



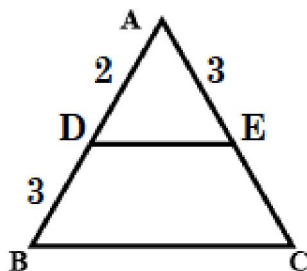
General Instructions : Same as given in UTS-01.

SECTION A

(Question numbers 01 to 20 carry 1 mark each.)

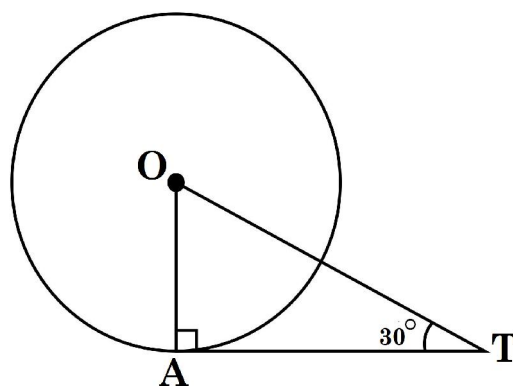
Followings are **multiple choice questions**. Select the correct option in each one of them.

01. The ratio of LCM and HCF of the least composite and the least prime numbers is
(a) 1 : 2 (b) 2 : 1 (c) 1 : 1 (d) 1 : 3
02. If one zero of $3x^2 + 8x + k$ be the reciprocal of the other, then $k =$
(a) 3 (b) -3 (c) $\frac{1}{3}$ (d) $-\frac{1}{3}$
03. If x and y are two odd prime numbers such that $x > y$, then $x^2 - y^2$ is
(a) an even number (b) an odd number
(c) an odd prime number (d) a prime number
04. If the system of equations $2x + 3y = 7$ and $2ax + (a+b)y = 28$ has infinite many solutions, then
(a) $a = 2b$ (b) $b = 2a$ (c) $a + 2b = 0$ (d) $2a + b = 0$
05. The relation between x and y such that the point $P(x, y)$ is equidistant from the points $A(1, 4)$ and $B(-1, 2)$ is
(a) $x - y + 3 = 0$ (b) $x = y$ (c) $x = 2y$ (d) None of these
06. The LCM of two prime numbers p and q , ($p > q$) is 221. Then the value of $(3p - q)$ is
(a) 4 (b) 28 (c) 38 (d) 48
07. If $\sin \theta - \cos \theta = 0$, then the value of $\sin^4 \theta + \cos^4 \theta$ is
(a) 1 (b) $\frac{3}{4}$ (c) $\frac{1}{2}$ (d) $\frac{1}{4}$
08. If $3\cos \theta = 5\sin \theta$, then the value of $\tan \theta - \cot \theta$ is
(a) $\frac{16}{15}$ (b) $-\frac{16}{15}$ (c) 0 (d) $-\frac{15}{16}$
09. In the given figure, if $\angle ADE = \angle ABC$, then $CE =$



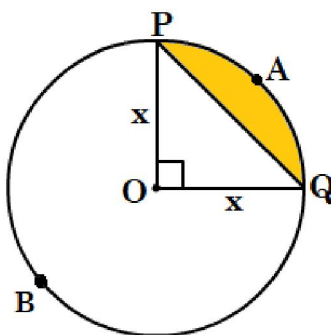
10. The shadow of a 5 m long stick is 2 m long. At the same time the length of the shadow of a 12.5 m high tree (in m) is
(a) 3 (b) 3.5 (c) 4.5 (d) 5
11. In the given figure. AT is a tangent to the circle with centre O such that $OT = 4$ cm and $\angle OTA = 30^\circ$. Then, $AT =$

- (a) 4 cm
(b) 2 cm
(c) $2\sqrt{3}$ cm
(d) $4\sqrt{3}$ cm



12. Area of segment PBQ (un-shaded region), is

- (a) $\frac{x^2}{4}(\pi - 2)$
(b) $\frac{x^2(3\pi + 2)}{4}$
(c) $\frac{x^2}{4}(\pi - 1)$
(d) $\frac{x^2}{4}(\pi + 1)$



