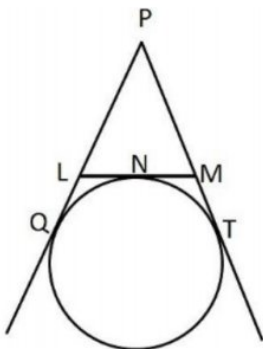
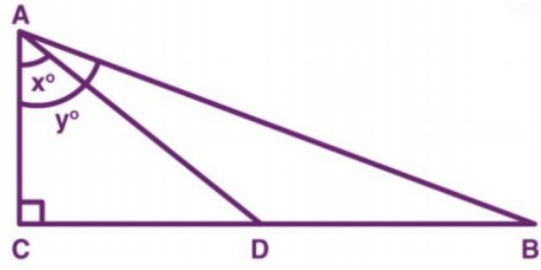
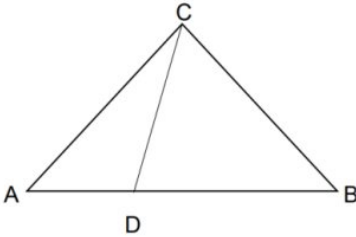




	<p><math>C(c, a)</math>, then the value of <math>a^3 + b^3 + c^3</math> is</p> <p>a) 0                      b) 3                      c) <math>3(a + b + c)</math>                      d) <math>3abc</math></p>	
7	<p>The coordinates of the point on y-axis which is nearest to the point <math>(-2, 5)</math></p> <p>a) <math>(-2, 0)</math>                      b) <math>(0, -2)</math>                      c) <math>(5, 0)</math>                      d) <math>(0, 5)</math></p>	1
8	<p><math>\Delta ABC</math> is such that <math>AB=3</math> cm, <math>BC=2</math> cm, <math>CA=2.5</math> cm. If <math>\Delta ABC \sim \Delta DEF</math> and <math>EF = 4</math> cm, then perimeter of <math>\Delta DEF</math> is</p> <p>a) 7.5 cm                      b) 15 cm                      c) 22.5 cm                      d) 30 cm</p>	1
9	<p>If two tangents inclined at an angle of <math>60^\circ</math> are drawn to a circle of radius 3 cm, then the length of each tangent is equal to</p> <p>a) <math>\frac{3\sqrt{3}}{2}</math> cm                      b) 3 cm                      c) 6 cm                      d) <math>3\sqrt{3}</math> cm</p>	1
10	<div style="text-align: center;">  </div> <p>If <math>PQ = 28</math> cm, then the perimeter of <math>\Delta PLM</math> is</p> <p>a) 14 cm                      b) 28 cm                      c) 56 cm                      d) 84 cm</p>	1
11	<p>If <math>1 + \sin 2\alpha = 3 \sin \alpha \cos \alpha</math>, then values of <math>\cot \alpha</math> are</p> <p>a) -1, 1                      b) 0, 1                      c) 1, 2                      d) -1, -1</p>	1
12	<p>If <math>\tan \alpha + \cot \alpha = 2</math>, then <math>\tan^{20} \alpha + \cot^{20} \alpha =</math></p> <p>a) 0                      b) 2                      c) 20                      (d) <math>2^{20}</math></p>	1
13	<p>In the given figure, D is the mid-point of BC, then the value of <math>\frac{\cot y^\circ}{\cot x^\circ}</math> is</p> <div style="text-align: center;">  </div> <p>a) 2                      b) <math>\frac{1}{2}</math>                      c) <math>\frac{1}{3}</math>                      d) <math>\frac{1}{4}</math></p>	1

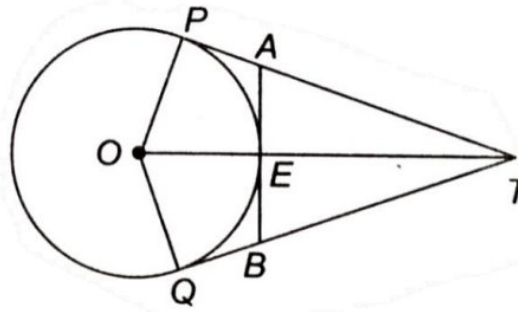
14	The number of revolutions made by a circular wheel of radius 0.7m in rolling a distance of 176m is (a) 22                      b) 24                      c) 75                      d) 40	1
15	If the circumference of a circle is doubled, then it's area is a) halved                      b) doubled                      c) tripled                      d) quadrupled	1
16	Two fair dice are rolled simultaneously. The probability that 5 will come up at least once is a) $\frac{5}{36}$ b) $\frac{11}{36}$ c) $\frac{12}{36}$ d) $\frac{23}{36}$	1
17	A card is drawn from a well shuffled deck of cards. What is the probability that the card drawn is neither a king nor a queen? a) $\frac{11}{13}$ b) $\frac{12}{13}$ c) $\frac{11}{26}$ d) $\frac{11}{52}$	1
18	If the difference of Mode and Median of a data is 24, then the difference of median and mean is a) 8                      b) 12                      c) 24                      d) 36	1
19	<b>Assertion:</b> If surface areas of two spheres are in the ratio 16 : 9, then their volumes are in the ratio 64 : 27 <b>Reason:</b> If $S_1$ and $S_2$ are surface areas of two spheres and $V_1$ and $V_2$ are their volumes, then $\frac{V_1}{V_2} = \left(\frac{S_1}{S_2}\right)^{\frac{3}{2}}$ a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A). b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A). c) Assertion (A) is true but reason (R) is false. d) Assertion (A) is false but reason (R) is true.	1
20	<b>Assertion:</b> In an arithmetic progression with $a = 15$ , $d = -3$ then 6th term will be zero. <b>Reason:</b> $a - d$ , $a$ , $a + d$ are three numbers in arithmetic progression. a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A). b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A). c) Assertion (A) is true but reason (R) is false. d) Assertion (A) is false but reason (R) is true.	1
<b>SECTION B</b>		
Section B consists of 5 questions of 2 marks each		
21	If sum of two numbers is 1215 and their HCF is 81. What is the possible number of pairs of such numbers. Also find them.	2

