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PREFACE

SSC 10th Board Examination is the first big milestone in a student's academic journey and it is common for students to experience a range of emotions including stress, anxiety, challenge of maintaining motivation. Effective time management and balancing revision are key to navigating this period successfully.

One proven strategy to ease these challenges is to study previous years' Board Papers. By reviewing these Board papers, students gain valuable insights into the actual examination, understand the pattern in which a questions are designed and can better strategise how to tackle the paper. This approach not only boosts confidence but also helps in alleviating some of the stress associated with the unknowns of the exam.

Target's 'SSC Board Solved Papers: Mathematics Part I & II' includes the most recent format of the Board's Question Papers and an Effective Time Management tool for the Board Exam Paper. This will help students understand the kinds of activities and questions they might see in the exams and optimize exam performance.

Includes chapter-wise marks analysis of Board Question Papers, which can significantly enhance exam readiness and contribute to better performance.

Board Question Papers from March 2020 to July 2024 are provided making it easier for students to spot the latest trends in the questions and activities. Detailed solutions are provided which will help students prepare thoroughly for their board exams.

We have incorporated *Smart Tips* throughout the book. These tips serve multiple purposes, including guiding students on effective question-solving approaches, highlighting common pitfalls to avoid, fostering lateral thinking for problem-solving and demonstrating simple yet effective methods for verifying answers

Topper's Answer Sheets is special inclusion in this book which provides valuable understanding of writing style, structure and content that helped them excel in the examination.

We are sure our **Target's SSC Board Solved Papers : Mathematics Part I & II** will prove to be extremely instrumental in achieving exemplary scores in the Board Examinations

Publisher

Edition: First

The journey to create a complete book is strewn with triumphs, failures and near misses. If you think we've nearly missed something or want to applaud us for our triumphs, we'd love to hear from you.

Please write to us at: mail@targetpublications.org

A book affects eternity; one can never tell where its influence stops.

Best of luck to all the aspirants!

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Exam Strategy: Paper Pattern and Time Management

- There will be separate question papers for Part I and Part II of 40 marks each.
- Duration of each paper will be 2 hours.

Question No.	Type of Questions	Total Marks	Marks with option	Time Management
1.	(A) Solve 4 out of 4 MCQ (1 mark each)	04	04	08 mins
	(B) Solve 4 out of 4 subquestions (1 mark each)	04	04	08 mins
2.	(A) Solve 2 activity based subquestions out of 3 (2 marks each)	04	06	10 mins
	(B) Solve any 4 out of 5 subquestions (2 marks each)	08	10	20 mins
3.	(A) Solve 1 activity based subquestion out of 2 (3 marks each)	03	06	08 mins
	(B) Solve any 2 out of 4 subquestions (3 marks each)	06	12	16 mins
4.	Solve any 2 out of 3 subquestions (4 marks each) [Out of textbook]	08	12	30 mins
5.	Solve any 1 out of 2 subquestions (3 marks each)	03	06	10 mins
	To Review and Re-checking	-	-	10 mins
	Total Marks	40	60	120 mins

Distribution of Marks	
Easy Questions	40%
Medium Questions	40%
Difficult Questions	20%

Objectives	Maths – I
Knowledge	20%
Understanding	30%
Application	40%
Skill	10%

[Maharashtra State Board of Secondary and Higher Secondary Education, Pune - 04]



Chapterwise Weightage of Board Question Papers (2020- 2024)

Month & Year Chapter No.	March 2020	November 2020	March 2022	July 2022	March 2023	July 2023	March 2024	July 2024
1	12	12	18	18	12	12	12	12
2	11	12	14	17	12	12	12	12
3	12	7	16	13	8	8	8	8
4	5	8	-	-	8	8	8	8
5	8	9	12	12	8	8	8	8
6	12	12	-	-	12	12	12	12
Total	60	60	60	60	60	60	60	60



N 000

Seat No.

