Grade 10
Unit 11

Maths

Course Outline

Formative 4

- **AP**
- **Application of trigonometry**
- **Circles**
- **Area related to circles**
- **Surface area and volumes**

MAT
(Monthly Achievement Tests)

Short Code: 447311

Test ID: NMM10U0110

SOUVENIR INFOTECH

Guide Lines

1.Each set consists of:

50 | Warm-up/Foundation Questions

30 | Regular Questions

20 | Thinking Ability Questions

2.The time allocation and instructions regarding the questions are printed clearly in the beginning of each question types. The answers should be written or tick marked as per the instructions given. It is suggested to use pencil initially, so as to enable you to reuse the practice papers.

3. **According to the new pattern of CBSE these practice papers will be very useful especially for syllabus related Quiz, Debates, Visuals related checking and Orals etc.,**

4.After marking the answers, the scores of students can be checked and for marks obtained guidelines are given along with the question solving instructions. Follow those instructions and if, you are fully satisfied with your performance then check for your expected grades as per the CBSE guidelines as given on the back of each set.

5.Remember that this is only a guideline not the finally worked out result. You can further improve your performance by increase your practice.

6.For your convenience please follow following essential examiner's advices:

a.Answer all the questions
b.Read all the Options carefully
c.Understand and use correct scientific language in your responses.

We from SOUVENIR INFOTECH **wish skillful learning for your bright future.**

Before going for the test, look at least :

1. First of all go through the syllabus of the test according to the **Course Outline** provided at the front page of each MAT.
2. After going through the syllabus once or twice or even more time as per your satisfaction, first of all do the Warm-up questions. If you score A+ grade in those 50 questions go to the next level otherwise go through the chapter again.
3. The box for **Specific Information** is very useful as it adds to your concept building. Try to fill specific information in the proper way so that you will get the maximum benefit of it.
4. **Let's Chat** portion will help you to prepare for oral assessment. Through this you can increase your capacity to interact on a particular topic related to your syllabus.
5. The **Extra Diet** portion is also there to enhance you knowledge through visulization of concept. This portion provides you added knowledge on various related concepts.
6. The information related to time factor is there to enhance your time management skills.
7. From the examiners point of view it is always advised to use Pencil for initial efforts. The use of pen is fruitful only when the final effort comes.

Examiner's Tips:

- Read the question carefully. Make sure you understand exactly what is required.
- If you find that you are unable to do a part of a question, do not give up. The next part may be easier and may provide a clue to what you might have done in the part you found difficult.
- Note the number of marks per question as guide to the depth of response needed.
- Underline or note the key words that tell you what is required.
- Underline or note data as you read the question.
- Structure your answer carefully.
- Show all steps in calculations. Include equations you use and show the substitution of data. remember to work according to units given.
- Make sure that your answers contain suitable significant figures (wherever necessary) and must include units in numericals.
- Draw diagrams and graphs carefully.
- Read data from graphs carefully; note scales and prefixes on axes.
- Keep your eye on the clock but don't panic.
- If you have time at the end, use it. Check that your descriptions and explanations make sense. Consider whether there is anything you could add to an explanation or description. Repeat calculations to ensure that you have not made a mistake.

50 Warm-up/Foundation Questions

Opening Window

To enlighten your fundamental/basic topic knowledge.

A+. If you score 45 or above marks, move to the next section confidently.

A. If you score between 40 and 45 marks, it is satisfactory. Bit more knowledge will bring excellent result.

B. If you score below 40, kindly go through the topic more seriously.

Section A (50 marks) **Time given – 50 minutes + 5 minutes for revision**

Questions 1 to 50 carry 1 mark each.

For questions 1 to 20 four options are given one of them is the correct answer make your choice and write its name (a, b, c or d) in the answer box provided.

1. Find the area of a quadrant of a circle, whose circumference is 22 cm.

(a) 9.625 cm^2 (b) 9.635 cm^2

(c) 9.425 cm^2 (d) 9.325 cm^2

T	– 1 min
S	– Area related to circle

Ans.