13. Two cubes each of edge 12 cm are joined. The surface area of new cuboid is
(a) 140 cm^2 (b) 1440 cm^2 (c) 144 cm^2 (d) 72 cm^2
14. 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
15. The perimeter (in cm) of a square circumscribing a circle of radius a cm is
(a) $4a$ (b) $5a$ (c) $8a$ (d) $10a$
16. For the following distribution,

Class	0-5	5-10	10-15	15-20	20-25
Frequency	10	15	12	20	9

the sum of the lower limits of the median and modal class is

- (a) 15 (b) 25 (c) 30 (d) 35
17. In a family of 3 children, the probability of having at least one boy is
(a) $\frac{7}{8}$ (b) $\frac{1}{8}$ (c) $\frac{5}{8}$ (d) $\frac{3}{4}$
18. For any $\triangle ABC$, the value of $\cos\left(\frac{A+B+C}{2}\right) =$
(a) 0 (b) 1 (c) -1 (d) 2

Followings are **Assertion-Reason based questions**.

In the following questions, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.

- (a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true and R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.
19. **Assertion (A)** : The H.C.F. of two numbers is 16 and their product is 3072. Then their L.C.M. is given by 162.

Reason (R) : If a and b are two positive integers, then $H.C.F. \times L.C.M. = a \times b$.

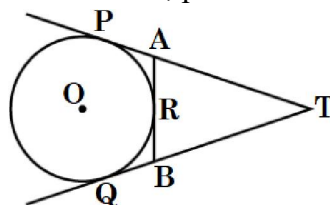
20. **Assertion (A) :** Mid-point of a line segment divides line in the ratio 1 : 1.

Reason (R) : The ratio in which the point $(-3, k)$ divides the line segment joining the points $(-5, 4)$ and $(-2, 3)$ is 1 : 2.

SECTION B

(Question numbers 21 to 25 carry 2 marks each.)

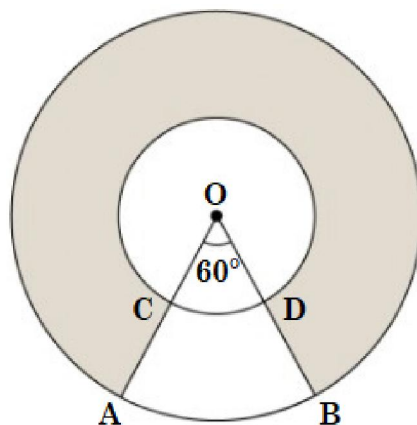
21. In figure, TP and TQ are tangents from T to the circle with centre O and R is any point on the circle. If AB is any tangent to the circle at R, prove that $TA + AR = TB + BR$.



OR

Prove that the angle between the two tangents drawn from an external point to a circle is supplementary to the angle subtended by the line-segment joining the points of contact and the centre.

22. Solve for x and y : $99x + 101y = 499$, $101x + 99y = 501$.
 23. If $7\sin^2 \theta + 3\cos^2 \theta = 4$, then find the value of $\cot \theta$.
 24. In the figure, two concentric circles with center O have radii 21 cm and 42 cm.



If $\angle AOB = 60^\circ$, then find the area of shaded region.

OR

If the perimeter of a semicircular protractor is 36 cm, find its diameter.

25. E is a point on the side AD produced of a parallelogram ABCD and BE intersects CD at F. Show that $\triangle ABE \sim \triangle CFB$.

SECTION C

(Question numbers 26 to 31 carry 3 marks each.)

26. If α and β are the zeroes of the quadratic polynomial $f(x) = 25x^2 - 15x + 2$, then find a quadratic polynomial whose zeroes are $\frac{1}{2\alpha}$ and $\frac{1}{2\beta}$.
 27. The area of a rectangle gets reduced by 9 square units, if its length is reduced by 5 units and breadth is increased by 3 units. If we increase the length by 3 units and breadth by 2 units, the area increases by 67 square units. Find the dimensions of rectangle.

