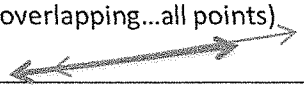
Hw 8

Always / Sometimes / Never.

- If you can find Examples, but no Counter Examples, then the situation is ALWAYS true.
- If you can find Counter Examples, but no Examples, then the situation is NEVER true.
- If you can find BOTH Examples, and Counter Examples, then the situation is SOMETIMES true.

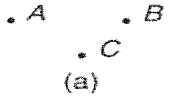
In the table below, use Examples and Counter Examples to describe relationships between and among points, lines, planes and angles. For each question, sketch a picture for which the statement is true (if possible), and a picture for which the statement is false (if possible). Then use these to determine whether the missing word in the statement is best replaced with Always , Sometimes or Never.

	Example	Counter-example
***Example**) Two intersecting lines **SOMETIMES** meet in exactly one point.*	(one point of intersection) 	(overlapping...all points) 
1) Two parallel lines_____ intersect.		
2) Two points are _____ collinear.		
3) Three points are _____ coplanar.		
4) Three points are _____ collinear.		
5) If points are coplanar, then they are _____ collinear.		
6) If points A, B, and C are collinear and AB=BC, then B is _____the midpoint of AC		
7) If MA = MB, then M, A & B are _____ collinear.		
8) If a figure is a parallelogram, then it is _____ a rectangle		
10) If a figure is a rectangle, then it is _____ a parallelogram		

State the postulate or theorem you would use to justify the statement made about each figure.

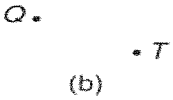
- *Postulate 1:* A line contains at least two points.
- *Postulate 2:* A plane contains at least three non-collinear points.
- *Postulate 3:* Through any two points, there is exactly one line.
- *Postulate 4:* Through any three non-collinear points, there is exactly one plane.
- *Postulate 5:* If two points lie in a plane, then the line joining them lies in that plane.
- *Postulate 6:* If two planes intersect, then their intersection is a line.
- *Theorem 1:* If two lines intersect, then they intersect in exactly one point.
- *Theorem 2:* If a point lies outside a line, then exactly one plane contains both the line and the point.
- *Theorem 3:* If two lines intersect, then exactly one plane contains both lines.

One plane contains points *A*, *B*, and *C*.



(a)

Only one line contains points *Q* and *T*.

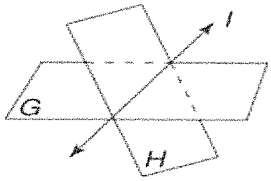


(b)

$\overleftrightarrow{KL}$ lies in plane *P*.

(c)

Plane *G* and plane *H* intersect along line *l*.



(d)

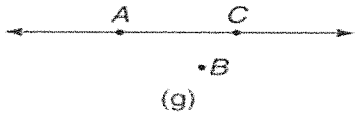
There is another point besides point *w* on *m*.

(e)

One plane contains *t* and *l*.

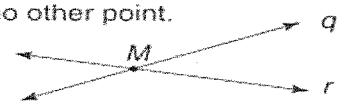
(f)

One plane contains $\overleftrightarrow{AC}$ and *B*.



(g)

Lines *q* and *r* intersect at *M* and at no other point.



(h)

The day before Gerardo returned from a two-week trip, he wondered if he left his plants inside his apartment or outside on his deck. He knows these facts:

- If his plants are indoors, he must water them at least once a week or they will die.
- If he leaves his plants outdoors and it rains, then he does not have to water them. Otherwise, he must water them at least once a week or they will die.
- It has not rained in his town for 2 weeks.

When Gerardo returns, will his plants be dead? Explain your **reasoning**.