2. How many parallel tangents can a circle have at the most ?

(a) one (b) two

(c) three (d) four

T	– 1 min
S	– Circle

Ans.

3. If a circle touches all the four sides of a quadrilateral *PQRS*, then

(a) $PQ + RS = QR + SP$ (b) $PQ + SP = QR + RS$

(c) $PQ + QR = SP + RS$ (d) none of these

T	– 1 min
S	– Circle

Ans.

4. Area of the sector of a circle with radius 4 cm and of angle 30° is

(a) 4 cm^2

(b) 4.6 cm^2

(c) 4.19 cm^2

(d) none of these

T	– 1 min
S	– Area related to circle

Ans.

5. Area of a sector of angle a (in degrees) of a circle with radius R is

(a) $\frac{a \times 2\pi R}{180}$ (b) $\frac{a \times \pi R^2}{180}$

(c) $\frac{a \times 2\pi R}{360}$ (d) $\frac{a \times 2\pi R^2}{720}$

T – 1 min
S – Area related to circle

Ans.

6. The area of circle is 154 cm^2. Find the circumcircle of the circle.

(a) 22 cm (b) 44 cm

(c) 33 cm^2 (d) 11 cm

T – 1 min
S – Area related to circle

Ans.

7. The tangent at any point of a circle is ..... to the radius through the point of contact

(a) 45° (B) 60°

(c) 30° (d) 90°

T – 1 min
S – Circle

Ans.

8. From outside the circle, how many tangent we can draw ?

(a) one (b) two

(c) three (d) infinite many

T – 1 min
S – Circle

Ans.

9. Area of segment of a circle =

(a) Area of the corresponding sector – Area of corresponding triangle

(b) Area of the corresponding sector + Area of corresponding triangle

(c) Area of the corresponding sector × Area of corresponding triangle

(d) None of these

T – 1 min
S – Area related to circle

Ans.

10. A circle is inscribed in ΔABC touching the sides AB, BC and AC at F, D and E respectively, then

(a) $AF + BD + CD = AE + BF + CE$

(b) $AF + BF + CE = AE + BD + CD$

(c) $BD + BF + CE = AE + AF + CD$

(d) None of these

T – 1 min
S – Circle

Ans.

11. The areas of two circles are in the ratio 4 : 9. The ratios of their circumference is

(a) 2 : 3 (b) 3 : 2

(c) 4 : 9 (d) 9 : 4

T – 1 min
S – Area related to circle

Ans.

12. The difference between the circumference and radius of a circle is

(a) 111 cm^2 (b) 184 cm^2

(c) 154 cm^2 (d) 259 cm^2

T – 1 min
S – Area related to circle

Ans.

13. The length of the segment of the tangent from the external point P and the point of contact with the circle is

(a) Length of tangent

(b) distance of tangent

(c) Segment of tangent

(d) none of these

T – 1 min
S – Circle

Ans.

14. Write first four terms of AP when the first term '*a*' and common difference '*d*' are –1 and 1/2.

(a) $-1, -1/2, 0, 1/2$ (b) $-1/2, -1, 0, 1/2$

(c) $0, 1, 2, 3$ (d) $-1, 0, -1/2, 1/2$

T – 1 min
S – A.P

Ans.

15. The surface area of sphere is 154 cm^2. The volume of the sphere is

(a) $179\frac{2}{3}\,cm^2$ (b) $359\frac{1}{3}\,cm^2$

(c) $1437\frac{1}{3}\,cm^2$ (d) none of these

T – 1 min
S – Volume and surface area of solids

Ans.

16. The 8th term of an AP is 17 and its 14th term is 29. The common difference of the AP is

(a) 3 (b) 2

(c) 5 (d) –2

T – 1 min
S – A.P

Ans.

17. The 7th term of an AP is 32 and its 13th term is 62. Find the AP.

(a) 2, 4, 6, 8..... (b) 2, 7, 12, 17, ...

