APPENDIX - B
Instructional Objective Associated to Each Item of the Achievement Test (Pre-test and Post-test)

Item No.	Instructional Objective	Level of Objective
	Q . I	
1	Recall the postulate that "Every line has atleast two distinct points."	Knowledge
2	Identify the condition for the two equal lines	Comprehension
3	Repeat that three distinct non-collinear points determine three lines	Knowledge
4	Recognize that the given points are collinear points	Comprehension
5	Interpret the postulate that "Two distinct points belong to simultaneously one and only one line."	Application
6	Identify that the given lines are distinct lines	Comprehension
7	Recall that the intersecting lines are non-parallel lines	Knowledge
8	Locate the point of intersection for the given two lines	Comprehension
9	Recall the property "PQ+QR $\geq$ PR" for three distinct points P,Q, and R	Knowledge
10	Identify the betweenness for the given three collinear points	Comprehension
11	Name the end-points of the given line-segment	Knowledge
12	Recall the definition of congruent line-segments	Knowledge
13	Identify the condition for the point to be the mid-point of the given line-segment	Comprehension
14	Recollect that the line-segment has only one mid-point	Knowledge
15	Indicate the intersection of two line-segments in a given situation	Comprehension
16	Name the initial point of the given ray	Knowledge
17	Recognize the point towards which the ray is	Comprehension

	extended infinitely	
18	Express the relation as line-segment is a subset of a line in a given situation	Comprehension
19	Recall the set representation of a ray	Knowledge
20	Locate the two opposite rays for the given betweenness of the three points	Comprehension
21	Recollect that a line-segment has a bisector	Knowledge
22	Indicate that the given line-segments with same length are congruent	Comprehension
23	Recall the postulate that three non-collinear points determine one and only one plane	Knowledge
24	Recognize that given plane contains atleast three non-collinear points	Comprehension
25	Recollect the postulate that a line passing through two distinct points of a plane is a subset of that plane	Knowledge
26	Reproduce that the intersection of two intersecting distinct planes is a line	Knowledge
27	Infer that the intersection of two half planes formed by a line is a null set	Comprehension
28	Interpret that the intersection of the line and the line-segment formed by two distinct points in the same half plane formed by the same line is an empty set	Application
29	Indicate that the intersection of a line in a plane with the same plane is a line itself	Comprehension
30	Recognize that the two planes containing the same three non-collinear points are equal	Comprehension
31	Identify the point in the interior of an angle for the given situation	Comprehension
32	Recall the cross-bar theorem " If D is in the interior of an angle $\angle ABC$, then $\overrightarrow{BD}$ intersects $\overline{AC}$."	Knowledge
33	Recollect that an angle has exactly one measure between 0 & 180	Knowledge

34	Recall the postulate that "If a point D is in the interior of $\angle$BAC, then m$\angle$BAD + m$\angle$DAC = m$\angle$BAC."	Knowledge
35	Reproduce that an angle has one bisector	Knowledge
36	Infer that the two congruent supplementary angles are right angles	Comprehension
37	Identify that the supplementary angle to the obtuse angle has to be an acute angle	Comprehension
38	Discover that for $\angle MON$ if $\overrightarrow{OP}$ is a bisector and m$\angle MOP$ = 45°, then $\angle MOP$ and $\angle PON$ will be a complementary pair of angles.	Application
39	Extend that if S is in the interior of $\angle PQR$ then point P is in the exterior of $\angle SQR$	Comprehension
40	Recognize that each of the angles from a pair of complementary angles is acute angle	Comprehension
	Q . II [A]	
1	Recognize the two congruent line-segments on a number-line	Comprehension
2	Find the number corresponding to the mid-point of the line-segment on the number-line	Comprehension
3	Calculate the length of the line segment on the number-line	Comprehension
4	Compute the number corresponding to F for A-F-E on the number-line where AF and the numbers corresponding to A and E are given.	Application
5	Compute the value of CO for C-O-P-E on the number line where OP=2=PE and the numbers corresponding to C and E are given.	Application
	Q . II [B]	
1	Infer based on the figure that the intersection of two parallel lines is a null set (ϕ)	Comprehension
2	Recognize in the figure all the points lying on the given line	Comprehension

