# Model Paper: "MATHEMATICS-1"

**9th Class, First Term, 2014**

## Objective (Multiple Choice)

**Time:** 20 Minutes

**Note:** You have four choices for each objective type question as A, B, C, and D. Choose the correct answer and encircle it. Cutting, erasing, overwriting, encircling more than one option, using of lead pencil will result in zero mark in that question.

<table>
<thead>
<tr>
<th>Q.</th>
<th>QUESTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Which is order of a square matrix?</td>
</tr>
<tr>
<td>2</td>
<td>The conjugate of 5+4i is ____</td>
</tr>
<tr>
<td>3</td>
<td>The logarithm of unity to any base is</td>
</tr>
<tr>
<td>4</td>
<td>4x+3x-y=2 is an algebraic ____</td>
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<tr>
<td>5</td>
<td>Find m so that x^2+4x+m is a complete square</td>
</tr>
<tr>
<td>6</td>
<td>The square root of a^2-2ab+1 is ____</td>
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<tr>
<td>7</td>
<td>Which one is solution of the in equation 3x-4x+11=0</td>
</tr>
<tr>
<td>8</td>
<td>If (x-1, y+1)=(0,0) then (x, y) is ____</td>
</tr>
<tr>
<td>9</td>
<td>Distance between points (1,0) and (0,1) is ____</td>
</tr>
<tr>
<td>10</td>
<td>How many end points has a ray? ____</td>
</tr>
<tr>
<td>11</td>
<td>In parallelogram ABCD, mL1=____</td>
</tr>
<tr>
<td>12</td>
<td>The bisectors of the angles of a triangle are ____</td>
</tr>
<tr>
<td>13</td>
<td>How many lines can be drawn through two points</td>
</tr>
<tr>
<td>14</td>
<td>What is the area of given figure</td>
</tr>
<tr>
<td>15</td>
<td>The medians of a triangle cut each other in the ratio ____</td>
</tr>
</tbody>
</table>

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**Diagram:**

[Diagram of a parallelogram ABCD with medians labeled]
12. Write short answers to any SIX (6) questions:

(i) Define singular and non-singular matrix.

(ii) If
\[
\begin{bmatrix}
  a + 3 & 4 \\
  6 & b - 1
\end{bmatrix}
= \begin{bmatrix}
  -3 & 4 \\
  6 & 2
\end{bmatrix}
\]
then find the value of \( a \) and \( b \).

(iii) Describe in brief the concept of radical and radicand.

(iv) Simplify:
\[
\frac{(x^3)^2}{x^3}
\]

(v) Find value of \( x \):
\[
\log_{625} 5 = \frac{1}{4}
\]

(vi) Find value of \( x \):
\[
\log x = 0.0044
\]

(vii) Which laws of surds are used to multiply and divide surds?

(viii) Rationalize the denominator:
\[
\frac{2}{\sqrt{5} - \sqrt{3}}
\]

(ix) Factorize:
\[
1 - 125x^3 = (1 - 5x)(1 + 5x + 25x^2)
\]

13. Write short answers to any SIX (6) questions:

(i) Find L.C.M. of \( 39x^7y^3z^2 \) and \( 91x^5y^6z^7 \).

(ii) Define linear equation and write down its standard form.

(iii) Solve:
\[
x - 3 = 7
\]

(iv) Define coordinate plane.

(v) Draw the graph:
\[
y = 3x
\]

(vi) What are you meant by \( \text{S.A.A.} = \text{S.A.A.} \)?

(vii) Define scalene triangle.

(viii) Find the mid point:
\[
A (-4,9), B (-4, -3)
\]

(ix) Define parallelogram.

14. Write short answers to any SIX (6) questions:

(i) Where will be the centre of a circle passing through three non-collinear points?

(ii) Why 2cm, 3cm and 5cm cannot be the sides of a triangle?

(iii) If \( AD = 2.4 \text{ cm, } AE = 3.2 \text{ cm, } DE = 2 \text{ cm, } BC = 5 \text{ cm} \), then find \( AB \) and \( DB \).

\[
\text{Diagram}
\]
4. (iv) Define proportion.

(v) Three sides of a triangle are measure 8, x and 17 respectively. For what value of x will it become base of a right angled triangle.

(vi) In a right angled triangle having angle A as 90° then:

![Diagram of a right-angled triangle]

(i) \[ AB^2 = \ldots \] (ii) \[ BC^2 = AB^2 ]

(vii) The area of a parallelogram is equal to that of rectangle on the same base and having same altitude.

(viii) Construct \( \triangle ABC \), where: \( m \angle C = 45^\circ \), \( m \angle A = 45^\circ \), \( m \angle B = 45^\circ \), \( \triangle ABC \)

(ix) What do you mean by point of concurrency?

(PART - II)

Note: Attempt THREE questions in all. 
But question No.9 is Compulsory.

4. 5. (a) Solve the linear equation by the matrix inverse method:
\[ 3x - 2y = -6 \]
\[ 5x - 2y = -10 \]

(b) Solve the equation for real \( x \) and \( y \):
\[ (2 - 3i)(x + yi) = 4 + i \]

4. 6. (a) Use log tables to find the value of:
\[ \sqrt[3]{2.709} \times \sqrt[3]{1.239} \]

(b) If \( x = 2 + \sqrt{3} \), then find the values of \( x \) and \( \left( \frac{1}{x} \right)^2 \)

4. 7. (a) Factorize:
\[ 25x^2 - 10x + 1 - 36z^2 \]

(b) Simplify as rational expression:
\[ \frac{x + 1}{x - 1} - \frac{x - 1}{x + 1} - \frac{4x}{x^2 + 1} \]

4. 8. (a) Find the equation:
\[ \frac{x - 3}{3} - \frac{x - 2}{2} = 1 \]

(b) Construct a \( \triangle ABC \) and draw perpendicular bisector of their sides:
\[ m \angle B = 60^\circ \]
\[ m \angle A = 30^\circ \]
\[ m \angle C = 90^\circ \]

8. 9. Prove that the bisectors of the angles of a triangle are concurrent. 

OR
Prove that the triangles on equal bases and of equal altitudes are equal in area.