(c) 4, 6, 8, 10 ..... (d) 1, 6, 11 .....

T – 1 min
S – A.P

Ans.

18. The area of circle is 64π cm^2. Find the circumcircle of the circle.

(a) 16π (b) 22π

(c) 32π (d) none

T – 1 min
S – Area related to circle

Ans.

19. The radius of a wheel is 0.25 m. How many revolutions will it make in covering 11 km ?

(a) 2800 (b) 4000

(c) 5500 (d) 7000

T – 1 min
S – Area related to circle

Ans.

20. In making 1000 revolutions, a wheel covers 88 km. The diameter of the wheel is

(a) 14 m (b) 24 m

(c) 28 m (d) 40 m

T – 1 min
S – Area related to circle

Ans.

Fill in the Blanks

21. Volume of a frustum of a cone _____ .

T – 1 min
S – Area related to circle

Ans.

22. The distance covered by travelling once around a circle is called _____ .

T – 1 min
S – Circle

Ans.

23. π = _____ .

T – 1 min
S – Area related to circle

Ans.

24. A line intersecting a circle, in two points is called _____ .

T – 1 min
S – Circle

Ans.

25. The tangents at the extremities of any chord makes _____ angle with the chord.

T – 1 min
S – Circle

Ans.

26. Lateral surface area of the frustum of the cone = _____ .

T – 1 min
S – Volume and surface of solids

Ans.

27. A continuous piece of a circle is called an _____ .

T – 1 min
S – Area related to circle

Ans.

28. An angle subtended by an arc at the centre of a circle is called its _____ .

T – 1 min
S – Area related to circle

Ans.

29. A sequence in which each term differs from its preceding term by a constant is called _____ .

T – 1 min
S – A.P

Ans.

30. The *n*th term of an AP is called its _____ .

T – 1 min
S – A.P

Ans.

True or False

31. $\frac{\text{Circumference}}{\text{Diameter}} = \pi$

T – 1 min
S – Area related to circle

Ans.

32. A line intersecting a circle in two points called a secant.

T – 1 min
S – Circles

Ans.

33. A circle can have two parallel tangents at the most.

T – 1 min
S – Circles

Ans.

34. A chord of a circle passing through its centre is called radius of the circle.

T – 1 min
S – Area related to circle

Ans.

35. One-fourth of a circular disc is called a quadrant.

T – 1 min
S – Volume and surface of solids

Ans.

36. Curved surface area of hollow cylinder $= \pi h(R^2 - r^2)$

T – 1 min
S – Volume and surface of solids

Ans.

37. Volume of the frustum of the cone $= \frac{\pi}{3}(R^2 + r^2 + Rr)$

T – 1 min
S – Volume and surface of solids

Ans.

38. A parallelogram circumscribing a circle is a rhombus.

T – 1 min
S – Circles

Ans.

39. The length of tangents drawn from an external point to a circle are unequal.

T – 1 min
S – Circles

Ans.

40. $T_n = a + (n-1)d$

T – 1 min
S – A.P

Ans.

Simple questions

41. The minute hand of a clock is 12cm long. Find the are of the face of the clock described by the minute hand in 35 minutes.

T	– 1 min
S	– Area of circle

Ans.

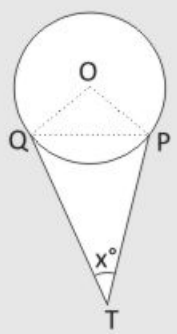
42. The perimeter of a sector of a circle of radius 5.6 cm is 27.2 cm. Find the area of the sector

T	– 1 min
S	– Area of circle

Ans.

43. Two tangents TP and TQ are drawn to a circle with centre O from an external point T. Prove that $\angle PTQ = 2\angle OPQ$

T	– 1 min
S	– Circle



Ans.

