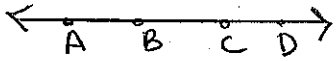
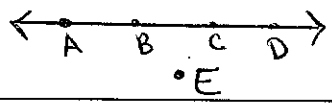
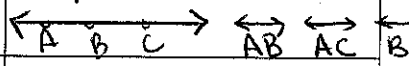
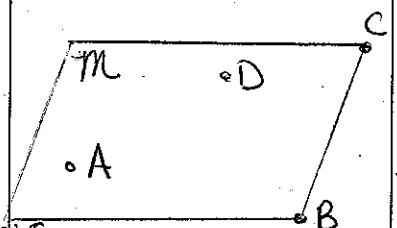
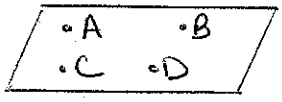
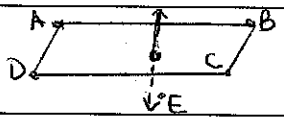
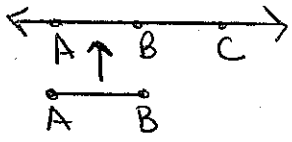
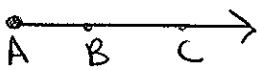
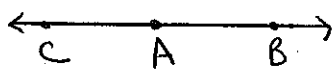
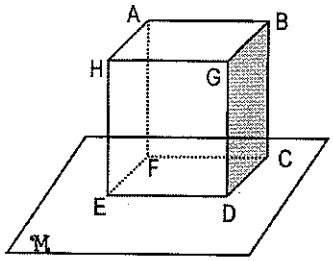
Geometry Notes

1.1 Points, Lines, and Planes Notes

Name Key

	Definition/ Description	Example	Named by:
Point	*has no size / dimension *represented by a dot		A capital letter •A •B •C
Collinear points	points that lie on the same line		
Noncollinear Points	points that do not lie on the same line		
Line	*has one dimension *no thickness *extends without end		A lower case cursive letter $\overleftrightarrow{\ell}$ OR 2 points on the line 
Plane	*flat surface that extends infinitely in all directions →has no depth *formed by 3 noncollinear pts.		A capital cursive letter M OR 3 noncollinear pts on the plane plane ABC
Coplanar Points	points that lie on the same plane		*the plane does not have to be drawn!
Noncoplanar Points	points that do not lie on the same plane		*think of E as a point on the floor + plane ABC as your desktop
Line Segment	*part of a line *made up of: 2 endpoints + all of the points on the line between them		2 endpoints + a bar above them $\overline{AB}$ $\overline{BC}$ $\overline{AC}$
Ray	*has 1 endpoint and extends infinitely in 1 direction		the endpoint 1st! + then a point in the direction the ray is going $\overrightarrow{AB}$ $\overrightarrow{AC}$
Opposite Rays	*2 collinear rays with the same endpoint This endpoint is between the 2 other points.	$\overrightarrow{AC}$ + $\overrightarrow{AB}$  *Not $\overrightarrow{CA}$ + $\overrightarrow{BA}$ (overlap)	*2 opposite rays form a line!

Practice Problems:



1. Name 3 noncoplanar points. — not possible

2. Name four lines. — $\overleftrightarrow{AB}$ $\overleftrightarrow{BC}$ $\overleftrightarrow{CD}$ $\overleftrightarrow{EF}$

3. Name four planes. * — plane ABG (top of cube), plane BCD (shaded side), plane EFD (bottom of cube), plane M (very bottom)

4. How many points are needed to make a line? — 2

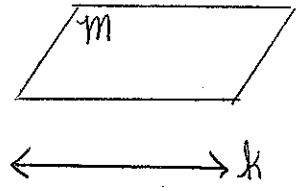
5. How many points are on a line? — infinite

6. How many points are needed to make a plane? — 3 noncollinear

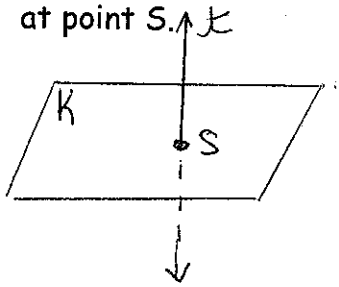
7. How many points are on a plane? — infinite

Draw and label a figure for each relationship.

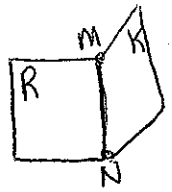
8. Line k does not intersect with plane M



9. Line t intersects plane K at point S.

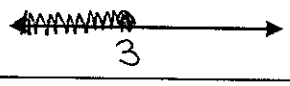


10. Planes R and K intersect in line MN.



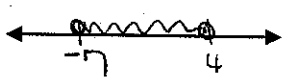
CHALLENGE! Graph the inequality on a number line.
Tell whether the graph is a segment, a ray, a point, or a line.

11. $x \leq 3$



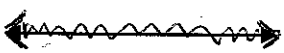
Ray

12. $-7 \leq x \leq 4$



Segment

13. $x \geq 1$ or $x \leq 5$



line

14. $x = 1$

point