22	<p>In the figure, if <math>\angle ACB = \angle CDA</math>, <math>AC = 6</math> cm and <math>AD = 3</math> cm, then find the length of <math>AB</math></p> 	2
23	<p>The radii of two concentric circles are 13 cm and 8 cm. <math>AB</math> is a diameter of the bigger circle and <math>BD</math> is tangent to the smaller circle touching it at <math>D</math> and intersecting the larger circle at <math>P</math>, on producing. Find the length of <math>AP</math>.</p>	2
24	<p>If <math>\sin \theta + \cos \theta = \sqrt{3}</math>, then prove that <math>\tan \theta + \cot \theta = 1</math></p> <p style="text-align: center;"><b>OR</b></p> <p>If <math>\sec \theta + \tan \theta = p</math>, find <math>\cot \theta</math></p>	2
25	<p>The measure of the minor arc of a circle is <math>\frac{1}{5}</math> of the measure of the corresponding major arc. If the radius of the circle is 10.5 cm, find the area of the sector corresponding to major arc.</p> <p style="text-align: center;"><b>OR</b></p> <p>The diameters of the front and rear wheels of a tractor are 80 cm and 2 m respectively. Find the number of revolutions that rear wheel will make to cover the distance which the front wheel covers in 1400 revolutions.</p>	2
<b>SECTION C</b>		
Section C consists of 6 questions of 3 marks each		
26	<p>Four bells commence tolling together. They toll at intervals of <math>2, 2\frac{1}{4}, 4\frac{1}{2}</math> and <math>2\frac{3}{4}</math> seconds respectively. After what time will they toll together again?</p>	3
27	<p>If the zeroes of the polynomial <math>px^2 + qx + r</math> are real and are of the form <math>\frac{\alpha}{\alpha+1}</math> and <math>\frac{\alpha+1}{\alpha}</math>, then show that <math>(p + q + r)^2 = 4p^2 + q^2 + 4pq</math></p>	3
28	<p>The expenses of a lunch are partly constant and partly proportional to the number of guests. The expenses amount to Rs.65 for 7 guests and Rs.97 for 11 guests. How much the expenses for 18 guests will amount to?</p> <p style="text-align: center;"><b>OR</b></p> <p>Solve for <math>x</math> and <math>y</math>:</p> $\frac{ax}{b} - \frac{by}{a} = a + b$ $ax - by = 2ab$	3

29

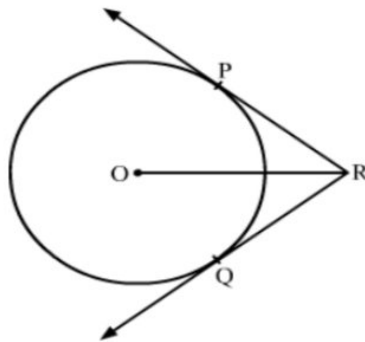
In the given figure, O is the centre of the circle of radius 5 cm. T is a point such that  $OT = 13$  cm and OT intersects circle at E. If AB is a tangent to the circle at E, find the length of AB, where TP and TQ are two tangents to the circle.

3



OR

In the figure given below, two tangents RP and RQ are drawn from an external point R to the circle with centre O. If  $\angle PRQ = 120^\circ$ , then prove that  $OR = PR + RQ$ .



30

If  $\cos \theta - \sin \theta = \sqrt{2} \sin \theta$ , prove that  $\cos \theta + \sin \theta = \sqrt{2} \cos \theta$ .

3

31

Find the mode of the following distribution of marks obtained by the students in an examination:

Class Interval	0-20	20-40	40-60	60-80	80-100
Frequency	15	18	21	29	17

Given the mean of the above distribution is 53, using empirical relationship estimate the value of its median.

3

### SECTION D

Section D consists of 4 questions of 5 marks each

32

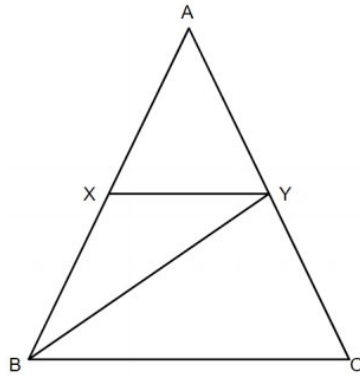
Nine times the side of one square exceeds the perimeter of a second square by one metre and six times the area of the second square exceeds twenty nine times the area of the first by one square metre. Find the side of both the squares.

