


## Relating Lines to Planes - Lesson 6-1

Today, we began to look at lines and planes and how they relate in space. Remember that space (...the Final Frontier!!...) is defined as the set of all points, so we're talking 3D here, not just 2D, like most of the rest of the year. We started with a definition (the foot of a line intersecting a plane), three postulates, and three theorems. These all have to do with the way that lines and planes intersect.

**The point of intersection of a line and a plane is called the *foot* of the line.**

***Postulate:*** **Three noncollinear points determine a plane.**

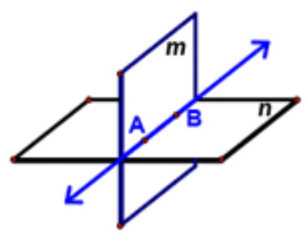
***Theorem 44:*** **A line and a point not on the line determine a plane.**

***Theorem 45:*** **Two intersecting lines determine a plane.**

***Theorem 46:*** **Two parallel lines determine a plane.**

***Postulate:*** **If a line intersects a plane not containing it, then the intersection is exactly one point.**

***Postulate:*** **If two planes intersect, their intersecton is exactly one line.**






We then looked at the following example. See if you can do it (the answers are below!).

a. *m* intersect *n* = ?

b. F, G, and E determine plane ?

c. Name the foot of $\overleftrightarrow{HJ}$ in *n.*

d. $\overleftrightarrow{HJ}$ and $\overleftrightarrow{FG}$ determine plane ?

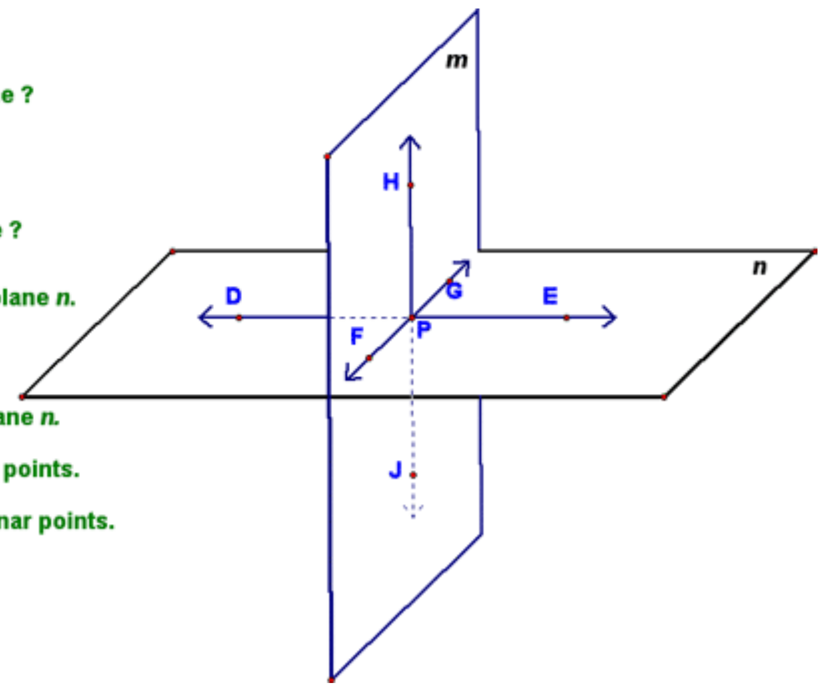
e. $\overleftrightarrow{FG}$ and point ? determine plane *n.*

f. Does J lie in plane *n*?

g. $\overleftrightarrow{DE}$ and line ? determine plane *n.*

h. D, E, G, and ? are coplanar points.

i. D, E, G, and ? are noncoplanar points.




a. $\overleftrightarrow{PG}$ (or $\overleftrightarrow{FP}$ or $\overleftrightarrow{FG}$)

b. n

c. point P

d. m

e. E or D

f. No

g. $\overleftrightarrow{PG}$ (or $\overleftrightarrow{FP}$ or $\overleftrightarrow{FG}$)

h. F or P

i. H or J