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2020 III 12 1100 – N 000 – MATHEMATICS (71) – (ALGEBRA – PART I) (E)

BOARD QUESTION PAPER: MARCH 2020

Time: 2 Hours

(Pages 4)

Max. Marks: 40

Important instructions:

- (1) All questions are compulsory.
- (2) Use of calculator 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.
- (5) For every MCQ, four alternative (A), (B), (C), (D) of answers are given. Alternative of correct answer is to be written in front of the subquestion number.

Note:

Students must carefully read all instructions before starting the exam, as they may change from year to year.

Q.1. (A) For every subquestion 4 alternative answers are given. Choose the correct answer and write the alphabet of it: [04 Marks]

- i. In the format of GSTIN there are _____ alpha-numerals.
(A) 15 (B) 10 (C) 16 (D) 9
- ii. From the following equations, which one is the quadratic equation?
(A) $\frac{5}{x} - 3 = x^2$ (B) $x(x + 5) = 4$
(C) $n - 1 = 2n$ (D) $\frac{1}{x^2}(x + 2) = x$
- iii. For simultaneous equations in variables x and y , if $D_x = 49$, $D_y = -63$, $D = 7$, then what is the value of x ?
(A) 7 (B) -7 (C) $\frac{1}{7}$ (D) $-\frac{1}{7}$
- iv. If $n(A) = 2$, $P(A) = \frac{1}{5}$, then $n(S) = ?$
(A) $\frac{2}{5}$ (B) $\frac{5}{2}$ (C) 10 (D) $\frac{1}{3}$

(B) Solve the following subquestions: [04 Marks]

- i. Find second and third term of an A.P. whose first term is -2 and common difference is -2 .
- ii. 'Pawan Medicals' supplies medicines. On some medicines the rate of GST is 12%, then what is the rate of CGST and SGST?
- iii. Find the values of a and b from the quadratic equation $2x^2 - 5x + 7 = 0$.
- iv. If $15x + 17y = 21$ and $17x + 15y = 11$, then find the value of $x + y$.

Q.2. (A) Complete and write any two activities from the following: [04 Marks]

- i. Complete the following table to draw the graph of $2x - 6y = 3$:

x	-5	<input type="text"/>
y	<input type="text"/>	0
(x, y)	<input type="text"/>	<input type="text"/>



- ii. First term and common difference of an A.P. are 6 and 3 respectively. Find S_{27} .

Solution:

First term = $a = 6$, common difference = $d = 3$, $S_{27} = ?$

$$S_n = \frac{n}{2} [\boxed{} + (n-1)d] \text{ - formula}$$

$$S_{27} = \frac{27}{2} [12 + (27-1) \boxed{}]$$

$$= \frac{27}{2} \times \boxed{}$$

$$= 27 \times 45$$

$$\therefore S_{27} = \boxed{}$$

- iii. A card is drawn from a well shuffled pack of 52 playing cards. Find the probability of the event, the card drawn is a red card.

Solution:

Suppose 'S' is sample space.

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

Event A: Card drawn is a red card.

$$\therefore \text{Total red cards} = \boxed{} \text{ hearts} + 13 \text{ diamonds}$$

$$\therefore n(A) = \boxed{}$$

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

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

$$\therefore P(A) = \boxed{}$$

(B) Solve any four subquestions from the following:

[08 Marks]

- i. Find the value of the determinant: $\begin{vmatrix} 7 & 5 \\ 3 & 3 \\ 3 & 1 \\ 2 & 2 \end{vmatrix}$
- ii. Solve the quadratic equation by factorisation method:
 $x^2 - 15x + 54 = 0$
- iii. Decide whether the following sequence is an A.P. if so, find the 20th term of the progression:
-12, -5, 2, 9, 16, 23, 30,
- iv. A two digit number is formed with digits 2, 3, 5, 7, 9 without repetition. What is the probability that the number formed is an odd number?
- v. If $L = 10, f_1 = 70, f_0 = 58, f_2 = 42, h = 2$, then find the mode by using formula.

Q.3. (A) Complete and write any one activity from the following:

[03 Marks]

i.

