Geometry 2.5
Identify and use basic postulates about points, lines, planes
Write paragraph proofs

postulate (axiom)
theorem
deductive argument
paragraph proof (informal)
2-column proof
working backward (CSI)

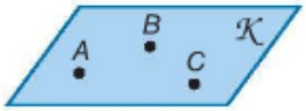
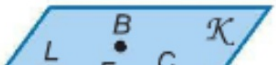
Reminder: projects due (APPS geometry) Tuesday EOD
reflections due Thurs. in class
see Fri. notes for reflection requirements

Postulate: Self-evident
Basic idea/example about a point, line, plane...
Sort of like a definition...
"...duh"
It just IS. Like gravity.

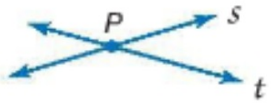
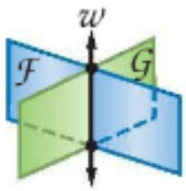
1 Points, Lines, and Planes

A **postulate** or **axiom** is a statement that is accepted as true without proof. Basic ideas about points, lines, and planes can be stated as postulates.

Postulates Points, Lines, and Planes

Words	Example
2.1 Through any two points, there is exactly one line.	 Line n is the only line through points P and R.
2.2 Through any three noncollinear points, there is exactly one plane.	 Plane $\mathcal{K}$ is the only plane through noncollinear points A, B, and C.
2.3 A line contains at least two points.	 Line n contains points P, Q, and R.
2.4 A plane contains at least three noncollinear points.	 Plane $\mathcal{K}$ contains noncollinear points L, B, C, and E.

KeyConcept Intersections of Lines and Planes

Words	Example
2.6 If two lines intersect, then their intersection is exactly one point.	 Lines s and t intersect at point P.
2.7 If two planes intersect, then their intersection is a line.	 Planes $\mathcal{F}$ and $\mathcal{G}$ intersect in line w.

Required elements:

Given: *starting point*
Prove: *where you end up*
Drawing (if applicable):
→ Chain of reasoning (explain) using statements & reasons

WB 2.5 prac.

Given: $5x-13=2$

To Prove: $x=3$

Given 5x-13=2

Prove x=3

Start with $5x-13=2$ and

$+13 \quad +13$

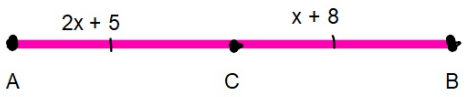
add 13 to both sides: $\frac{5x}{5}=\frac{15}{5}$.

Divide both sides by 5 so $x=3$.

Book

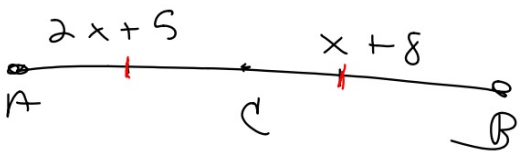
Given C is the midpoint of AB

Prove x=3



Given C is mp of AB.

Prove $x = 3$



If C is mp then $AC = BC$ so $2x+5 = x+8$.

$-x \quad -x$

Zero pair X's so $x + 5 = 8$. add -5 to both

$-5 \quad -5$

sides so $x = 3$.

Given $\angle 1$ and $\angle 2$ form linear pair. $m\angle 1 = 105°$

Prove $m\angle 2 = 75°$

Since $\angle 1$ & $\angle 2$ are L.P. their sum is $180°$

So $m\angle 1 + m\angle 2 = 180°$. If $m\angle 1 = 105°$ then

$105° + m\angle 2 = 180°$ Subtract 105 from both

$-105 \qquad -105$

So $m\angle 2 = 75°$