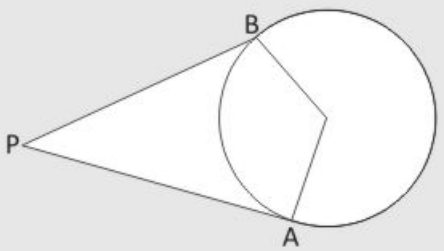
44. A road which is 7 m wide surrounds a circular park whose circumference is 352 cm. Find the area of the road.

T	– 1 min
S	– Area related to circle

Ans.

45. In the given figure, PA and PB are the tangent segments to a circle with centre O show that the point A, O, B and P are concyclic.

T	– 1 min
S	– Area related to circle



Ans.

46. A point P is 26 cm away from the centre of a circle and the length of tangent drawn from P to the circle is 24 cm. Find the radius of the circle ?

T	– 1 min
S	– Circle

Ans.

47. Find the circumference and the area of a circle of diameter 35 cm (take $r = 22/7$)

T	– 1 min
S	– Area related to circle

Ans.

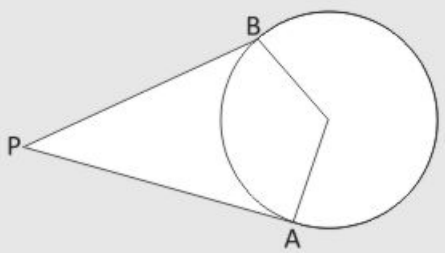
48. Which term of the AP 2, $-1, -4, -7$ ..... is -40 ?

T	– 1 min
S	– A.P

Ans.

49. Find the area of a circle circumference of circle is 770 cm.

T	– 1 min
S	– Circle



Ans.

50. The area of a circle is 301.84 cm^2. Find its circumference. (take $\pi = \frac{22}{7}$)

T	– 1 min
S	– Area related to circle

Ans.

30 Regular Questions

Opening Window

To enlighten your regular knowledge of topic. If you score more than 55 marks here, you have achieved this level brilliantly. Move to the next level of test papers.

Section B (60 marks) **Time given – 45 minutes + 5 minutes for revision**

Questions 51 to 80 carry 2 marks each.

51. A vertical pole stands on the level ground from a point on the ground, 25 m away from the foot of the pole, the angle of elevation of its top is found to be 60°. Find the height of the pole.

T	– 1 min
S	– Application of trigonometry

Ans.

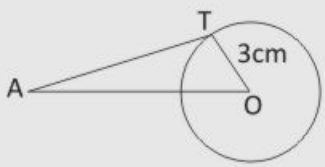
52. The area and circumference of a circle are numerically equal. What is the radius of the circle ?

T	– 1 min
S	– Area related to circle

T	– 1 min
S	– Circle

53. The length of the tangent from a point *A* to a circle of radius 3 cm, is 4 cm. Find the distance of *A* from the centre of the circle.

T	– 1 min
S	– Circle



Ans.

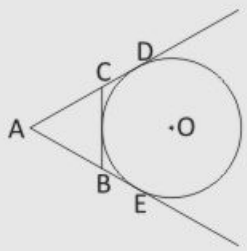
54. A hemispherical bowl of internal radius 9 cm, contains a liquid. This liquid is to be filled into small cylindrical bottles of diameter 3 cm, and height 4 cm. How many bottles are necessary to empty the bowl ?

T	– 1 min
S	– Volume and surface area of solids

Ans.

55. In the following figure, AD , AE and BC are tangents to the circle at D, E and F respectively, then write $2AD$ in terms of AB, BC and CA.

T	– 1 min
S	– Circle



Ans.

56. The length of the diagonal of a cube is $6\sqrt{3}$ cm. Find its total surface area.

T	– 1 min
S	– Volume and surface area of solids

Ans.

57. How many bricks each measuring (25 $\times$ 11.25 cm $\times$ 6 cm) will be required to construct a wall (8 m $\times$ 6 m $\times$ 22.5 cm)

T	– 1 min
S	– Volume and surface area of solids

Ans.