5



33

$\Delta ABC \sim \Delta AXY$  and  $\frac{AB}{AX} = \frac{5}{3}$ . If  $XY = 4$  cm and  $BY$  bisects  $\angle XYC$ , find  $AY$



5

34

The height of a cone is 30 cm. A small cone is cut off at the top by a plane parallel to the base. If its volume be  $\frac{1}{27}$  of the volume of the given cone, at what height above the base is the section made?

**OR**

The dimensions of a room are 8m x 6m x h. It has two doors each of size 2m x 1m and one almirah of size 3m x 2m. The cost of covering the walls by wall paper which is 40 cm wide at the rate of Rs.1.25 per m is Rs. 362.50. Find the height of the room.

5

35

Daily wages of 110 workers, obtained in a survey, are tabulated below:

Daily Wages (in Rs.)	100-120	120-140	140-160	160-180	180-200	200-220	220-240
Number of Workers	10	15	20	22	18	12	13

Compute the mean daily wages and modal daily wages of these workers.

5

### SECTION E

Case study based questions are compulsory

36

#### Case study – 1



India is a competitive manufacturing location due to the low cost of manpower and strong

technical and engineering capabilities. The production of TV set in a factory increases uniformly by a fixed number every year. It produced 16000 sets in 6th year and 22600 in 9th year.

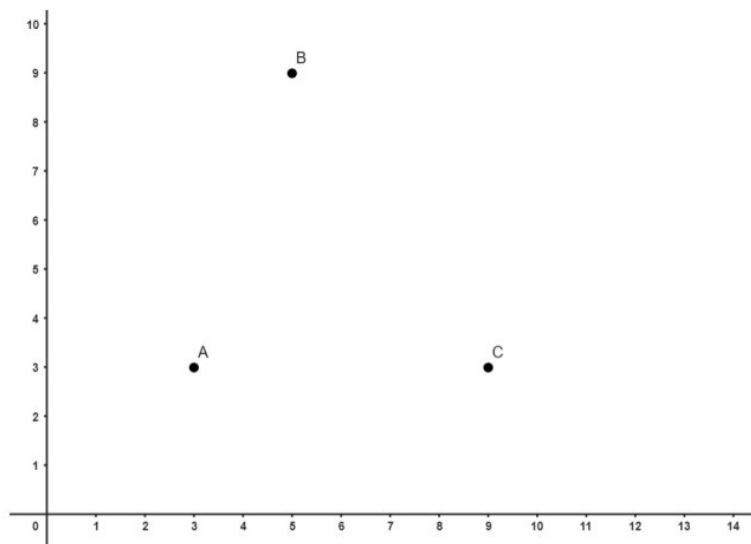
Based on the above information, answer the following questions:

<b>i)</b>	Find the production during first year.	<b>1</b>
<b>ii)</b>	In which year the production is 29200? <b>OR</b> Find the difference of the production during 7th year and 4th year.	<b>2</b>
<b>iii)</b>	Find the production during 8th year	<b>1</b>

**37**

**Case study – 2**

For sports day celebration, the school decided to make activity between the students in such a way that Vicky, Gaurav and Shalini are standing at positions A, B and respectively.



Based on the above information, answer the following questions:

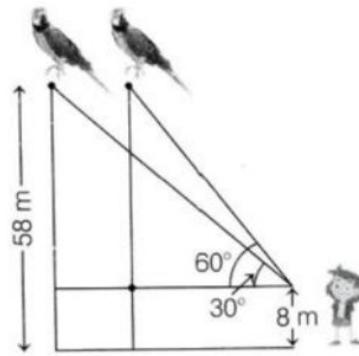
<b>i)</b>	Write the coordinates of the midpoint of the line joining Vicky and Gaurav.	<b>1</b>
<b>ii)</b>	If all the three students are joined by straight lines, find the area covered by the closed figure so obtained. <b>OR</b> Find the point on X-axis equidistant from the points A and C.	<b>2</b>
<b>iii)</b>	Find the distance between Gaurav and Shalini.	<b>1</b>

**38**

**Case study – 3**

A girl 1.5 m tall spots a parrot sitting on the top of a building of height 58 m from the ground. The angle of elevation of the parrot from the eyes of girl at any instant is  $60^\circ$ . The parrot flies away horizontally in such a way that it remained at a constant height from the ground. After 8s

the angle of elevation of the parrot from the same point is  $30^\circ$ .



Based on the above information, answer the following questions:

<b>i)</b>	Find the distance between the girl and the building.	<b>1</b>
<b>ii)</b>	Find the distance of first position of the parrot from the eyes of the girl.	<b>2</b>
<b>OR</b>		
	Find the distance travelled by the parrot.	
<b>iii)</b>	Find speed of the parrot.	<b>1</b>