

2 - 5

**Postulates and
Paragraph Proofs**

postulate (or axiom): a statement that describes a fundamental relationship between the basic terms of geometry (points, lines, planes, etc.)

*** accepted as true




Postulate 2.1: Through any two points, there is exactly one line.

Postulate 2.2: Through any three points not on the same line, there is exactly one plane.

Postulate 2.3: A line contains at least two points.

Postulate 2.4: A plane contains at least three points not on the same line.



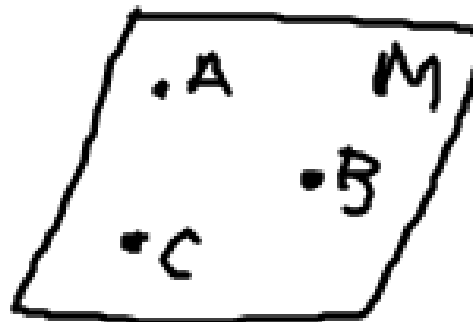
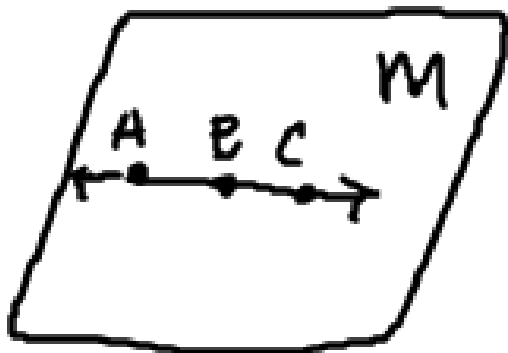
Postulate 2.5: If two points lie on a plane, then the entire line containing those points lies in that plane.

Postulate 2.6: If two lines intersect, then their intersection is exactly one point.

Postulate 2.7: If two planes intersect, then their intersection is a line.

Determine whether each statement is *sometimes*, *always*, or *never* true.

- 1.) If points A, B, and C lie in plane M, then they are collinear.



sometimes

2.) There is exactly one plane that contains noncollinear points P, Q, and R.

P •

•
R

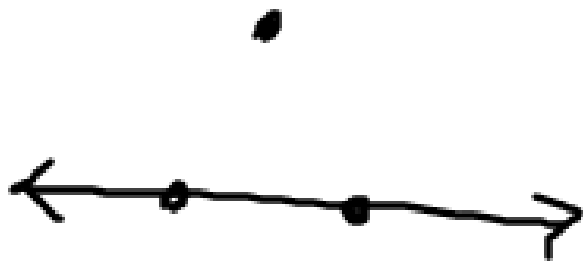
• Q

Postulate 2.2

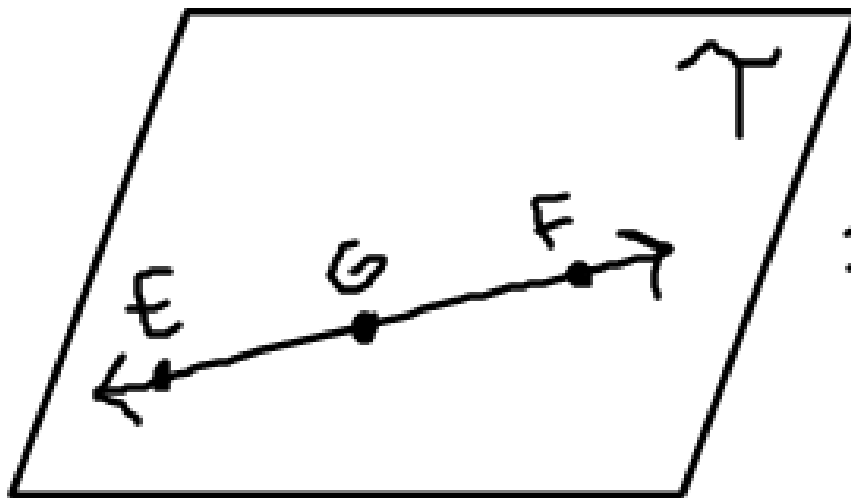
3.) \overleftrightarrow{GH} contains three noncollinear points.

never


defn. of collinear



- 4.) If plane T contains \overleftrightarrow{EF} , and \overleftrightarrow{EF} contains point G , then plane T contains point G .



always
Postulate 2.5



*"Undefined terms, definitions, postulates, and algebraic properties of equality are used to prove that other statements or conjectures are true. Once a statement or conjecture has been shown to be true, it is called a **theorem**, and it can be used like a definition or postulate to justify that other statements are true."*

Theorem 2.1

Midpoint Theorem

If M is the midpoint of \overline{AB} ,

then $\overline{AM} \cong \overline{MB}$.



proof: a logical argument where each statement you make is supported by a statement accepted as true (reason)

paragraph proof: write a paragraph explaining why a conjecture is true



Homework:

p.91 #6-9, 16-19, 22-27