CASE STUDY

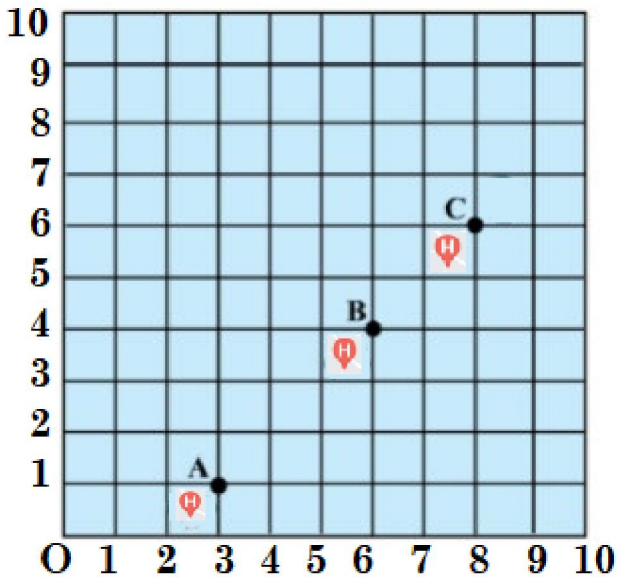
PRACTICE QUESTIONS

CBSE (2023-24) : CLASS 10 (MATHEMATICS)

Following **Case-Study Questions** are taken from **UMANG TEST SERIES** for Grade-10 Sample Papers book.

CASE STUDY I

Mr Pankaj Chugh aged 50 years, is a senior Maths teacher and is living in New Delhi.
As per the government's directive, he had taken his first dose of COVID-19 vaccine in the month of April 2021 in a city hospital.
Now he wants to take his second dose of the vaccine.
The following map is showing three vaccination centers around his home.
Let O represents his home. Vaccination centers are at A, B and C as shown in the figure below.



Observe this situation and answer the following questions.

01. Write the coordinates of nearest vaccination center.

02. According to the figure, vaccination center B is dividing the line joining vaccination center A to C in the ratio of m : n m:n. Find this ratio.

03. Assuming that Mr Chugh went to center B and vaccine doses are finished. Then what is the closest distance he has to cover to reach another vaccination center?

04. Find the distance between his home to the vaccination center C.

05. Find the distance between the vaccination centers A and C.

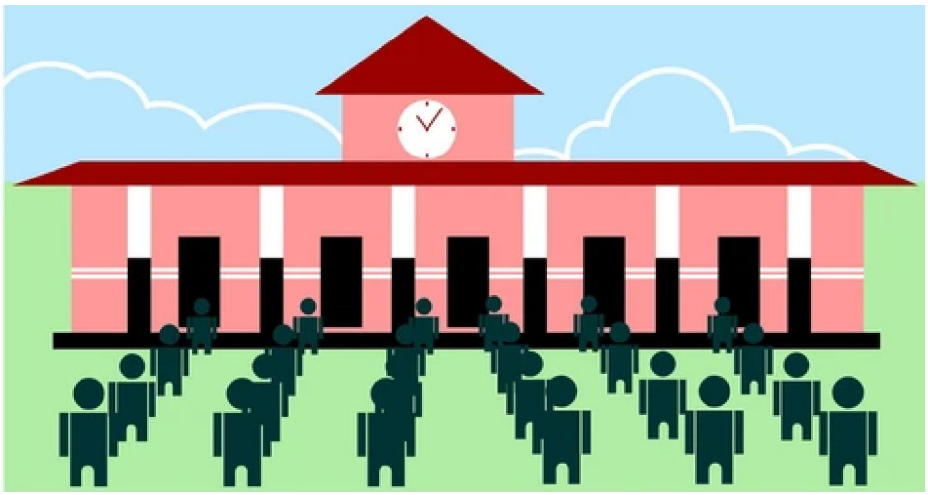
Answers

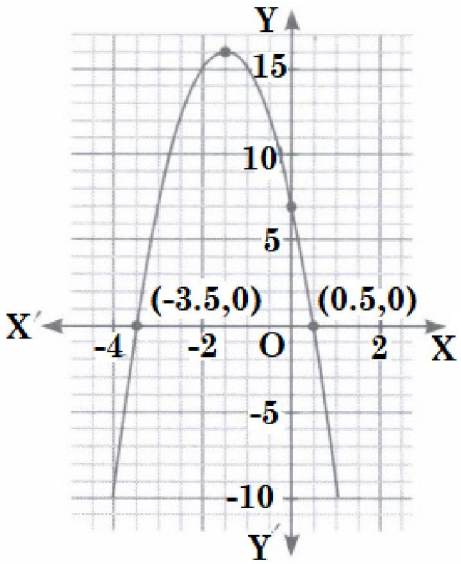
01. (3, 1) **02.** 3:2 **03.** $2\sqrt{2}$ **04.** 10 **05.** $5\sqrt{2}$