OR

The students of a class are made to stand in rows. If 4 students are extra in each row, there would be 2 rows less. If 4 students are less in each row, there would be 4 rows more. Find the number of students in the class.

28. Given that $\sqrt{3}$ is irrational, hence show that $\frac{7+5\sqrt{3}}{2}$ is irrational.
29. Prove that the intercept of a tangent between a pair of parallel tangents to a circle subtend a right angle at the centre of the circle.

OR

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

30. Prove that $(\sec \theta - \tan \theta)^2 = \frac{\operatorname{cosec} \theta - 1}{\operatorname{cosec} \theta + 1}$.
31. A card is drawn at random from a pack of 52 cards. Find the probability that the card drawn is
- a black king
 - either a black card or a king
 - a jack, queen or a king.

SECTION D

(Question numbers 32 to 35 carry 5 marks each.)

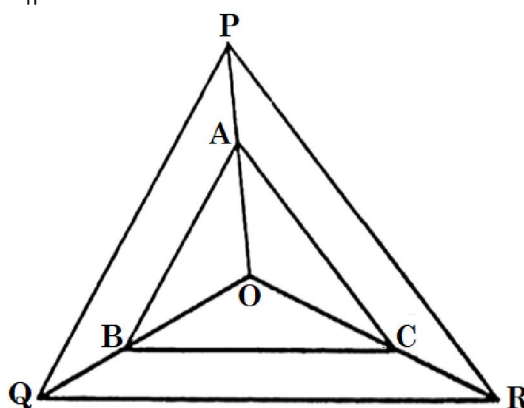
32. Solve for x : $9x^2 - 9(a+b)x + [2a^2 + 5ab + 2b^2] = 0$.

OR

A trader bought a number of articles for ₹900. Five articles were found damaged. He sold each of the remaining articles at ₹2 more than what he paid for it. He got a profit of ₹80 on the whole transaction. Find the number of articles he bought.

33. Prove that if a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, then the other two sides are divided in the same ratio.

In figure, A, B and C are points on OP, OQ and OR respectively such that $AB \parallel PQ$ and $BC \parallel QR$. Show that $AC \parallel PR$.



34. The height of a cone is 40 cm. A small cone is cut off at the top by a plane parallel to the base and its volume $\frac{1}{64}$ times the volume of original cone. Find the height from the base at which the section is made.

OR

A tent is in the shape of a cylinder surmounted by a conical top. If the height and diameter of the cylindrical part are 2.1 m and 4 m respectively, and the slant height of the top is 2.8 m, find the area of the canvas used for making the tent. Also, find the cost of the canvas of the tent at the rate of ₹500 per m^2 .

35. If the mean of the following data is 14.7, find the values of p and q.

Class	0-6	6-12	12-18	18-24	24-30	30-36	36-42	Total
Frequency	10	p	4	7	q	4	1	40

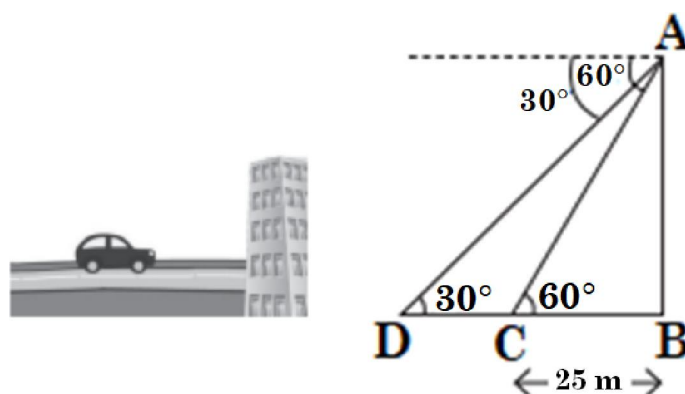
SECTION E

(Question numbers 36 to 38 carry 4 marks each.)

This section contains **three Case-study / Passage based questions.**

Each question has **three sub-parts (i), (ii) and (iii).** Two sub-parts are of **1 mark each** while the remaining third sub-part (with internal choice) is of **2 marks.**

36. **CASE STUDY I :** Isha is standing at the top of the building observes a car at an angle of depression of 30° , which approaching to the foot of the building with a uniform speed.