Age group (in years)	No. of Persons	Measure of central angle
20 - 25	80	$\frac{\boxed{}}{200} \times 360 = \boxed{}$
25 - 30	60	$\frac{60}{200} \times 360 = \boxed{}$
30 - 35	35	$\frac{35}{200} \times \boxed{} = 63^\circ$
35 - 40	25	$\frac{25}{200} \times 360 = \boxed{}$
Total	200	$\boxed{}$



- ii. Shri Shantilal has purchased 150 shares of FV ₹ 100, for MV of ₹ 120, Company has paid dividend at 7%, then to find the rate of return on his investment, complete the following activity:

Solution: FV = ₹ 100; Number of shares = 150

Market value = ₹ 120

1. Sum investment = MV × No. of Shares

$$= \boxed{} \times \boxed{}$$

∴ Sum investment = ₹ 18,000

2. Dividend per share = FV × Rate of dividend

$$= \boxed{} \times \frac{\boxed{}}{100}$$

$$= ₹ 7$$

∴ Total dividend received = 150 × 7

$$= \boxed{}$$

3. Rate of return = $\frac{\text{Dividend income}}{\text{Sum invested}} \times 100$

$$= \frac{1,050}{18,000} \times 100$$

$$= \boxed{}$$

(B) Attempt any two subquestions from the following:

[06 Marks]

- i. A balloon vendor has 2 red, 3 blue and 4 green balloons. He wants to choose one of them at random to give it to Pranali. What is the probability of the event that Pranali gets:
- a red balloon.
 - a blue balloon.
- ii. The denominator of a fraction is 4 more than twice its numerator. Denominator becomes 12 times the numerator, if both the numerator and the denominator are reduced by 6, find the fraction.
- iii. A milk centre sold milk to 50 customers. The table below gives the number of customers and the milk they purchased. Find the mean of the milk sold by direct method:

Milk Sold (litre)	No. of Customers
1–2	17
2–3	13
3–4	10
4–5	7
5–6	3

- iv. In an A.P. sum of three consecutive terms is 27 and their products is 504. Find the terms. (Assume that three consecutive terms in an A.P. are $a - d$, a , $a + d$.)

Q.4. Attempt any two subquestions from the following:

[08 Marks]

- i. Represent the following data by histogram:

Price of Sugar (per kg in ₹)	Number of Weeks
18–20	4
20–22	8
22–24	22
24–26	12
26–28	6
28–30	8



- ii. One person borrows ₹ 4,000 and agrees to repay with a total interest of ₹ 500 in 10 instalments. Each instalment being less than the preceding instalment by ₹ 10. What should be the first and the last instalments?
- iii. The sum of the areas of two squares is 400 sq.m. If the difference between their perimeters is 16 m, find the sides of two squares.

Q.5. Attempt any one subquestion from the following:

[03 Marks]

- i. Convert the following equations into simultaneous equations and solve:

$$\sqrt{\frac{x}{y}} = 4, \quad \frac{1}{x} + \frac{1}{y} = \frac{1}{xy}$$

- ii. A dealer sells a toy for ₹ 24 and gains as much percent as the cost price of the toy. Find the cost price of the toy.

Sample Content

MATHEMATICS PART - I

BOARD ANSWER PAPER: MARCH 2020

Q.1
(A)

- i. (A)
ii. (B)
iii. (A)
iv. (C)

Hints:

ii. $x(x + 5) = 4$

$\therefore x^2 + 5x - 4 = 0$

Here, x is the only variable and maximum index of the variable is 2.

