

**BCM SCHOOL, BASANT AVENUE, DUGRI, LUDHIANA.
SEPTEMBER ASSIGNMENT
CLASS- X (MATHEMATICS)**

SECTION –A (MULTIPLE CHOICE QUESTIONS)

1. Given that $\sin A = \frac{1}{2}$ and $\cos B = \frac{1}{2}$, then the value of **(A+B)** is
a) 90° b) 60° c) 30° d) 45°
2. If $(a/3, 4)$ is the mid-point of the segment joining the points $P(-6, 5)$ and $R(-2, 3)$, then the value of 'a' is
a) 12 b) -6 c) -12 d) -4
3. If the value of mean and mode are respectively 30 and 15, then median =
a) 20.3 b) 25 c) 27.5 d) 22.9
4. **ASSERTION:** 184 is 60^{th} term of sequence 3,7, 11.....
REASON: The nth term of an AP is given by $a_n = a+(n-1) d$
a.) Both Assertion and Reason are correct and Reason is the correct explanation for Assertion
b.) Both Assertion and Reason are correct and Reason is not the correct explanation for Assertion.
c.) assertion is true but the reason is false.
d.) assertion is false but the reason is true.

SECTION B(2 MARKS QUESTIONS)

5. The following data gives the information on the observed lifetimes (in hours) of 225 electrical components:

Lifetime (in hours)	0–20	20–40	40–60	60–80	80–100	100–120
Frequency	10	35	52	61	38	29

Determine the modal lifetimes of the components.
6. If the point $P(x,y)$ is equidistant from the points $A(a+b, b-a)$ and $B(a-b, a+b)$. Prove that $bx = ay$.
7. A card is drawn from a well shuffled deck of 52 cards. Find the probability that the card drawn is:
(A) Neither a king nor queen.
(B) Non face card of red color.
(C) A card of spade or an ace.
(D) A card of clubs
(E) 10 of hearts.

SECTION – C (3 MARKS QUESTIONS)

8. In triangle OPQ, right angled at P, $OP = 7$ cm, $OQ - PQ = 1$ cm. determine the values of $\sin Q$ and $\cos Q$.
9. If two vertices of an equilateral triangle are $(0,0)$ and $(3,\sqrt{3})$, find the third vertex.
10. Prove that: $2(\sin^6 \theta + \cos^6 \theta) - 3(\sin^4 \theta + \cos^4 \theta) + 1 = 0$

SECTION – D (5 MARKS QUESTIONS)

11. From the top of a tower h m high angles of depression of two objects, which are in line with foot of the tower are α and $\beta(\beta > \alpha)$. Find the distance between the two objects.
12. A peacock is sitting on the top of a pillar, which is 9 m high. From a point 27 m away from the bottom of the pillar a snake is coming to its hole at the base of the pillar. Seeing the snake the peacock pounces on it. If their speeds are equal, at what distance from the whole is the snake caught?
13. The sum of 4 consecutive numbers in an AP is 32 and the ratio of the product of the first and the last term to the product of two middle terms is 7:15. find the number.

SECTION – E (CASE STUDY)

14.

CASE STUDY 1:

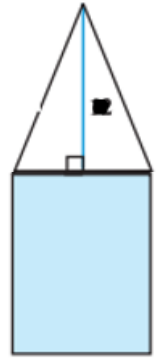
The government of India has decided to promote healthy and clean environment in the society and aware about exercise and plans to construct a rectangular park is to be designed whose breadth is 3 m less than its length. Its area is to be 4 sq m more than the area of park that has already been made in the shape of an isosceles triangle with its base as the breadth of the rectangular park and altitude 12 m.

Based on the above information answer the following questions:

- (i) What is the length and breadth of rectangular part in term of x ?
- (ii) What is the quadratic equation to calculate the area of park?
- (iii) What are the dimensions of rectangular part?

OR

What is the area of triangular part only?



15.

CASE STUDY 2:

Your elder brother wants to buy a car and plans to take loan from a bank for his car. He repays his total loan of Rs. 1,18,000 by paying every month starting with first installment of Rs.1000. If he increases the installment by Rs. 100 every month, then answer the following questions:

- (i) What is the amount paid by him in 30th installment?
- (ii) Calculate the amount paid by him in 30 installments.
- (iii) What is amount paid in last installment, if total installments are 40.

OR

What is the ratio of 1st installment to the last installment?