CASE STUDY II

Just before the morning assembly Sachin Pandey, is a Math lecturer and the school-coordinator of a convent school observes some clouds in the sky. So, he cancels the assembly. He also observes that the

clouds have a shape of the polynomial. The mathematical representation of a cloud is shown in the figure. He decides to teach his students about this mathematical aspect in the nature.





Based on the above information of the above information, answer the following questions.

01. Find the zeroes of the polynomial represented by the graph.

02. What will be the expression for the polynomial represented by the graph?

03. What will be the value of polynomial represented by the graph, when $x = 3$?

04. If α and β are the zeroes of the polynomial $f(x) = x^2 + 2x - 8$, then find $\alpha^2 + \beta^2$.

05. Obtain a quadratic polynomial whose sum and product of the zeroes are $0, 36$ respectively.

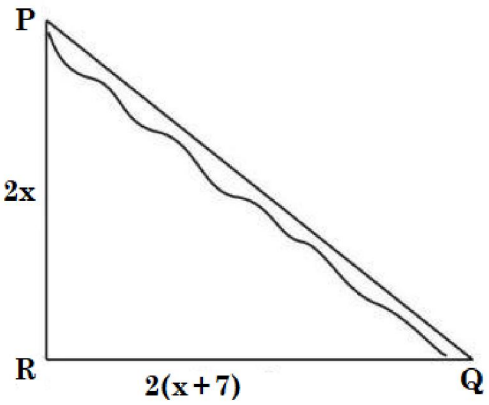
Answers

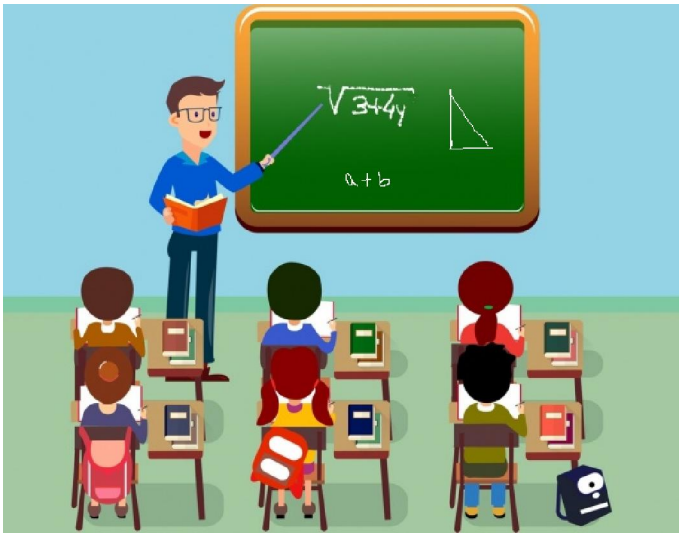
01. $\frac{1}{2}, -\frac{7}{2}$ **02.** $p(x) = -4x^2 - 12x + 7$ **03.** -65

04. 20 **05.** $k(x^2 + 36)$

CASE STUDY III

Mr O.P. GUPTA, a math lecturer went to city Q from city P, for a **math workshop** in a school. There is a route via city R such that PR is perpendicular to RQ, $PR = 2x$ km and $RQ = 2(x + 7)$ km.





Mr GUPTA noticed a sign-board which mentions that there is a proposal to construct a 26 km highway which directly connects the two cities P and Q.

Based on the given information, answer the following questions.