$a = 1, b = 5, c = -4$ are real numbers and $a \neq 0$.

iii. $x = \frac{D_x}{D} = \frac{49}{7} = 7$

iv. $P(A) = \frac{n(A)}{n(S)}$

$\therefore \frac{1}{5} = \frac{2}{n(S)}$

$\therefore n(S) = 10$

Q.1
(B)

i. $a = t_1 = -2, d = -2$
 $\therefore t_2 = t_1 + d = -2 - 2 = -4$
 $t_3 = t_2 + d = -4 - 2 = -6$

ii. Rate of GST = 12 %

\therefore Rate of CGST = Rate of SGST

$= \frac{\text{Rate of GST}}{2}$

$= \frac{12}{2} = 6\%$

\therefore Rate of CGST = Rate of SGST = 6%

iii. Comparing $2x^2 - 5x + 7 = 0$ with $ax^2 + bx + c = 0$, we get

$a = 2$ and $b = -5$

iv. $15x + 17y = 21$

$+ 17x + 15y = 11$

$32x + 32y = 32$

$\therefore x + y = 1$

Q.2
(A)

i.

x	-5	$\frac{3}{2}$
y	$\frac{-13}{6}$	0
(x, y)	$\left(-5, \frac{-13}{6}\right)$	$\left(\frac{3}{2}, 0\right)$



ii. First term = $a = 6$, common difference = $d = 3$, $S_{27} = ?$

$$S_n = \frac{n}{2} [2a + (n-1)d]$$

$$S_{27} = \frac{27}{2} [12 + (27-1) \cdot 3]$$

$$= \frac{27}{2} \times 90$$

$$= 27 \times 45$$

$$\therefore S_{27} = 1215$$

iii. Suppose 'S' is sample space.

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

Event A: Card drawn is a red card.

$$\therefore \text{Total red cards} = 13 \text{ hearts} + 13 \text{ diamonds}$$

$$\therefore n(A) = 26$$

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

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

$$\therefore P(A) = \frac{1}{2}$$

Q.2
(B)

i.

$$\begin{vmatrix} 7 & 5 \\ 3 & 3 \\ 3 & 1 \\ 2 & 2 \end{vmatrix} = \left(\frac{7}{3} \times \frac{1}{2} \right) - \left(\frac{5}{3} \times \frac{3}{2} \right)$$
$$= \frac{7}{6} - \frac{15}{6}$$
$$= \frac{7-15}{6} = \frac{-8}{6}$$

$$\therefore \begin{vmatrix} 7 & 5 \\ 3 & 3 \\ 3 & 1 \\ 2 & 2 \end{vmatrix} = \frac{-4}{3}$$

ii. $x^2 - 15x + 54 = 0$

$$\therefore x^2 - 9x - 6x + 54 = 0$$

$$\therefore x(x-9) - 6(x-9) = 0$$

$$\therefore (x-9)(x-6) = 0$$

$$\therefore x-9 = 0 \text{ or } x-6 = 0$$

$$\therefore x = 9 \text{ or } x = 6$$

\therefore The roots of the given quadratic equation are 9 and 6.

iii. The given sequence is $-12, -5, 2, 9, 16, 23, 30, \dots$

$$\text{Here, } t_1 = -12, t_2 = -5, t_3 = 2, t_4 = 9$$

$$\therefore t_2 - t_1 = -5 - (-12) = -5 + 12 = 7$$

$$t_3 - t_2 = 2 - (-5) = 2 + 5 = 7$$

$$t_4 - t_3 = 9 - 2 = 7$$

$$\therefore t_2 - t_1 = t_3 - t_2 = \dots = 7 = d = \text{constant}$$

The difference between two consecutive terms is constant.

\therefore The given sequence is an A.P.



$$t_n = a + (n - 1)d$$

$$\therefore t_{20} = -12 + (20 - 1)7 \quad \dots[\because a = -12, d = 7]$$

$$= -12 + 19 \times 7$$

$$= -12 + 133$$

$$\therefore t_{20} = 121$$

\therefore 20th term of the given A.P. is 121.

iv. Sample space

$$S = \{23, 25, 27, 29, \\ 32, 35, 37, 39, \\ 52, 53, 57, 59, \\ 72, 73, 75, 79, \\ 92, 93, 95, 97\}$$

$$\therefore n(S) = 20$$

Let A be the event that the number formed is an odd number.