58. Prove that in two concentric circles, the chords of the larger circle, which touches the smaller circle, is bisected at the point of contact.

T	– 1 min
S	– Circle

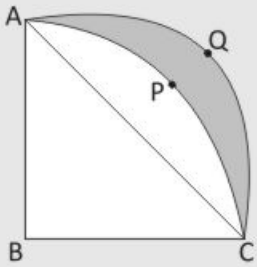
Ans.

59. The ratio between the volumes of two spheres is 8 : 27. What is the ratio between their surface area ?

T	– 1 min
S	– Volume and surface area of solids

Ans.

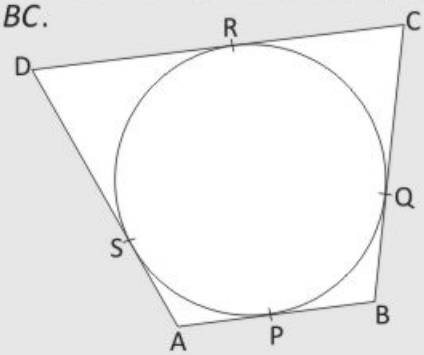
60. In the given figure, *ABCPA* is a quadrant of a circle of radius 121 cm. With *AC* as diameter, a semicircle is drawn. Find the area of the shaded region.



T	– 1 min
S	– Area related to circle

Ans.

61. A quadrilateral *ABCD* is drawn to circumscribe a circle, as shown in the figure. Prove that $AB + CD = AD + BC$.



T	– 1 min
S	– Circle

Ans.

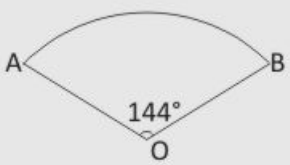
62. Find the sum of all two – digit odd positive numbers

T	– 1 min
S	– A.P

Ans.

63. In the following figure, the length of an arc $AB = 20\pi$ cm is a sector of a circle, find the radius of the circle.

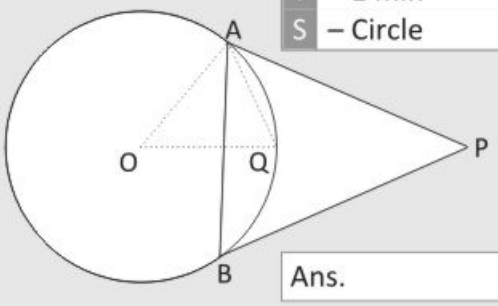
T	– 1 min
S	– Area related to circle



Ans.

64. From a point P, two tangents PA and PB are drawn to a circle $C(0,r)$. If $OP = 2r$, show that ΔAPB is equilateral.

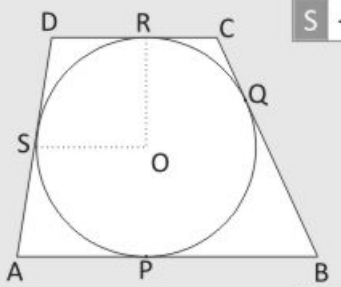
T	– 1 min
S	– Circle



Ans.

65. In the given figure, $ABCD$ is a quadrilateral in which $\angle D = 90°$. A circle $C(0,r)$ touches the sides AB, BC, CD and DA at P, Q, R, S respectively. If $BC = 38$ cm $CD = 25$ cm and $BP = 27$cm, find the value of r.

T	– 1 min
S	– Circle



Ans.

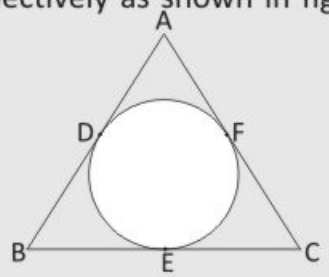
66. If a be the first term, d the common difference and l the last term of given AP. Show that its nth term from the end is $\{l-(n-1)d\}$.

T	– 2 min
S	– A.P

Ans.

