

# Geometry

Name \_\_\_\_\_

## 2.5 Postulates and Paragraph Proof

Date \_\_\_\_\_ Hour \_\_\_\_\_

def – postulate – a statement that is accepted as true

def – theorem – a statement that has been proven to be true

def – proof – a logical argument in which each statement you make is supported by a statement accepted as true (the supporting statements may be postulates, definitions, or theorems)

def – midpoint – If a point is a midpoint of a segment, then it divides the segment into two equal lengths

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

Postulate 2.2 – Through any three noncollinear points there is exactly one plane.

Postulate 2.3 – A line contains at least two points.

Postulate 2.4 – A plane contains at least three noncollinear points.

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

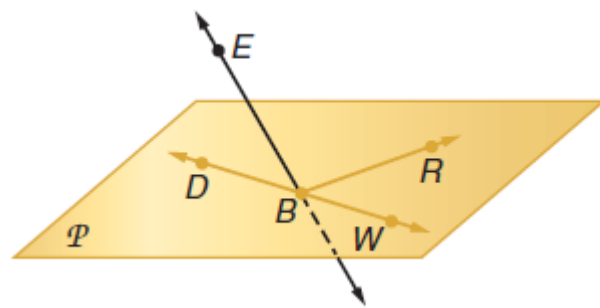
Postulate 2.6 – If two lines intersect, then their intersection is exactly one point.

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

**Theorem 2.1 (Midpoint Th'm)** – *If  $M$  is the midpoint of  $\overline{AB}$ , then  $\overline{AM} \cong \overline{MB}$ .*

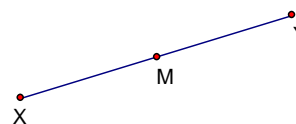
What postulate or theorem supports the statement for 1 -3 ?

- 1) B, D, and W are collinear.
- 2) E, B, and R are coplanar.
- 3) Since D and W are in plane  $\mathcal{P}$  then the line  $\overleftrightarrow{DW}$  is in the plane  $\mathcal{P}$ .

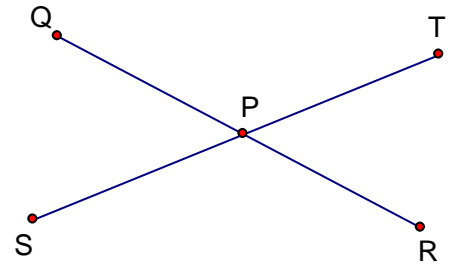


Write a paragraph proof for 4 and 5.

- 4) Given that M is the midpoint of  $\overline{XY}$ , show that  $\overline{XM} \cong \overline{MY}$ .



5) In the figure P is the midpoint of  $\overline{QR}$  and P is the midpoint of  $\overline{ST}$ .  
Also  $\overline{QR} \cong \overline{ST}$ . Show that  $PQ = PT$ .



6) Can the intersection of two planes be a point?  
(Illustrate your answer.)

7) Can the intersection of three planes be a point?  
(Illustrate your answer.)

8) How many planes can be made through four noncollinear and noncoplanar points?

9) How many planes can be made through five noncollinear and noncoplanar points?

10) Write the converse, inverse, and contrapositive. Decide if each is TRUE or FALSE.

***If you have access to the Internet at your house, then you have a computer.***