$$\therefore A = \{23, 25, 27, 29, 35, 37, 39, 53, 57, 59, 73, 75, 79, 93, 95, 97\}$$

$$\therefore n(A) = 16$$

$$\therefore P(A) = \frac{n(A)}{n(S)} = \frac{16}{20}$$

$$\therefore P(A) = \frac{4}{5}$$

v.
$$\text{Mode} = L + \left[\frac{f_1 - f_0}{2f_1 - f_0 - f_2} \right] \times h$$

$$= 10 + \left[\frac{70 - 58}{2(70) - 58 - 42} \right] \times 2$$
$$= 10 + \left[\frac{12}{140 - 100} \right] \times 2$$
$$= 10 + \left(\frac{12}{40} \right) \times 2$$
$$= 10 + \frac{24}{40} = 10 + 0.6$$

\therefore Mode = 10.6

Q.3
(A)

i.

Age group (in years)	No. of Persons	Measure of central angle
20 - 25	80	$\frac{80}{200} \times 360 = 144^\circ$
25 - 30	60	$\frac{60}{200} \times 360 = 108^\circ$
30 - 35	35	$\frac{35}{200} \times 360 = 63^\circ$
35 - 40	25	$\frac{25}{200} \times 360 = 45^\circ$
Total	200	360°



- ii. FV = ₹ 100; Number of shares = 150
Market value = ₹ 120
- Sum investment = $MV \times \text{No. of Shares}$

$$= 120 \times 150$$

$$\therefore \text{Sum investment} = ₹ 18,000$$
 - Dividend per share = $FV \times \text{Rate of dividend}$

$$= 100 \times \frac{7}{100}$$

$$= ₹ 7$$

$$\therefore \text{Total dividend received} = 150 \times 7$$

$$= 1050$$
 - Rate of return = $\frac{\text{Dividend income}}{\text{Sum invested}} \times 100$

$$= \frac{1,050}{18,000} \times 100$$

$$= 5.83\%$$

Q.3
(B)

- i. Let the 2 red balloons be R_1, R_2 ,
3 blue balloons be B_1, B_2, B_3 , and
4 green balloons be G_1, G_2, G_3, G_4 .
- \therefore Sample space
 $S = \{R_1, R_2, B_1, B_2, B_3, G_1, G_2, G_3, G_4\}$
 $\therefore n(S) = 9$
- Let A be the event that Pranali gets a red balloon.
 $\therefore A = \{R_1, R_2\}$
 $\therefore n(A) = 2$
 $\therefore P(A) = \frac{n(A)}{n(S)}$
 $\therefore P(A) = \frac{2}{9}$
 - Let B be the event that Pranali gets a blue balloon.
 $\therefore B = \{B_1, B_2, B_3\}$
 $\therefore n(B) = 3$
 $\therefore P(B) = \frac{n(B)}{n(S)} = \frac{3}{9}$
 $\therefore P(B) = \frac{1}{3}$
- ii. Let the numerator of the fraction be x and the denominator be y .
 $\therefore \text{Fraction} = \frac{x}{y}$
- According to the first condition, denominator of a fraction is 4 more than twice its numerator.
 $\therefore y = 2x + 4$
 $\therefore 2x - y = -4$... (i)



According to the second condition, denominator becomes 12 times the numerator, if both are reduced by 6.

$$\begin{aligned} \therefore (y - 6) &= 12(x - 6) \\ \therefore y - 6 &= 12x - 72 \\ \therefore 12x - y &= 72 - 6 \\ \therefore 12x - y &= 66 \quad \dots(ii) \end{aligned}$$

Subtracting equation (i) from (ii), we get

$$\begin{aligned} 12x - y &= 66 \\ 2x - y &= -4 \end{aligned}$$

$$\begin{array}{r} - \quad + \quad + \\ \hline 10x \quad = 70 \end{array}$$

$$\therefore x = \frac{70}{10} = 7$$

Substituting $x = 7$ in equation (i), we get

$$\begin{aligned} 2x - y &= -4 \\ 2(7) - y &= -4 \\ \therefore 14 - y &= -4 \\ \therefore 14 + 4 &= y \\ \therefore y &= 18 \end{aligned}$$

$$\therefore \text{Fraction} = \frac{x}{y} = \frac{7}{18}$$

\therefore The required fraction is $\frac{7}{18}$.

iii.

