



Jakarta International School

8th Grade – AG1

Practice Test - Blue

Points, Lines, and Planes

Name: _____

Date: _____

Score: 35

Goal 5: Solve problems using visualization and geometric modeling

Section 1: Points, Lines, and Planes

1. Draw a clear diagram showing the following: (4 points)

Plane P contains :-

- \overline{AB} and \overline{CD} intersecting at point C so that $\overline{AC} \perp \overline{CD}$.
- \overline{XY} intersects \overline{AB} at point E so that $\overline{XY} \parallel \overline{CD}$.
- Point D and E are joined to form \overline{DE} and $\triangle CDE$.
- \overline{CZ} intersects plane P at C

Use your diagram to answer True or False to the following: (3 points)

2. Points A, C, D are collinear points. _____
3. Exactly one plane contains \overline{AB} . _____
4. Points Z, C and E are coplanar _____

Read the following statements and indicate if each of the following is ALWAYS TRUE **(A)**, SOMETIMES TRUE **(S)** or NEVER TRUE **(N)**. (8 points)

Justify your answer either by a written explanation or a drawing to show your understanding.

#	Statement	A/S/N	Drawing or Explanation
5.	If three planes intersect, then their intersection is a point.		
6.	If a lines intersects one of two parallel lines, it will also intersect the other parallel line.		
7.	\overline{AC} and \overline{CD} are different lines		
8.	A line and a plane can intersect in exactly two points?		

QUESTIONS 9 - 11 concern your understanding of SPHERICAL GEOMETRY

9. For each property listed from plane Euclidean Geometry, write a corresponding statement for spherical geometry. (3 points)

- a. The shortest path between two points is a straight line segment.
- b. Two lines intersecting to form four right angles are perpendicular.
- c. Through any two points in a plane, there is a unique and infinite straight line.

10. Compare the distance between any pole point and its equator to the length of a great circle on the same sphere. (1 point)

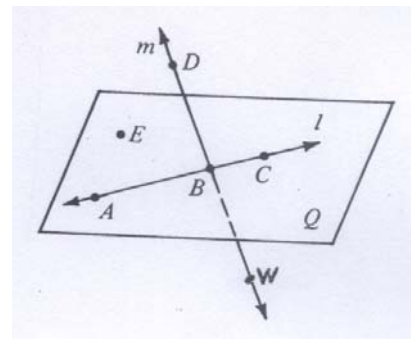
11. Is it possible for parallel great circles to exist? Explain. (1 point)

Section 2: Distance, Line Segments, and Rays

12. Do the two figures named intersect? If so, what is the intersection? (2 points)

\overline{AB} and \overline{CB} ?

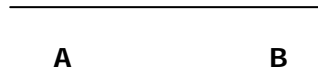
\overline{DB} and \overline{BW} ?



13. If U is between T and B, find the value of x and the measure of \overline{TU} . (2 points)

$$TU = 1 - x, UB = 4x + 17, TB = -3x$$

14. 2 points, **A** and **B**, are on a number line as shown in the figure below. Write an expression that represents the *distance* between the two points. (1 point)



15. Find the value(s) of x satisfying the equation $|x-10|=|x-16|$. Draw a number line that illustrates why your answer makes sense. (2 points)

Section 3: Midpoints

16. **A** and **B** are points on a number line. The coordinate of **A** is $2x+5$ and the coordinate of **B** is $-3x-5$. If $\overline{AB} = 25$ units, find the value of x and the corresponding coordinates of points **A** and **B**. Sketch \overline{AB} . (2 points)

17. Find the coordinates of the midpoint of the segment \overline{MN} whose endpoints have coordinates **M** $(-2,4)$ and **N** $(3,1)$. (2 points)

Section 4: Constructions

18. An object's **center of mass** is the point where an object balances in all directions. Use the steps listed below to find the Triangle's center of mass.

To Locate a Triangle's Center of Mass

- a. Locate the midpoint of each side of the triangle. Do this by using a compass to construct the perpendicular bisector of each side. (2 points)
- b. Draw a segment between the midpoint of \overline{QR} and P. (1 point for b-d)
- c. Draw a segment between the midpoint of \overline{PR} and Q.
- d. Draw a segment between the midpoint of \overline{PQ} and R.
- e. The center of mass is the point where these three segments intersect. Label the center of mass C. (1 point)

