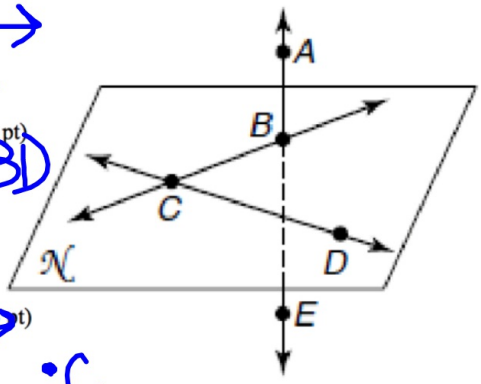
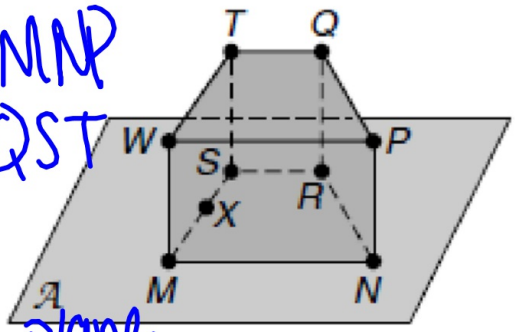
Refer to the Figure for questions 1 - 5.



1. Name a line that is not contained in plane *N*. (2 pt) $\overleftrightarrow{AE}$
2. Name two different ways to name a plane that contains point B. (2 pt) plane BCD & CBD
3. Name three collinear points. (2 pt) A, B, E
4. Name two lines that intersect and the point where they intersect. (3 pt) $\overleftrightarrow{CB}$ $\overleftrightarrow{BE}$ • B / $\overleftrightarrow{CD}$ $\overleftrightarrow{CB}$ • C
5. Name a set of opposite rays. (2 pt) $\overrightarrow{BA}$ $\overrightarrow{BE}$

Refer to the Figure for questions 6 - 11.



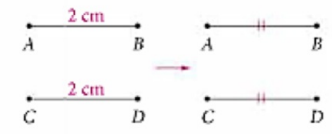
6. Name ALL the planes. (6 pt) Plane A NPR MNP MSW MNR QST
7. Name three collinear points. (2 pt) • M, X, S
8. Are points N, S, R, and W coplanar? Why? (2 pt) NO • S Not in diag. plane
9. What is another way to name Plane A? (2 pt) Plane MNX
10. Where do $\overline{QR}$ and $\overline{SR}$ intersect? (2 pt) • R
11. Name two lines or segments and their intersections (other than question 10). (3 pt) $\overleftrightarrow{MW}$ $\overleftrightarrow{WT}$ • W $\overleftrightarrow{QP}$ $\overleftrightarrow{QR}$ • Q

Geometry **Sect. 1-4: Segments, Rays, Parallel Lines and Planes** **Date:**

Objective 1: I can find the length of segments by using the segment addition postulate.

- Many geometric figures, such as squares and angles are formed by parts of lines called rays, segments, or segments. A segment is the part of a line consisting of two endpoints and all endpoints in between them.
- A ray is the part of a line consisting of one endpoint and all the endpoints of the line on one side of the endpoint.
- opp. rays are two collinear rays with the same endpoint. opp rays always form a line.

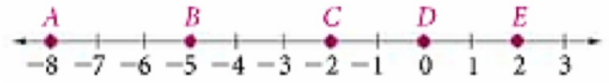
Two segments with the same length are congruent segments. In other words, if AB = CD, then we can write $\overline{AB} \cong \overline{CD}$. You can use these statements interchangeably. The symbol for congruent is $\cong$. An example is below.



As shown above, segments can be marked with tick marks to show they are congruent.

**When you are referring to the actual segment, as a shape, then put the symbol over the letters.*
**When you are referring to the segment's length, we tend not to use the symbol over the letters.*

Example 1: Use the number line for parts A – D.



A) Find AB and BC. Are $\overline{AB}$ and $\overline{BC}$ congruent?

AB = 3

BC = 3

yes

B) Compare CD and DE. Are the segments congruent?

CD = 2

DE = 2

yes

C) What is the length of $\overline{AD}$?

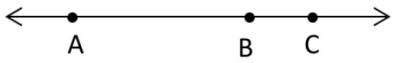
AD = 8

D) Which segment is the shortest? $\overline{CD}$ $\overline{DE}$ Which segment is the longest? $\overline{AE}$

A ***postulate*** (also sometimes called an axiom) is a statement that is agreed by everyone to be correct. This is useful for creating proofs in mathematics and science, and ***postulates*** are often the basic truth of a much larger theory or law. We will see many postulates throughout Geometry.

SEGMENT ADDITION POSTULATE:

If B is between A and C, then $AB+BC=AC$.



If $AB+BC=AC$, then B is between A and C.

Example 2: Write an equation using the segment addition postulate for each diagram.

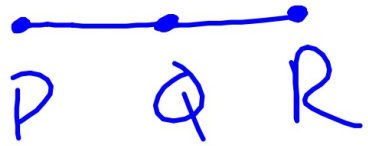
A)

$AB+BC=AC$

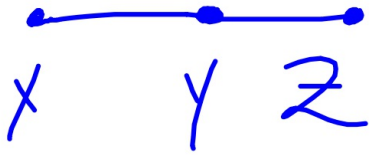
B)

$DE+EF=DF$

Example 3: Draw a segment for the equation: PQ + QR = PR

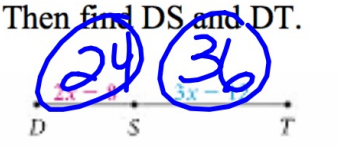


Example 4: Fill in the missing segment: XY + $\overline{YZ}$ = XZ



Example 5: Find the value of x, and each indicated length.

A) If DT = 60, find the value of x. Then find DS and DT.



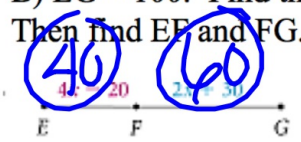
$2x-8+3x-12=60$

$5x-20=60$

$5x=80$

$x=16$

B) EG = 100. Find the value of x. Then find EF and FG.



$EF+FG=EG$

$4x-20+2x+30=100$

$6x+10=100$

$6x=90$

$x=15$