

Chapter 2.4: Use Postulates and Diagrams

Objective: I can use postulates involving points, lines and planes.

Review: Use the following statement to write each of the following. *When an angle measure is 30° , it is acute*

Write the conditional:

If an angle measure is 30° , then it is acute. (Always true)

Write the converse.

If an angle is acute, then its measure is 30° (Not Always true)

Write the inverse.

If an angle measure is not 30° , then it is not acute.

Write the contrapositive.

If an angle is not acute, then its measure is not 30°

If you can, write as a biconditional statement

Cannot write because the converse is not always true.

Postulate:

A rule accepted without proof.

Postulate 1 (Ruler):

Distance of a segment (measure)

Postulate 2 (Segment Addition):

$$AB + BC = AC$$

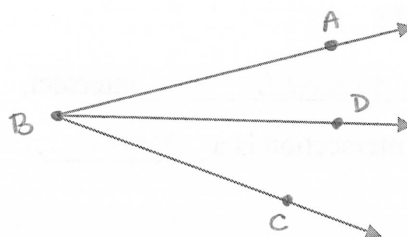


Postulate 3 (Protractor):

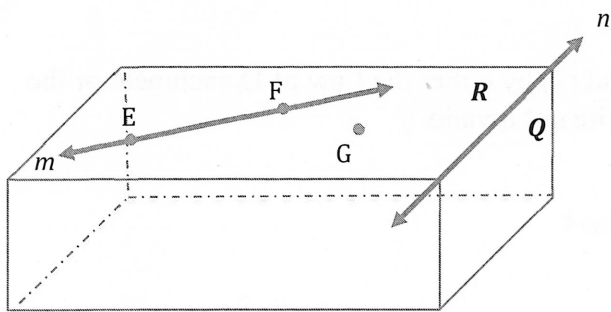
Degree of an angle (measure)

Postulate 4 (Angle Addition):

$$\angle ABD + \angle DBC = \angle ABC$$



Example #1: Use the diagram to write/state which postulate verifies the following statements



a. The points E, F and G are coplanar

8, 9

b. The points E and F lie on one line

5, 6

c. The planes R and Q intersect at one line

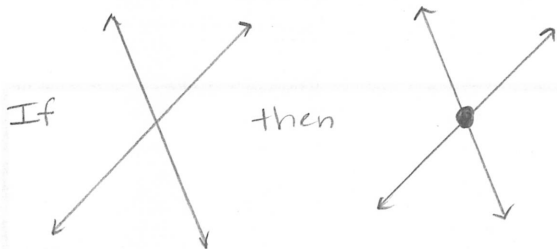
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d. The points E and F lie in plane R. Therefore, line m lies on plane R.

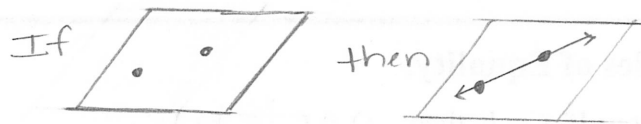
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Example #2: Draw a sketch to illustrate each postulate.

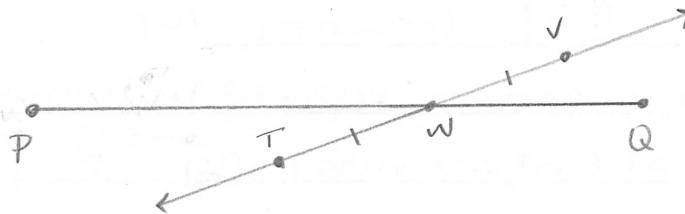
a.) If two lines intersect, then their intersection is exactly one point.



b.) If two points lie in a plane, then the line containing them lies in the plane.



Example #3: Sketch a diagram showing \overleftrightarrow{TV} intersecting \overline{PQ} at point W, so that $\overline{TW} \cong \overline{WV}$



Example #3: Which of the following statements **cannot** be assumed from the diagram?

a.) A, B and F are collinear.

Can be assumed

b.) E, B and D are collinear.

Cannot be assumed; no line is shown connecting E, B, D.

c.) $\overline{AB} \perp$ plane S

Can be assumed

d.) $\overline{CD} \perp$ plane T

Cannot be assumed; No right angle marked.

e.) \overleftrightarrow{AF} intersects \overleftrightarrow{BC} at point B

Can be assumed.

