SUMMATIVE ASSESSMENT – I, 2015-16
MATHEMATICS
Class – IX
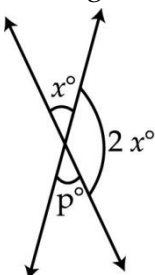
Time Allowed : 3 hours   **Maximum Marks: 90**

General Instructions:
1.   All questions are **compulsory**.
2.   The question paper consists of **31** questions divided into **four sections A, B, C and D**. **Section-A** comprises of **4** questions of **1 mark** each; **Section-B** comprises of **6** questions of **2 marks** each; **Section-C** comprises of **10** questions of **3 marks** each and **Section-D** comprises of **11** questions of **4 marks** each.
3.   There is no overall choice in this question paper.
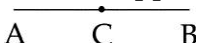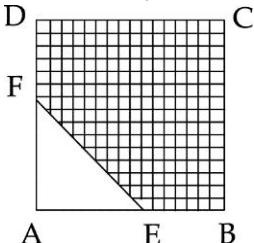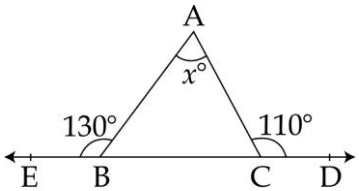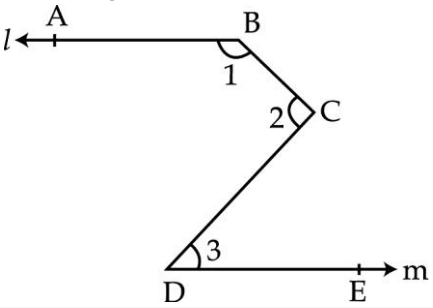4.   Use of calculator is not permitted.

SECTION-A

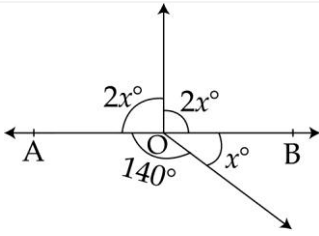Question numbers **1** to **4** carry one mark each.

1	Simplify : $13\sqrt[5]{32}\ 27\sqrt[4]{625}\ 1\sqrt[3]{729}$.	1
2	Complete the sentence using one of the following : A linear polynomial _____. may have no zero, may have one zero, has one and only one zero, may have more than one zero.	1
3	In the given figure, find the value of p. 	1
4	Name the mathematician who initiated the development of coordinate geometry.	1

SECTION-B

Question numbers **5** to **10** carry two marks each.

5	If x, y and z are positive real numbers, then show that : $\sqrt{x^{2\ 1}y}.\sqrt{y^{2\ 1}z}.\sqrt{z^{2\ 1}x}\ 5\ 1$.	2
6	If a 1 b 1 c 521 and ab 1 bc 1 ca 524, then find the value of $a^2\ 1\ b^2 1\ c^2$.	2
7	In the given figure, if point C lies between A and B, then prove that AB > AC. Which Euclid's axiom is applied by you ? $\overline{A\quad \overset{\bullet}{C}\quad B}$	2
8	AD is a median of ∆ABC and PL is a median of ∆PQR. If AB5PQ, BC5QR and AD5PL, prove that $\triangle ABD \cong \triangle PQL$.	2
9	Plot the points (3, 25) and (23, 5) and join them.	2

10	In the figure, ABCD is a square of side 4 cm. E and F are mid – points of AB and AD respectively. Find the area of the shaded region.	2

Question numbers **11** to **20** carry three marks each.

11	Find three irrational numbers between $\dfrac{5}{7}$ and $\dfrac{9}{11}$.	3
12	Simplify : $\dfrac{1}{2}\ \sqrt{486}\ 2\ \sqrt{\dfrac{27}{2}}$	3
13	Simplify by factorising : $\dfrac{-9-6x-x^2}{9-x^2}$	3
14	Find the product of $\left(a2\ \dfrac{1}{a}\right)\left(a1\ \dfrac{1}{a}\right)\left(a^2\ 1\ \dfrac{1}{a^2}\right)\left(a^4\ 1\ \dfrac{1}{a^4}\right)$ using a suitable identity :	3
15	Write Euclid's Fifth Postulate. Does this postulate imply the existence of Parallel lines ? Explain.	3
16	The side BC of a triangle ABC is produced in both directions to the points D and E such that $\angle ABE51308$ and $\angle ACD51108$ as shown in the figure. Find the value of *x*.	3

17	In the figure, $l??m$. Prove that $\angle\ 11\angle\ 22\angle\ 351808$	3

18	In the given figure, find the value of *x*.	3

19	Plot two points A(-1, 5) and B(-2, 4) on the graph sheet. Plot reflections of A and B in y-axis and denote them by C and D respectively. Identify the figure ABDC.	3
20	The unequal side of an isosceles triangle is 4 cm and its perimeter is 20 cm. Find its area.	3

SECTION-D

Question numbers **21** to **31** carry four marks each.

21	Express $1.\overline{321} - 0.\overline{35}$ in the form $\dfrac{p}{q}$, where p and q are integers and $q \neq 0$.	4
22	Represent $\sqrt{13}$ on number line geometrically. Verify using mathematically.	4
23	If both $(x-2)$ and $(2x-1)$ are factors of ax^2+2x+b, prove that $a=2b=5,0$.	4
24	If the polynomial $p(x)=5x^3-8x^2-117x+ax$ is divided by $(x-2)$ and $(x+1)$, the remainders are same. Find the value of 'a'.	4
25	Using factor theorem, show that $(m-2n)$, $(n-2p)$ and $(p-2m)$ are factors of $m(n^2-2p^2)+n(p^2-2m^2)+p(m^2-2n^2)$.	4
26	Without actually calculating the cubes, find the value of $(1)^3+(2)^3-12(4)^3+(25)^3+(26)^3$. Also write the identity used.	4
27	For her records, a teacher asked the students about their heights. Mayank said his height is same as of Anav. Rahul said that his height is same as that of Anav. She then asked the students to relate the height of Mayank and Rahul. Anav answered, they both have same height. Is Anav correct ? If yes, state Euclid's Axiom which support your answer. What are the characteristics of Anav nature ?	4
28	Solve the equation $x-125=540$ and state which axiom you use here. Also give two more axioms other than the axiom used in the above situation.	4
29	If two parallel lines are intersected by a transversal, prove that the bisectors of two pairs of interior angles form a rectangle.	4
30	Prove that the sum of three angles of triangle is $180°$. Also, find the angles of a triangle if they are in ratio 5 : 6 : 7.	4
31	In $\triangle ABC$ of the figure, BD and CD are internal bisectors of $\angle$ B and $\angle$ C respectively. Prove that $180°+y=2x$.	4

-o0o0o0o-