6 seconds later, the angle of depression of the car formed to be 60° , whose distance at that instant from the building is 25 m.

Based on the above information, answer the following questions.

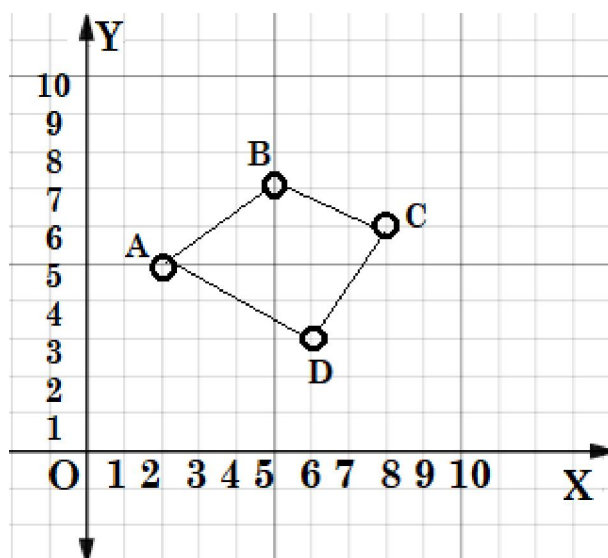
- Find the height of the building.
- Find the distance of the observer from the car when it makes angle of 60° .
- Find the distance between the two positions of the car.

OR

- Find the total time taken by the car to reach the foot of the building from the starting point.

37. **CASE STUDY II :** Students of a city school are standing in rows and columns in their school ground to celebrate their annual sports day.

A, B, C and D are the positions of four students as shown in the figure.



Based on the above information, answer the following questions.

- (i) Assume that the sports teacher is sitting at the origin, then which of the four students is closest to him?
- (ii) Write the distance between A and C.
- (iii) Find the coordinates of the mid-point of line segment AC.

OR

- (iii) If a point P divides the line segment AD in the ratio 1:2, then find the coordinates of P.

38. **CASE STUDY III :** In a board game, the no. of sea shells in various cells forms an arithmetic progression.

If the number of sea shells in the 3rd and 11th cell together is 68 and number of shells in the 11th cell is 24 more than that of 3rd cell.



Based on the above information, answer the following questions.

- (i) What is the difference between the number of sea shells in the 20th and 18th cells?
- (ii) How many sea shells are there in the first cell?
- (iii) How many total sea shells are there in first 15 cells?

OR

- (iii) What is the sum of number of sea shells in the 8th and 9th cell?

10

CLASS

UMANG

TEST SERIES

STRICTLY BASED ON THE LATEST SYLLABUS
A OFFICIAL SAMPLE PAPER ISSUED BY
CBSE ON 13 JANUARY 2023

CBSE SAMPLE PAPERS

MATHEMATICS

(STANDARD & BASIC)

SURE SHOT QUESTIONS

POWERED
BY AI

O.P. GUPTA

SACHIN PANDEY

VISHAL MINOCHA

+ 8 Solved Sample Papers
+ 10 Unsolved Sample Papers

- ✓ Multiple Choice Questions
- ✓ Assertion-Reason Questions
- ✓ Case Study Questions
- ✓ Subjective Type Questions

O.P. GUPTA Presents CBSE UMANG SAMPLE PAPERS

For CBSE 2023-24 Exams ▪ Class 10
(Standard & Basic Maths)

Umang Test Series

For order related queries, please contact by
WhatsApp @ +91 9650350480 (only message)

★ Buy on Amazon & Flipkart

MANY DIRECT QUESTIONS HAVE BEEN
DIRECTLY TAKEN IN THE RECENT
CBSE EXAMS.. #We-Are-On-Mission

MATHEMATICIA BY O.P. GUPTA

...a name you can bank upon!