Class Milk Sold (Litre)	Class mark x_i	Frequency (No. of customers) f_i	Frequency \times Class mark $f_i x_i$
1 – 2	1.5	17	25.5
2 – 3	2.5	13	32.5
3 – 4	3.5	10	35
4 – 5	4.5	7	31.5
5 – 6	5.5	3	16.5
Total	-	$\Sigma f_i = 50$	$\Sigma f_i x_i = 141$

Here, $\Sigma f_i x_i = 141$, $\Sigma f_i = 50$

$$\text{Mean} = \bar{X} = \frac{\Sigma f_i x_i}{\Sigma f_i} = \frac{141}{50} = 2.82$$

\therefore The mean of the milk sold is 2.82 litres.

iv.

Let the three consecutive terms in an A.P. be $a - d$, a and $a + d$.

According to the first condition,

sum of three consecutive terms is 27.

$$a - d + a + a + d = 27$$

$$\therefore 3a = 27$$

$$\therefore a = \frac{27}{3}$$

$$\therefore a = 9$$

$\dots(i)$



According to the second condition, product of the three numbers is 504.

$$(a - d) a (a + d) = 504$$

$$\therefore a(a^2 - d^2) = 504$$

$$\therefore 9(9^2 - d^2) = 504$$

...[From (i)]

$$\therefore 81 - d^2 = \frac{504}{9}$$

$$\therefore 81 - d^2 = 56$$

$$\therefore d^2 = 81 - 56$$

$$\therefore d^2 = 25$$

Taking square root of both sides, we get

$$d = \pm 5$$

When $d = 5$ and $a = 9$,

$$a - d = 9 - 5 = 4$$

$$a = 9$$

$$a + d = 9 + 5 = 14$$

When $d = -5$ and $a = 9$,

$$a - d = 9 - (-5) = 9 + 5 = 14$$

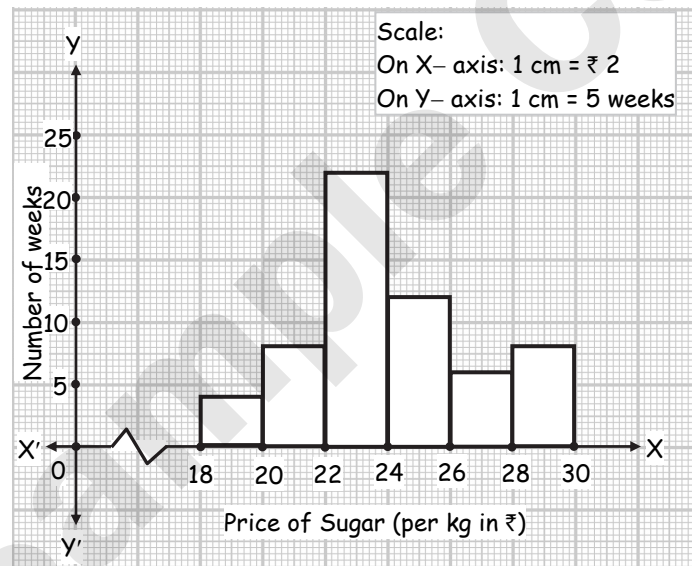
$$a = 9$$

$$a + d = 9 - 5 = 4$$

\therefore The three consecutive terms are 4, 9 and 14 or 14, 9 and 4.

Q.4

i.



ii.

The instalments are in A. P.

