

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)


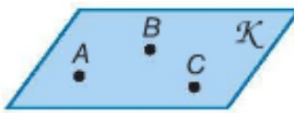

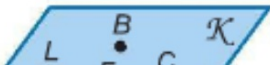
Quiz 2.3-2.4 Wed.

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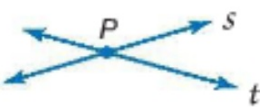

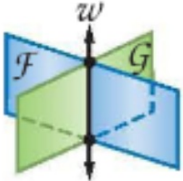
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Postulate: Self-evident
 Basic idea/example about a
 point, line, plane...
 Sort of like a definition...
 "...duh"
 It just IS. Like gravity.

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

Required elements:

- ✓ Given:
- ✓ To prove:
- ✓ Drawing (if applicable):
Chain of reasoning (explain) using
statements & reasons

must: Given $5x-13=2$
must: Prove $x=3$

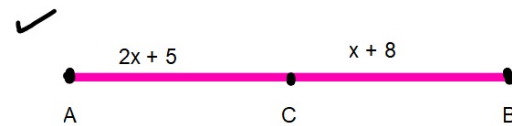
Proof: Start with $5x-13=2$
 $+13 \quad +13$

$$\frac{5x}{5} = \frac{15}{5} \quad (\text{add } 13 \text{ to both})$$
$$\frac{x}{1} = \frac{3}{1} \quad (\text{divide both by } 5)$$

$x=3$

✓ Given C is the midpoint of \overline{AB}

✓ Prove $x=3$



Since C is mp then $AC = CB$

(def mp.) By subs. $2x + 5 = x + 8$

add $-x$ to both
add -5 to both

$$\begin{array}{r} 2x + 5 = x + 8 \\ -x \quad -5 \quad -x \quad -5 \\ \hline x = 3 \end{array}$$