01. Which concept can be used to get the value of x ?

02. Find the value of x .

03. Find PR .

04. Find RQ .

05. How much distance will be saved in reaching city Q after the construction of highway?

Answers

01. Pythagoras theorem **02.** 5 **03.** 10 km

04. 24 km **05.** 8 km

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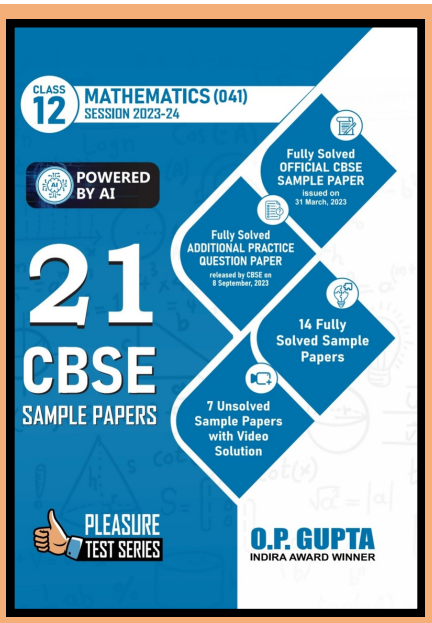

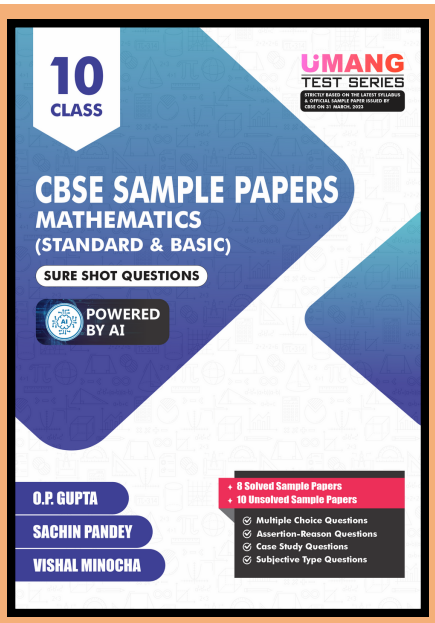

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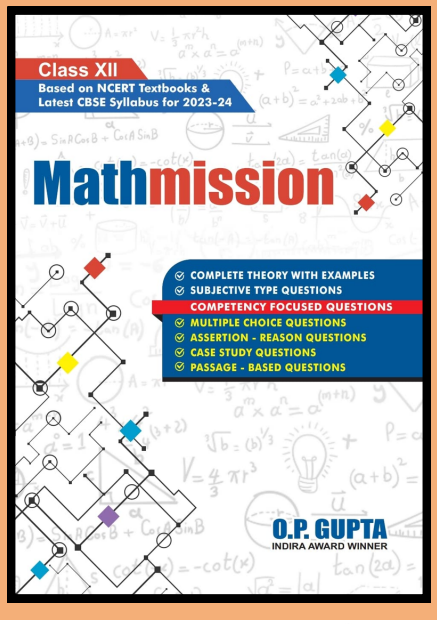

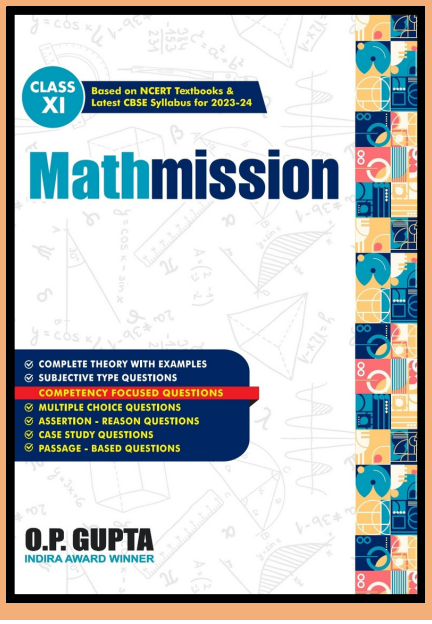

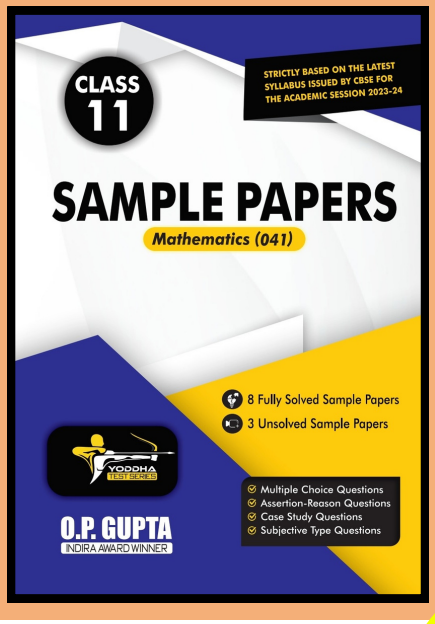

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