67. A circle is inscribed in a ΔABC having $AB = 10$cm $BC = 12$cm and $CA = 8$cm and touching these sides at D, E, F respectively as shown in figure.

T	– 2 min
S	– Circle



Ans.

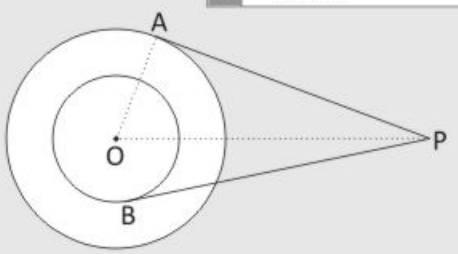
68. A cow is placed for grazing inside a rectangular field 70m by 52 m. It is tethered to one corner by a rope 21m long. One how much area can it graze? How much area is left ungazed?

T	– 2 min
S	– Area of circle

Ans.

69. In the given figure, O is the centre of two concentric circles of radii 5 cm and 3 cm. From an external point P tangents PA and PB are drawn to these are drawn to these circles. If $PA = 12$ cm, then find the length of PB.

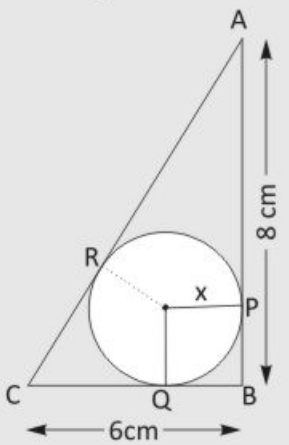
T	– 2 min
S	– Circle



Ans.

70. In the given figure, ΔABC is right angled at B such that $BC = 6$ cm and $AB = 8$ cm. A circle with centre O has been inscribed inside the triangle. $OP \perp AB, OQ \perp BC$ and $OR \perp AC$ If $OP = OQ = OR = x$ cm then $x = ?$

T	– 2 min
S	– Circle



Ans.

71. A pendulum swings through an angle of 30° and describes an arc 8.8 cm in length. Find the length of the pendulum.

T – 2 min
S – Area related to circle

Ans.

72. A solid metal cone with radius of base 12 cm and height 24 cm is melted to form solid spherical balls of diameter 6 cm each. Find the number of balls thus formed.

T – 2 min
S – Volume and surface area of solids

Ans.

73. A solid sphere of radius 3 cm is melted and then cast into small spherical balls, each of diameter 0.6 cm. Find the number of small balls so obtained ?

T – 2 min
S – Volume and surface area of solids

Ans.

74. From the top of a light house, the angles of depression of two ships on the opposite sides of it are observed to be α and β. If the height of the light house be h metres and the line joining the ships passes through the foot of the light house, show that the distance between the ships is $\frac{h\tan\alpha + \tan\beta}{\tan\alpha\tan\beta}$ metres.

T – 2 min
S – Application of trigonomery

Ans.

75. A solid is composed of a cylinder with hemispherical ends. If the whole length of the solid is 104 cm and the radius of each of its hemispherical ends is 7 cm, find the cost of polishing its surface at the rate of the rate of Rs 10 per dm^2

T	– 2 min
S	– Area related to circle

Ans.

76. $51+52+53+.....+100=?$

T	– 2 min
S	– A.P

Ans.

77. Find the sum of all natural numbers lying between 100 and 500, which are divisible by 8.

T	– 2 min
S	– A.P

Ans.

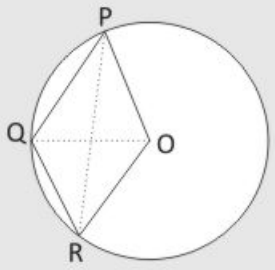
78. Water is flowing at the rate of 5 km per hour through a pipe of diameter 14 cm into a rectangular tank which 50 m long and 44 m wide. Find the time in which the level of water in the tank will rise by 21 cm.

T	– 2 min
S	– Volume and surface area of solids

Ans.