To get FREE PDF Materials, join
WhatsApp Teachers Group
by Clicking on the Logo

If you are a Student, then you may join our Students Group

CLICK HERE FOR
**CLASSES
IX & X**

CLICK HERE FOR
**CLASSES
XI & XII**

You can add our WhatsApp no. +919650350480 to your Groups also

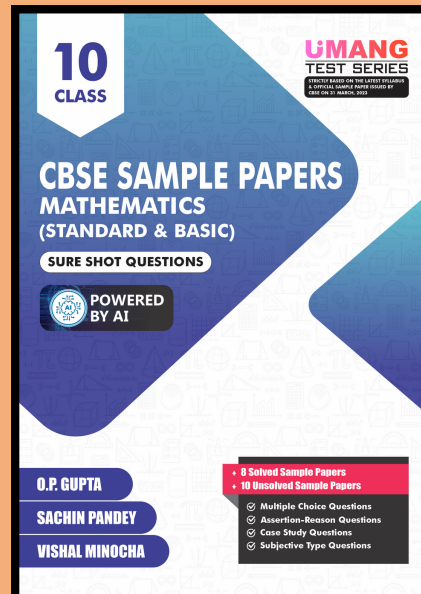
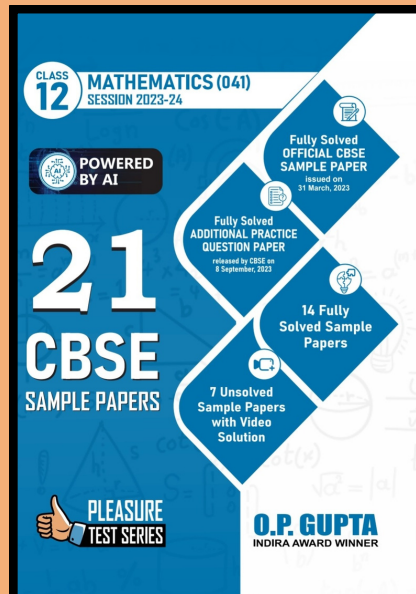
Feel Safe to Share this Document with other math scholars

CLICK NOW

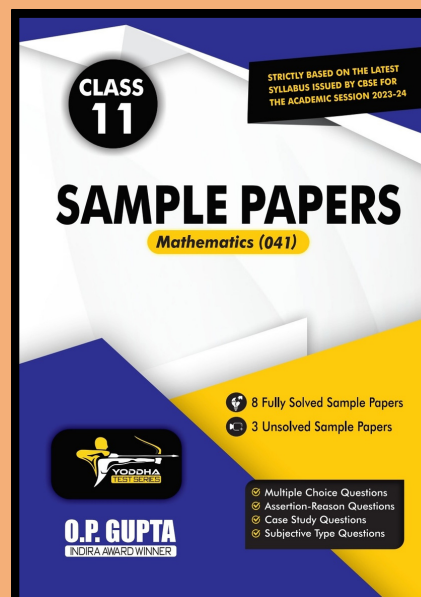
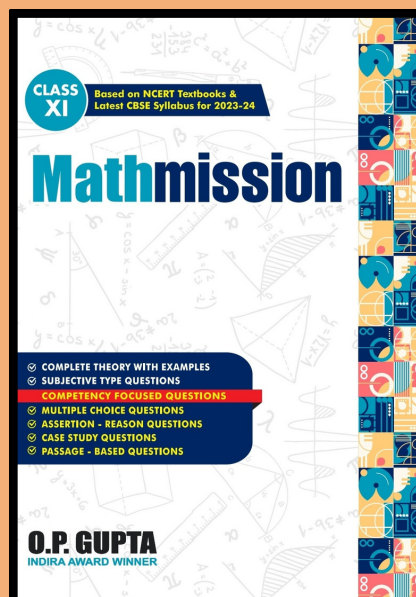
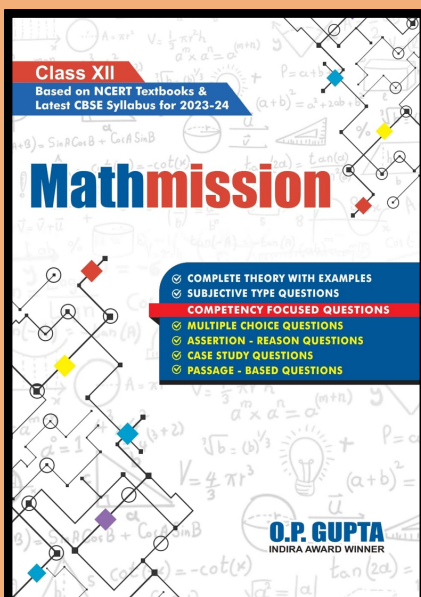
Download