Amount repaid in 10 instalments (S_{10}) = Amount borrowed + total interest

$$\therefore S_{10} = 4000 + 500 = 4500$$

Number of instalments (n) = 10

Each instalment is less than the preceding instalment by ₹10.

$$\therefore d = -10$$

$$S_n = \frac{n}{2} [2a + (n - 1)d]$$

$$\therefore S_{10} = \frac{10}{2} [2a + (10 - 1)(-10)]$$

$$\therefore 4500 = 5[2a + 9(-10)]$$



$$\therefore \frac{4500}{5} = 2a - 90$$

$$\therefore 900 = 2a - 90$$

$$\therefore 2a = 900 + 90$$

$$\therefore 2a = 990$$

$$\therefore a = \frac{990}{2}$$

$$\therefore a = 495$$

Now, $t_n = a + (n - 1)d$

$$\therefore t_{10} = 495 + (10 - 1)(-10)$$

$$\therefore t_{10} = 495 + 9(-10)$$

$$\therefore t_{10} = 495 - 90$$

$$\therefore t_{10} = 405$$

\therefore Amount of the first instalment is 495 and that of the last instalment is 405.

iii. Let the sides of the two squares be x cm and y cm ($x > y$).

Then, their areas are x^2 and y^2 and their perimeters are $4x$ and $4y$.

According to the first condition,

sum of the areas of two squares is 400 sq.m

$$\therefore x^2 + y^2 = 400 \quad \dots(i)$$

According to the second condition,

difference between the perimeters is 16 m

$$\therefore 4x - 4y = 16$$

$$\therefore 4(x - y) = 16$$

$$\therefore x - y = 4$$

$$\therefore x = y + 4$$

Substituting the value of x in equation (i), we get

$$(y + 4)^2 + y^2 = 400$$

$$\therefore y^2 + 8y + 16 + y^2 = 400$$

$$\therefore 2y^2 + 8y - 384 = 0$$

$$\therefore y^2 + 4y - 192 = 0$$

$$\therefore y^2 + 16y - 12y - 192 = 0$$

$$\therefore y(y + 16) - 12(y + 16) = 0$$

$$\therefore (y + 16)(y - 12) = 0$$

$$\therefore y + 16 = 0 \text{ or } y - 12 = 0$$

$$\therefore y = -16 \text{ or } y = 12$$

But, $y \neq -16$ as the side of a square cannot be negative.

$$\therefore y = 12$$

$$\therefore x = y + 4 = 12 + 4 = 16$$

\therefore The sides of the two squares are 16 cm and 12 cm.



Q.5

i. $\sqrt{\frac{x}{y}} = 4$

Squaring on both sides, we get

$$\frac{x}{y} = 16$$

$\therefore x = 16y$... (i)

$$\frac{1}{x} + \frac{1}{y} = \frac{1}{xy}$$

Multiplying both sides by xy , we get

$$y + x = 1$$

i.e., $x + y = 1$... (ii)

Substituting $x = 16y$ in equation (ii), we get

$$16y + y = 1$$

$$\therefore 17y = 1$$

$$\therefore y = \frac{1}{17}$$

Substituting $y = \frac{1}{17}$ in equation (i), we get

$$x = 16y = \frac{16}{17}$$

$\therefore (x, y) = \left(\frac{16}{17}, \frac{1}{17}\right)$ is the solution of the given equations.

ii. Selling price (S. P.) of the toy = ₹ 24

Let the cost price (C. P.) of the toy be ₹ x .

$$\therefore \text{Gain\%} = x\%$$

$$\text{Gain\%} = \frac{\text{S.P.} - \text{C.P.}}{\text{C.P.}} \times 100$$

$$\therefore x = \frac{24 - x}{x} \times 100$$

$$\therefore x^2 = (24 - x)100$$

$$\therefore x^2 = 2400 - 100x$$

$$\therefore x^2 + 100x - 2400 = 0$$

$$\therefore x^2 + 120x - 20x - 2400 = 0$$

$$\therefore x(x + 120) - 20(x + 120) = 0$$

$$\therefore (x + 120)(x - 20) = 0$$

$$\therefore x + 120 = 0 \text{ or } x - 20 = 0$$

$$\therefore x = -120 \text{ or } x = 20$$

But, the cost price cannot be negative.

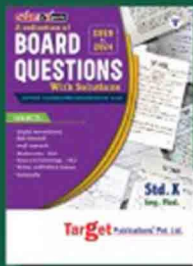
$$\therefore x = 20$$

\therefore The cost price of the toy is ₹20.





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