79. In the given figure, *OPQR* is a rhombus, three of whose vertices lie on a circle with centre *O*. If the area of the rhombus is $32\sqrt{3}\,cm^2$, find the radius of the circle.

T	– 2 min
S	– Area related to circle



Ans.

80. A path of 8 m width runs around the outside of a circular park whose radius is 17 m. Find the area of the path.

T	– 2 min
S	– Area related to circle

Ans.

20 Thinking Ability Questions

Opening Window

To enlighten your regular knowledge of topic. If you score more than 50 marks here, you have achieved this level brilliantly. Move to the next level of test papers.

Section C (60 marks) **Time given – 45 minutes + 5 minutes for revision**

81. A kite is flying, attached to a thread which is 165 m long. The thread makes an angle of 30° with the ground. Find the height of the kite from the ground, assuming that there is no slack in the thread.

T – 2 min
S – Application of trigonometry

Ans.

82. Which terms of the AP 5, 9, 13, 17, ... is 81.

T – 2 min
S – A.P

Ans.

83. Find the arithmetic mean between $a - b$ and $a + b$.

T – 2 min
S – A.P

Ans.

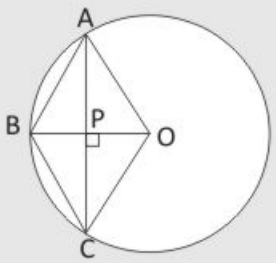
84. How many terms of the AP 3, 5, 7, 9 ..... must be added to get the sum 120 ?

T	– 2 min
S	– A.P

Ans.

85. In the given figure, *OABC* is a rhombus whose three vertices A, B, C lie on a circle of radius 10 cm. Find the area of the rhombus.
Take $\sqrt{3} = 1.732$

T	– 2 min
S	– Area related to circle



Ans.

86. The angle of elevation of a cloud from a point 60 metres above a lake is 30° and the angle of depression of the reflection of the cloud in the lake is 60°. Find the height of the cloud.

T	– 2 min
S	– Application of trigonometry

Ans.

87. The bicycle wheel makes 5000 revolutions in moving 11 km. Find the diameter of the wheel.

T	– 2 min
S	– Area related to circle

Ans.

88. A vertical tower stands on a horizontal plane and is surmounted by a vertical flagstaff of height 5 m. From a point on the plane the angles of elevation of the bottom and the top of the flagstaff are 30° and 60°. Find the height of the tower.

T	– 2 min
S	– Application of trigonomery

Ans.

89. How many spherical bullets can be made out of a solid cube of lead whose edge measures 44 cm, each bullets being 4 cm in diameter ?

T	– 2 min
S	– Volume and surface area

Ans.

90. If the radii of the ends of 42 cm high bucket are 16 cm and 11 cm, determine its capacity (Take $\pi = 22/7$)

T	– 2 min
S	– Volume and surface area

Ans.

91. The diameter of the wheels of a car is 280 cm. How many revolutions per minute must a wheel make in order to move at a speed of 70 km per hour?

T	– 2 min
S	– Area related to circle

Ans.

92. Prove that the line segment joining the point of contact of two parallel tangents to a circle is a diameter of the circle.

T	– 3 min
S	– A.P

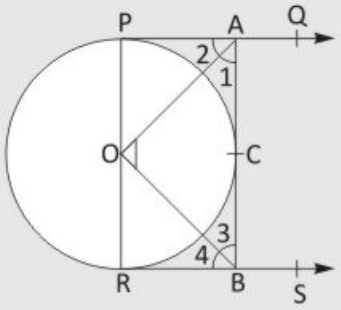
Ans.

93. The diameter of the wheels of a bus is 140 cm. How many revolutions per minute must a wheel make in order to move at a speed of 66 km per hour?

T	– 3 min
S	– Area related to circle

Ans.