**FREE PDF SAMPLE
PAPERS FOR THE
CLASSES XII, XI & X
or, just type -
bit.ly/m/theopgupta**



Click on the
Image of any
Book, to Buy it

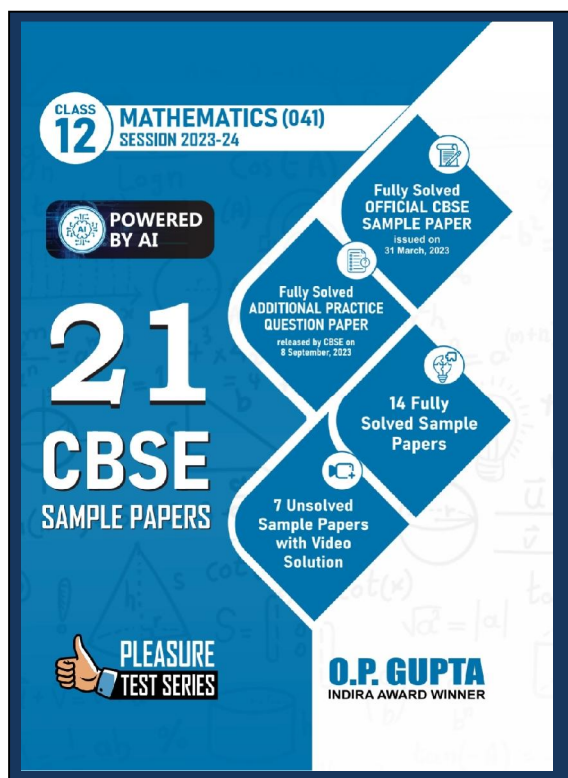


Many Direct
Questions
from our
Books have
been asked
in the recent
CBSE Exams

Buy our
books on
amazon
Flipkart

[/theopgupta](https://www.theopgupta.com) [/theopgupta](https://www.theopgupta.com) [/theopgupta](https://www.theopgupta.com) [@theopgupta](https://www.theopgupta.com)

For Bulk Orders at Discounted Price, contact on +91-9650350480



CBSE 21 SAMPLE PAPERS

For CBSE 2023-24 Exams ■ Class 12 Maths (041)

Pleasure Test Series By O.P. Gupta

For order related queries, please contact by
WhatsApp @ +91 9650350480 (only message)

★ Buy on Amazon & Flipkart

MANY DIRECT QUESTIONS HAVE BEEN
DIRECTLY TAKEN IN THE RECENT
CBSE EXAMS.. #We-Are-On-Mission

We have released Set of 2 Books for CBSE
XII (Academic session 2023-24).

1. MATHMISSION FOR XII

- ☑ COMPLETE THEORY & EXAMPLES
- ☑ SUBJECTIVE TYPE QUESTIONS
- ☑ COMPETENCY FOCUSED QUESTIONS
 - ★ Multiple Choice Questions
 - ★ Assertion-Reason Questions
 - ★ Case-Study Questions
 - ★ Passage-Based Questions

2. SOLUTIONS OF MATHMISSION

- ☑ Step-by-step Detailed Solutions
(For all Exercises of MATHMISSION)



For Discounted Price
Order on WhatsApp

9650350480

Our other books -

★ MATHMISSION FOR CLASS XI

- (available in Stock)

★ CBSE Yoddha Sample Papers for Class XI

- (releasing in Dec.)

Inquire now on WhastApp @ 9650350480