

PRACTICE QUESTIONS SET – 1 (2024-25)

MATHEMATICS

CLASS – X

Section A

Answer ALL the following Questions. Each question carries 2 marks.

1. If the H.C.F of 408 and 1032 is expressible in the form of $1032 \times 2 + 408 \times p$, find the value of p.
2. If one zero of the polynomial $f(x) = 3x^2 - 8x + 2k + 1$ is seven times the other, find the value of k.
3. Show that 12^n cannot end with digit 0 or 5 for any natural number n.
4. Explain why $11 \times 17 \times 5 \times 3 \times 2 \times 1 + 5$ is a composite number.
5. If α and β are the zeroes of the quadratic polynomial $f(x) = x^2 + 3x - 2$, evaluate $\frac{\alpha^2}{\beta} + \frac{\beta^2}{\alpha}$
6. Prove that $\frac{(\sqrt{5}-2)}{3}$ is an irrational number, given that $\sqrt{5}$ is an irrational number.

Section B

Answer ALL the following Questions. Each question carries 3 marks.

7. Find the smallest pair of 4-digit positive numbers such that the difference between them is 303 and their H.C.F is 101.
8. If $(x - k)$ is the H.C.F of $(2x^2 - kx - 9)$ and $(x^2 + x - 12)$, find the value of k.
9. Find a quadratic polynomial, the sum and product of whose zeroes are $\sqrt{2}$ and $(-\frac{3}{2})$, respectively. Also find its zeroes.
10. Prove that $\sqrt{3}$ is an irrational number.
11. The number of students learning German, Arabic and English are 48, 80 and 144 respectively. Find the minimum number of rooms required if in each room the same number of students are seated and all of them are of the same subject.

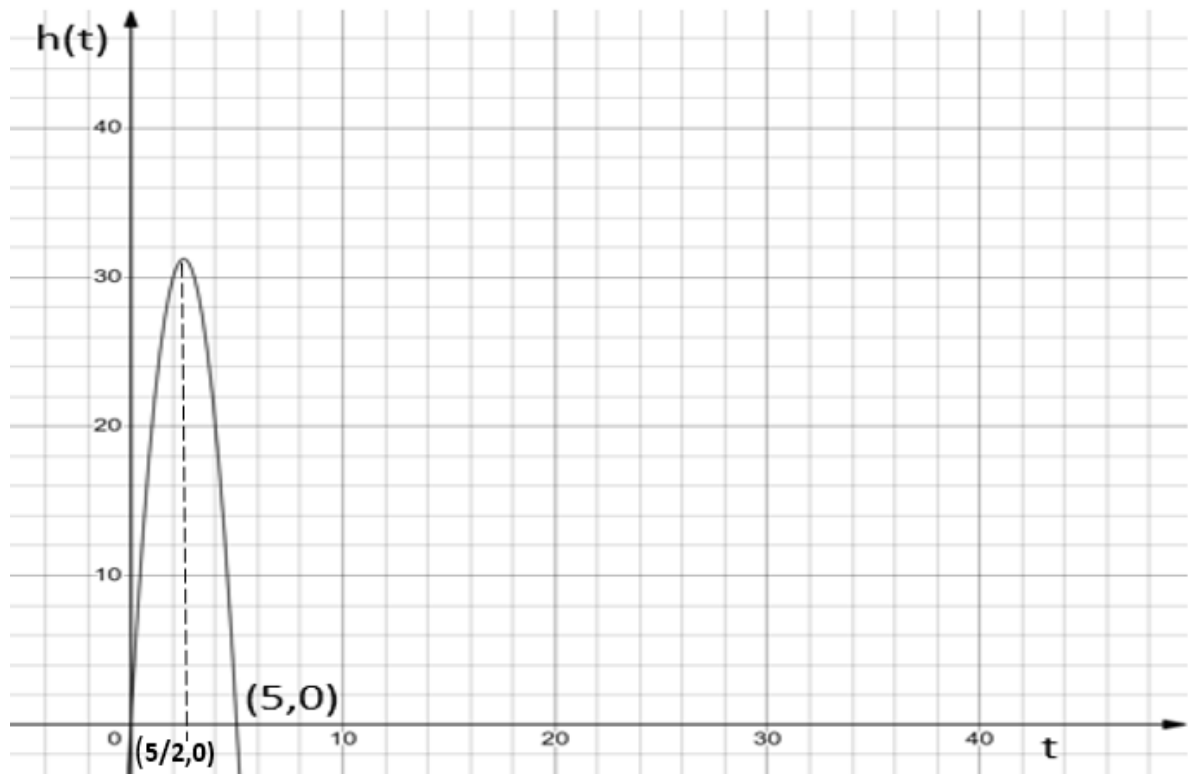
Section C

Answer ALL the following Questions. Each question carries 5 marks.

12. Find the zeroes of the quadratic polynomial $p(y) = 7y^2 - \frac{11}{3}y - \frac{2}{3}$ and verify the relationship between the zeroes and the coefficients. Hence, form a quadratic polynomial whose sum and product of zeroes are same as $p(y)$.
13. If one zero of the quadratic polynomial $f(x) = 4x^2 - 8kx + 8x - 9$ is negative of the other, find the zeroes of $kx^2 + 3kx + 2$.
14. Find the H.C.F and L.C.M of 180 and 288 by prime factorisation method. Also, verify that $\text{HCF} \times \text{LCM} = \text{Product of two given numbers}$.

Section – D : Case Study (4 marks question)

15. A ball is thrown in the air so that t seconds after it is thrown, its height h metre above its starting point is given by the polynomial $h(t) = 25t - 5t^2$.



Observe the graph of the polynomial and answer the following questions:

- Write zeroes of the given polynomial.
- Find the maximum height achieved by ball.
- (a) After throwing upward, how much time did the ball take to reach to the height of 30m?

OR

(b) Find the two different values of t when the height of the ball was 20m?

16. **ASSERTION REASON BASED QUESTIONS (1 mark question)**

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.

Assertion(A): If the graph of the polynomial $f(x) = ax^2 + bx + c, a > 0$ touches x-axis at its lowest point, then its zeroes are equal to $\left(-\frac{b}{2a}\right)$

Reason(R): If the graph of a quadratic polynomial touches x-axis, then its zeroes are equal.

General Guidelines:

1. You are advised against doing selective study.
2. The questions to be given in the question paper are sample questions for practice prior to Board examination.
3. Although Answer keys will be provided within two/three days of posting of these questions you are advised to answer them yourself.
4. In case you have queries regarding a portion of the chapters being revised here you may send your query to your teacher through Chat section in MS Teams.

***** END *****