3	Choose the four collinear points in the given figure	Application
4	Group the lines intersecting in a given point in the figure.	Application
5	Apply the property of distance " for P-V-T, PV+VT = PT" to find the value of VT based on the given figure	Application
6	Compute the number corresponding to the mid-point of the line-segment in the figure based on the given numbers corresponding to the end-points of the line-segment	Application
7	Identify based on the figure that the given lines are intersecting	Comprehension
8	Locate the point of intersection of two line-segments based on the given figure	Comprehension
9	Identify the line-segment which is the intersection of two given line-segments	Comprehension
10	Recognize based on the figure that the given line segments are not intersecting lines and the intersection is a null set (ϕ)	Comprehension
11	Infer based on the figure that the intersection of given two rays is an empty set (ϕ)	Comprehension
12	Identify the point of intersection of two rays in the given figure	Comprehension
13	Recognize based on the given figure that the given rays are opposite or not	Comprehension
14	Infer from the figure that the given lines are same and their intersection is the line itself	Comprehension
15	Indicate based on the figure that the intersection of a line and a line-segment which is its subset is a line-segment itself.	Comprehension
	Q . II [C]	
1	List the points lying in the plane from the given figure	Knowledge
2	Recognize from the figure that the given lines are	Comprehension

	skew lines and their intersection is a null set	
3	Name the plane in the figure of which the given line is a subset.	Knowledge
4	Identify from the figure that the given lines are intersecting each other	Comprehension
5	Identify based on the figure whether the given two lines are coplanar or skew lines	Knowledge
6	Locate from the figure the points lying in the same half-planes	Comprehension
7	Identify from the figure that the given lines are not intersecting each other	Comprehension
8	Infer from the figure that the given two planes are not intersecting and their intersection is a null set	Comprehension
9	Recognize that the line ℓ is a subset of the closed half plane of α formed by the line ℓ	Comprehension
10	Recognize based on the figure that the given points are coplanar	Comprehension
Q . II [D]		
1	Name the arms of the given angle from the figure	Knowledge
2	List the points in the exterior of an angle from the figure	Comprehension
3	List the points in the interior of an angle from the figure	Comprehension
4	List the points on the angle in the given figure	Comprehension
5	Apply the cross-bar theorem to identify the rays intersecting the given line-segment in the figure	Application
6	Identify that the given angles are not equal	Comprehension
7	Identify that the given angles are equal	Comprehension
8	Recognize that the given angles from the figure are adjacent angles	Comprehension
9	Locate the bisector of the given angle from the figure	Comprehension
10	Find the complementary angle to the given angle	Comprehension

	from the figure	
11	Identify that the given angles in the figure are supplementary angles	Comprehension
12	Recognize that the given pair of angles in the figure are not forming linear pair of angles	Comprehension
13	Apply the property of vertically opposite angles that they are always congruent	Application
14	Identify from the figure that the given angles are not vertically opposite angles	Comprehension
15	Recognize that the given angle is an obtuse angle	Comprehension
	Q . III	
1	Represent "P $\notin \overleftrightarrow{AB}$ but Q$\in \overleftrightarrow{BP}$" by a figure	Application
2	Represent "$\overleftrightarrow{AB} = \overleftrightarrow{PQ}$, but $\overleftrightarrow{AB} \neq \overleftrightarrow{PR}$ & S$\in \overleftrightarrow{QR}$ & R-Q-S" by a figure	Application
3	Represent "A-B-C, C-D-E, A-F-E, D-G-A" by a figure	Application
4	Represent "R$\in \overleftrightarrow{PQ}$ & S$\notin \overleftrightarrow{PQ}$, $\overleftrightarrow{PQ} \cap \overleftrightarrow{RS}$ ={R}" by a figure	Application
5	Represent "For distinct lines ℓ_1, ℓ_2, ℓ_3; $\ell_1 \cap \ell_2 = \phi$ and $\ell_1 \cap \ell_3$ ={X}" by a figure	Application
6	Represent "$\overleftrightarrow{AB} = \overleftrightarrow{CD} \neq \overleftrightarrow{CE}$" by a figure	Application
7	Represent "X,Y and Z are collinear, ℓ is a line, X$\notin \ell$, Y$\in \ell$, Z$\notin \ell$" by a figure	Application
8	Represent "P,Q,R & P,S,T are non-collinear triplets; but P,Q,S & P,R,T are collinear points" by a figure	Application
9	Represent "$\overline{PQ} \subset \overleftrightarrow{AB} \neq \overleftrightarrow{PR}$" by a figure	Application
10	Represent "A, O, B are 3 non-collinear points and $\overrightarrow{AO} \cap \overrightarrow{OB} = \{O\}$" by a figure	Application
11	Represent "ℓ_1, ℓ_2 and ℓ_3 are three distinct lines and $\ell_1 \cap \ell_2 \cap \ell_3 = \{P\}$" by a figure	Application
12	Represent "A $\notin \overleftrightarrow{PQ}$ but B$\in \overrightarrow{AQ}$" by a figure	Application

13	Represent "X,Y and Z are non-collinear points and ℓ is a line, X$\in \ell$, Y$\in \ell$ and Z$\notin \ell$" by a figure	Application
14	Represent "$\overrightarrow{RQ} \subset \ell_1$ and S$\in \ell_1$, S-R-Q" by a figure	Application
15	Represent "$\overrightarrow{PQ} \cap \ell_1 \cap \ell_2 = \{P\}$; Q $\notin \ell_1$, Q $\notin \ell_2$" by a figure	Application