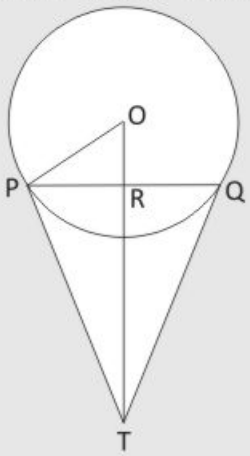
94. In the given figure, PQ and RS are two parallel tangents to a circle with centre O and another tangent AB with point of contact C intersects PQ at A and RS at B. Prove that $\angle AOB = 90°$.



T	– 3 min
S	– Circle

Ans.

95. In the given figure, PQ is a chord of length 8 cm of a circle of radius 5 cm. The tangents at P and Q intersect at a point T. Find the length TP.

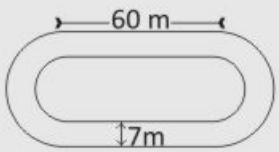


T	– 3 min
S	– Circle

Ans.

96. The inside perimeter of a running track, as shown in the figure, is 340 m. The length of each straight portion is 60 m, and the curved portions are semicircles. If the track is 7 m wide, find the area of the track. Also find the outer perimeter of the track.

T	– 3 min
S	– Area related to circle



Ans.

97. A hollow cone is cut by a plane parallel to the base and the upper portion is removed. If the curved surface of the remainder is 8/9 of the curved surface of the whole cone, find the ratio of the line segments into which the altitude of the cone is divided by the plane.

T	– 3 min
S	– Volume and surface area of solids

Ans.

98. A solid cylinder of diameter 12 cm and height 15 cm is melted and recast in to 12 toys in the shape of a right circular cone mounted on a hemisphere. Find the radius of the hemisphere and the total height of the toy, if the height of the conical part is 3 times is radius.

T	– 3 min
S	– Volume and surface area of solids

Ans.

99. Find the sum of first 21 terms of the *AP* whose 2^{nd} term is 8 and 4^{th} term is 14.

T	– 3 min
S	– A.P

Ans.

100. The internal and external radii of a hollow sphere are 3 cm and 5 cm respectively. The sphere is melted to form a solid cylinder of height $2\frac{2}{3}$ cm find the diameter and the curved surface area of the cylinder.

T	– 3 min
S	– Volume and surface area of solids

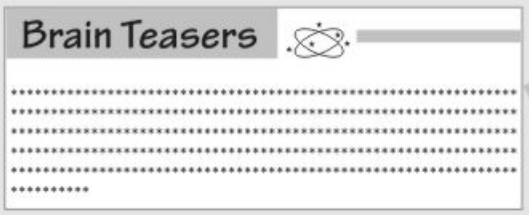
Ans.

Tools at a glance

Opening Window with instructions for your potential analysis and guideline to improve your performance.

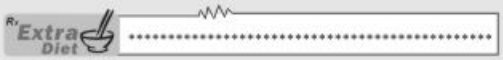
Let's Chat, the feature with suggestive topics for discussion so as to improve your capacity to debate on various topics.

Box with time break-up of questions **(T)** and its concept (**S**, i.e., subject)



Brain Teasers i.e., Questions with difference to make the concepts of students crystal clear. These are the questions with higher difficulty levels to check the grip of the students over the concepts.

Extra Diet, the web link, the notation: www._____ to provide additional information regarding the concept for more clarity of thoughts.



CBSE GRADING PATTERN

As the new pattern includes **CCE** (Continuous and Comprehensive Evaluation) which will be run in two terms i.e., from April to September and October to March. Thus the school will conduct four **Formative** and two **Summative** Assessments.

However, the most generalised version of grades is given below:

MARKS PERCENTAGE	GRADE	GRADE POINT	CATEGORY
91 to 100	A1	10	Exceptional
81 to 90	A2	9	Excellent
71 to 80	B1	8	Very Good
61 to 70	B2	7	Good
51 to 60	C1	6	Ordinary (Fair)
41 to 50	C2	5	Average
33 to 40	D	4	Below Average
21 to 32	E1	3	Improvement Needed
Below 20	E2	Below 2	Unsatisfactory