

SATISH SCIENCE ACADEMY

**DHANORI PUNE-411015** 

# ALGEBRA

# Class 10 - Mathematics - I

Time Allowed: 2 hours			Maximum Mar	Maximum Marks: 40				
General	Instruc	tions:						
	1. All	questio	ns are compulsory.					
	2. Use	of a ca	lculator is not allowed.					
	3. The numbers to the right of the questions indicate full marks.							
	4. In case of MCQs Q. No. 1(A) only the first attempt will be evaluated and will be given credit.							
1.								
1.	(a)	Choose the correct alternative from given :						
		i.	Out of the following equ	ations which one is not a quadratic equation?	[1]			
			a) $2x - x^2 = x^2 + 5$	b) $5x^2 = 90$				
			c) $x^2 = 4x$	d) $x^2 + 4x = 11 + x^2$				
		ii.	To draw the graph of $x$ -	+ 2y = 4, find $x$ when $y = 1$ :	[1]			
			a) 1	b) -2				
			c) 6	d) 2				
		iii.	What is the sum of the fi	irst 10 natural numbers?	[1]			
			a) 65	b) 20				
			c) 55	d) 11				
		iv.	The tax levied by the Central Government for trading within state is		[1]			
			a) UTGST	b) IGST				
			c) SGST	d) CGST				
	(b)	i.	If $17x + 15y = 11$ and	15x + 17y = 21, then find the value of $x - y$ .	[1]			
		ii.	Write second and third to	erm of an A.P. whose first term is 6 and common difference is -3.	[1]			
	iii. If the face value of a share is ₹100 and market value is ₹ 150. If rate of brokerage is $\frac{1}{2}$							
	brokerage paid on one share.							
		iv.	If a die is rolled, what is	the probability that number appearing on upper face is less than 2?	[0]			
			a) $\frac{1}{6}$	b) $\frac{1}{2}$				
			c) 1	d) $\frac{1}{3}$				
2.					[12]			
	(a)	Com	plete the following activit	ties and rewrite it (any two) :				
		i.	First term and common o	difference of an A.P. are 6 and 3 respectively. Find $S_{27}$ .	[2]			

## CONTACT:8830597066 | 9130946703

1/3

First term = a = 6, common difference = d = 3,  $S_{27} = ?$   $S_n = \frac{n}{2} [\Box + (n - 1)d] - \text{ formula}$   $S_{27} = \frac{27}{2} [12 + (27 - 1)\Box]$   $= \frac{27}{2} \times \Box$   $= 27 \times 45$  $\therefore S_{27} = \Box$ 

- ii. Solve the following quadratic equation:  $x^2 + 8x + 15 = 0$  [2]
- iii. A box contains 5 red, 8 blue and 3 green pens. Rutuja wants to pick a pen at random. What is [2] the probability that the pen is blue?

### (b) Solve the following subquestions (any four) :

i.	Solve the following simultaneous equations: $x+y=6; x-y=4$	[2]
ii.	Obtain a quadratic equation whose roots are -3 and -7.	[2]

- iii. Write an A.P. whose first term is a = 10 and common difference d = 5. [2]
- iv. A card is drawn from a well shuffled pack of 52 playing cards. Find the probability of the [2] event, the card drawn is a red card. Suppose S is sample space.

$$\therefore n(S) = 52$$

Event A: Card drawn is a red card.

 $\therefore$  Total red cards =  $\Box$  hearts + 13 diamonds

$$\therefore n(A) = \Box$$

$$\therefore P(A) = \frac{\Box}{n(S)}$$
 - formula

$$\therefore P(A) = \frac{26}{52}$$

$$\therefore P(A) = \Box$$

v. The following table shows classification of number of workers and number of hours they work [2] in software company. Prepare less than upper limit type cumulative frequency distribution table:

Number of hours daily	Numbers of workers
8 - 10	150
10-12	500
12-14	300
14-16	50

3.

### (a) **Complete the following activity and rewrite it (any one) :**

- A survey was conducted for 180 people in a city 70 ate Pizza, 60 ate burgers and 50 ate chips. [3]
  Draw a pie diagram for the given information.
- ii. A readymade garment shopkeeper gives 5% discount on a dress of ₹ 2,000 and charges 5% [3]GST on the remaining amount. What is the purchase price of the dress for the customer?
- (b) Solve the following subquestions (any two) :

[9]

- Solve quadratic equation using formula method:  $5 m^2 + 13m + 8 = 0$ . i.
- ii. The co-ordinates of the point of intersection of lines ax + by = 9 and bx + ay = 5 is [3] (3, -1). Find the values of *a* and *b*.
- iii. A retailer sold 2 tins of lustre paint and taxable value of each tin is ₹ 2,800. If the rate of GST [3] is 28%, then find the amount of CGST and SGST charged in the tax invoice.
- A bag contains 3 red, 3 white, 3 green and 3 black balls. One ball is picked up from the bag at iv. [3] random. What is the probability that the ball drawn is:

i. white

ii. not white.

#### 4. Solve the following subquestions (any two) :

- (a) The product of two numbers is 352 and their mean is 19. Find the numbers.
- Draw a pie diagram to represent the world population given in the following table: (b)

[4] [4]

[8]

[3]

Country	Japan	England	India	China
Percentage of World Population	20	10	40	30

One person borrows ₹4,000 and agrees to repay with a total interest of ₹ 500 in 10 instalments. Each (c) [4] instalment being less than the preceding instalment by ₹ 10. What should be the first and the last instalments?

#### 5. Solve the following subquestions (any one) :

Represent the following data using histogram: (a)

Represent the following data using histogram:					
Daily Income (₹)	No. of Workers				
130 - 135	4				
135 - 140	7				
140 - 145	14				
145 - 150	16				

Solve the following simultaneous equations using Cramer's rule: (b)

$$3x - 4y = 10, 4x + 3y = 5$$

[3]

[3]