Objectives: *You will identify and use basic postulates about points, lines, and planes and decide what can be assumed and what needs to be labeled.*

Postulate: An accepted statement of fact.

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Two Point Postulate: Through any two points there exists exactly one line.

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Line-Point Postulate: A line contains at least two points.

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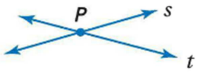
Line Intersection Postulate: If two lines intersect, then their intersection is exactly one point.



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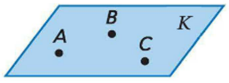
Three Point Postulate: Through any three non-collinear points, there exists exactly one plane.



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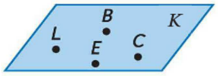
Plane-Point Postulate: A plane contains at least three non-collinear points.



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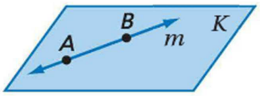
Plane-Line Postulate: If two points lie in a plane, then the line containing them lies in the plane.



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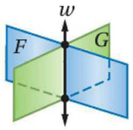
Plane Intersection Postulate: If two planes intersect, then their intersection is a line.



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Example #1: Complete with always, sometimes, or never.

a) Three points are sometimes collinear.

b) Two planes always intersect at a line.

c) Two lines never intersect at a plane.

d) Two points always determine a line.

e) Parallel lines never intersect.

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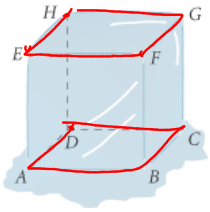
Example #2: Use the diagram determine whether you can assume the statement

1. Points H, E, and F are collinear.
   No, not on same line
2. Points H, E, D, and F are coplanar.
   No, not on same plane
3. Point F is on the front plane.
   yes
4. Plane HEFG and plane DABC intersect.
   no, they are parallel



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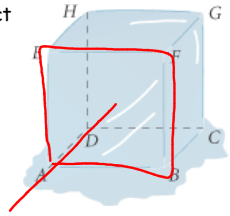
5. $\overleftrightarrow{BC}$ and $\overleftrightarrow{AB}$ intersect
   yes, at B
6. $\overleftrightarrow{AD}$ and plane ABFE intersect at A.
   yes



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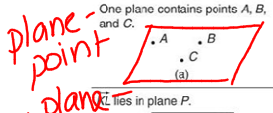
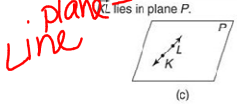
Example #3: State the postulate or theorem you would use to justify the statement made about each figure.

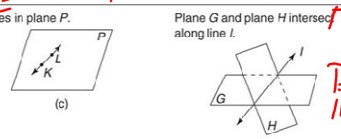
plane-point plane



2pt postulate

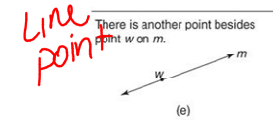
line





plane int.

line point



line int

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