so that the equation has two equal roots.	2

4.	Find the 20 <sup>th</sup> term from the last term of the A.P:3,8,13,.....,253.	2												
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### SECTION B

7.	Prove that opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the centre of the circle.	3
8.	A man standing on the deck of a ship, which is 10 m above the water level, observes the angle of elevation of the top of a hill as 60° and the angle of depression of the base of the hill as 30°. Calculate the distance of the hill from the ship and height of the hill.  OR A vertical tower stands on a horizontal plane and is surmounted by a flagstaff of height 5 m. From a point on the ground, the angle of elevation of the top and the bottom of the flagstaff are 60° and 30° respectively. Find the height of the tower and the distance of the point from base of the tower.	3
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Draw a line segment AB of length 8 cm. Taking A as centre, draw a circle of radius 4 cm and taking B as centre draw another circle of radius 3 cm. Construct tangents to each circle from the centre of the other circle.

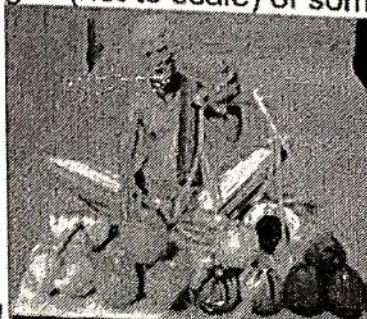
### Case Study Questions

13. Krishna Nagar is a small town in Nadia District of West Bengal. Krishna Nagar clay dolls are unique in their realism and quality of their finish. They are created by modelling coils of clay over a metal frame. The figures are painted in natural colours and their hair is made either by sheep's wool or jute. Artisans make models starting from fruits, animals, God, goddess, farmer, fisherman, weavers to Donald Duck and present comic characters. These creations are displayed in different national and international museums

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Doll-1



Doll-2



Doll-3



Doll-4

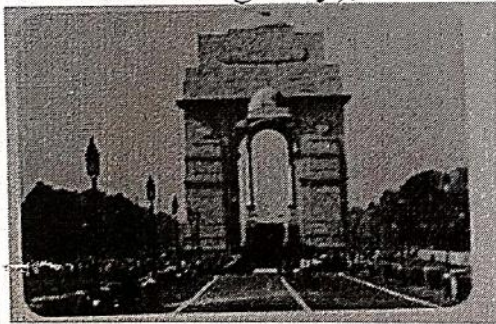
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2+2