

City International School

FIRST TERMINAL EXAMINATION – 2013 - 2014

Date : 01/08/2013

Marks : 80

Std : IX

Subject : Mathematics

Time : 2½ hrs

Answers to this Paper must be written on the paper provided separately.

You will not be allowed to write during the first 15 minutes.

This time is to be spent in reading the question paper.

The time given at the head of this paper is the time allowed for writing the answers.

Attempt all questions form Section A and any four questions from Section B.

The intended marks for questions or parts of questions are given in brackets ()

SECTION A [40 MARKS]

Q.1 a. Solve the following: $\frac{5x-4}{8} - \frac{x-3}{5} = \frac{x+6}{4}$ (3)

b. Expand: (4)

i. $(3x - 2y)^3$ ii. $(2x + y)(2x - y)(4x^2 + y^2)$

c. The measures of angles of a hexagon are: $x^\circ, (x - 5)^\circ, (x - 5)^\circ, (2x - 5)^\circ, (2x - 5)^\circ, (2x + 20)^\circ$. Find the value of x. (3)

Q.2 a. Factorize: (4)

i. $a(a - 2b - c) + 2bc$ ii. $x^4 + y^4 - 11x^2y^2$

b. Evaluate: $\log 6 + 2 \log 5 + \log 4 - \log 3 - \log 2$ (3)

c. The length of a rectangular field is twice its breadth. (3)

If the perimeter of the field is 1500m, find its dimensions.

Q.3 a. Solve: i. $3x - y = 10$ ii. $5x + 2y = 24$ (3)

b. Find the values of a & b: $\frac{4 + 3\sqrt{5}}{4 - 3\sqrt{5}} = a + b\sqrt{5}$ (3)

- c. The following is the distribution of weight of 40 persons (in kg): (4)

Wt. in Kg	50-55	55-60	60-65	65-70	70-75
No. of persons	11	8	2	9	10

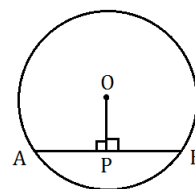
Draw a histogram for the above data. Also find the mode.

- Q.4 a. Find the median of the following data. (2)
8, 10, 7, 6, 10, 11, 6, 13, 10

- b. Express in terms of $\log 2$ and $\log 3$: $\sqrt[3]{432}$ (2)

- c. Factorise : $3(a + 5)^2 - 11(a + 5) - 4$ (2)

- d. Given: O is the centre of a circle. $OP \perp AB$ (4)
To prove: $AP = BP$



SECTION B [40 MARKS]

- Q.5 a. Do as directed: (3)
i. Find x if $\log_4(x + 3) = 2$
ii. Express $\log_{10} 1000 = 3$ in exponential form
iii. Evaluate: $\log 5 + \log 2$

- b. Simplify: $\frac{\sqrt{5} - 2}{\sqrt{5} + 2} - \frac{\sqrt{5} + 2}{\sqrt{5} - 2}$ (4)

- c. A man covers a distance of 15km in 3hrs, partly by walking and partly by riding. If he walks at 3km/hr & rides at 9km/hr, find the distance he covered by riding. (3)

- Q.6 a. $x = 5 - 2\sqrt{6}$ Find: (4)

i. $\frac{1}{x}$ ii. $\left(x - \frac{1}{x}\right)$ iii. $\left(x + \frac{1}{x}\right)$ iv. $\left(x^2 - \frac{1}{x^2}\right)$

- b. Factorize: $(a^2 - b^2)(c^2 - d^2) - 4abcd$ (3)

- c. The mean of 100 observations was found to be 50. If 2 observations were misread as 47 and 13 instead of 74 and 31, find the correct mean. (3)

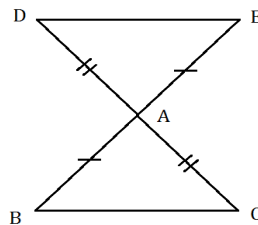
Q. 7 a. If $a + \frac{1}{a} = 4$, find: (3)

i. $a^2 + \frac{1}{a^2}$ ii. $a^4 + \frac{1}{a^4}$ iii. $a^3 + \frac{1}{a^3}$

- b. The ratio between the interior angle to the exterior angle of a regular polygon is 7:2. Find the number of sides of the polygon. (3)

c. Solve: i. $\frac{3}{x+y} + \frac{2}{x-y} = 2$ ii. $\frac{9}{x+y} - \frac{4}{x-y} = 1$ (4)

- Q. 8 a. In the figure, the sides BA and CA have been produced such that BA = AD and CA = AE. Prove that $\Delta BAC \cong \Delta EAD$. (3)



b. Solve: $\frac{1}{3}\left(x + \frac{1}{2}\right) + \frac{1}{5}\left(2x + \frac{1}{5}\right) = \frac{1}{4}\left(x - \frac{1}{3}\right)$ (3)

- c. Depict a combined histogram & frequency polygon from the given data: (4)

Class interval	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	4	10	6	8	5	9

- Q. 9 a. In a pentagon ABCDE, $AB \parallel DC$. $\angle A : \angle E : \angle D$ is 2 : 3 : 7. Find $\angle A$ and $\angle D$ (3)

b. Find x if: (3)

$$\log(5x - 4) - \log(x + 1) = \log 4$$

c. If $x + y = 12$ and $xy = 32$, find the value of: (4)

i. $x^2 + y^2$ ii. $x - y$