Geometry Note-Taking Guide
SECTION 1.3 – Points, Lines, and Planes

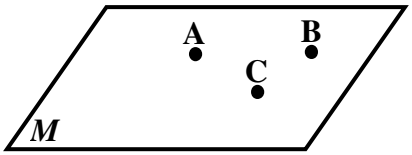
A _____ has no dimension. It is represented by a small dot and named using a capital letter.
Ex:

Point A

A _____ extends in one dimension and is always straight. Through any two points there is exactly one line. A line can be given a lower case letter name or also be defined by two points on the line.
Ex:

Line $\overleftrightarrow{AB}$ or line k

A _____ extends in two dimensions and is always flat. Through any three non-collinear points there is exactly one plane. A plane can be name by a letter in the corner or also be named by three non-collinear points.
Ex:

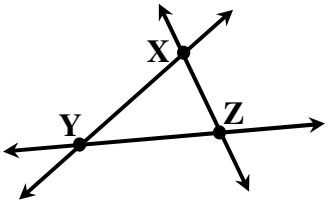


Plane *M* or plane ABC

Points are _____
if they lie on the same line.
Ex:

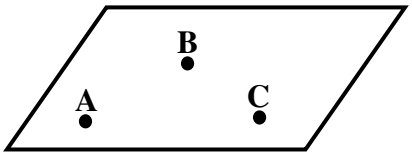
Points D, E and F are collinear

Points are _____
if they do _____ lie on the same line.
Ex:



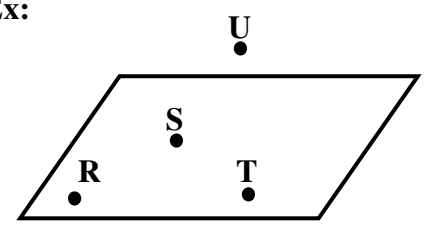
Points X, Y and Z are noncollinear

Points are _____
if they lie on the same plane.
Ex:



Points A, B and C are coplanar

Points are _____
if they do _____ lie on the same plane.
Ex:



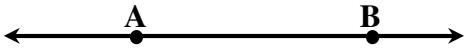
Points R, S, T, and U are noncoplanar

Consider $\overleftrightarrow{AB}$.

A _____ is a portion of a line consisting of ___ endpoints.

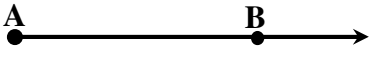
A _____ is a portion of a line with ___ endpoint and extends to infinity in one direction.
Important: When naming a ray the first letter is the starting point.

Ex: Line $\overleftrightarrow{AB}$ or $\overleftrightarrow{BA}$

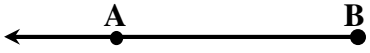


Ex: Segment $\overline{AB}$ or $\overline{BA}$

Ex: Ray $\overrightarrow{AB}$

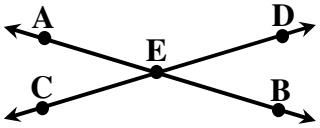


Ray $\overrightarrow{BA}$



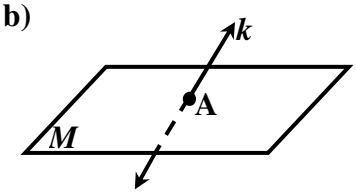
Two or more geometric figures _____ or _____if they have one or more points in common.

Ex: a)



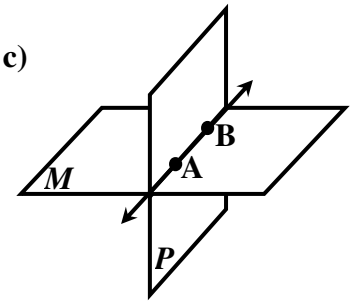
$\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$ intersect at point E

b)



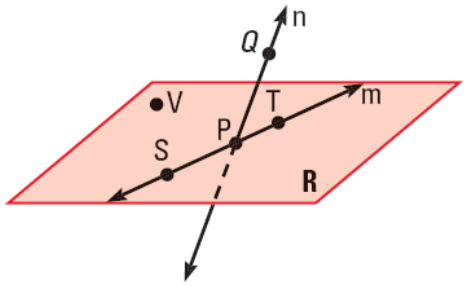
Line k and plane *M* intersect at point A

c)



Plane *M* and plane *P* intersect at $\overleftrightarrow{AB}$

Ex 1:
Determine whether the given statement is true or false.



a) Points S, P, and T are collinear.

b) Points S, P, T, and V are noncoplanar.

c) Points S, P, Q, and V are coplaner.

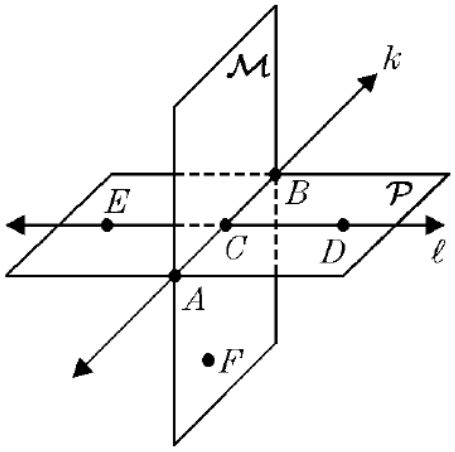
d) Points S, P, and Vare noncollinear.

e) Line n and line m intersect at point P.

f) $\overleftrightarrow{PQ}$ and plane R intersect at point S.

g) Line m and plane R intersect at point T.

Ex 2:
Decide whether the statement is true or false.



a) Points A, C, and E are collinear.

b) Points A, B, C and F are coplanar.

c) Point E, C, and D are noncollinear.

d) Points A, C, D, and F are coplanar.

e) Point A lies on $\overleftrightarrow{CB}$.

f) Point B lies on $\overrightarrow{CA}$.

g) Point F lies on plane *P*.

h) $\overleftrightarrow{AB}$ and line *k* are the same line.

i) $\overline{CE}$ and $\overline{CD}$ are part of line ℓ.

j) The intersection of plane *M* and plane *P* is $\overleftrightarrow{ED}$.

k) The intersection of plane *M* and plane *P* is $\overleftrightarrow{AB}$.

l) $\overleftrightarrow{AB}$ and line ℓ intersect.

m) $\overrightarrow{CA}$ and $\overrightarrow{CD}$ intersect at point E.

n) $\overline{AF}$ and $\overline{CD}$ intersect at point E.