Name Key Date _____ Period ____

Measuring Segments

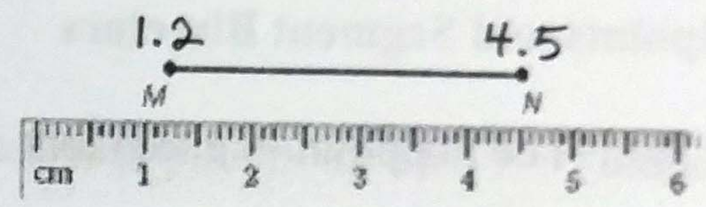
Finding the distance between two points on a number line is relatively *trivial*, which means it is something that we accept without much proof needed to verify. This is what we call a POSTULATE or an AXIOM in Geometry.

Ruler Postulate: The distance between 2 points is the ABSOLUTE VALUE of the DIFFERENCE of the two coordinates.

Example: 1. Measure the length of $\overline{MN}$ to the nearest tenth of a centimeter.

$MN = |4.5 - 1.2|$
$= |3.3|$
$= 3.3$

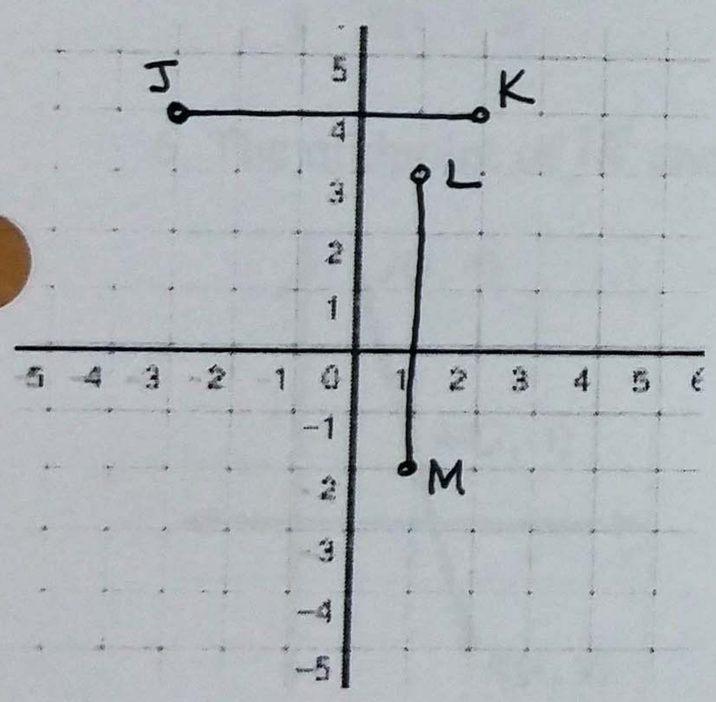
$\overline{MN}$ IS 3.3 CM LONG



Congruent Segments

Line segments that have the SAME length are called CONGRUENT SEGMENTS ($\cong$ SEGMENTS)

Example: 2. Plot J(-3, 4), K(2, 4), L(1, 3) and M(1, -2) in the coordinate plane below. Then determine whether $\overline{JK}$ and $\overline{LM}$ are congruent.



$\overline{JK}$ HORIZONTAL SEGMENT: USE x-COORDS

$JK = |2-(-3)|$
$= |5|$
$= 5$

$\overline{LM}$ VERTICAL SEGMENT: USE y-COORDS

$LM = |-2-3|$
$= |-5|$
$= 5$

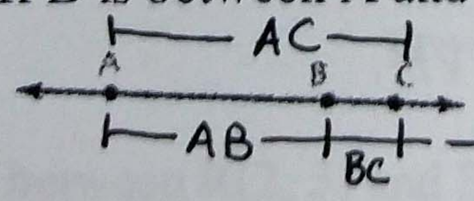
$JK = LM = 5$

THEY HAVE THE SAME LENGTH, SO $\overline{LM} \cong \overline{JK}$

Using the Segment Addition Postulate

**When three points are collinear, we can say that one point is BETWEEN the other two.

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

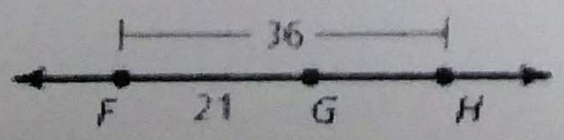


Examples:

3. Find DF. (*remember, no bar on top of DF means find its LENGTH)

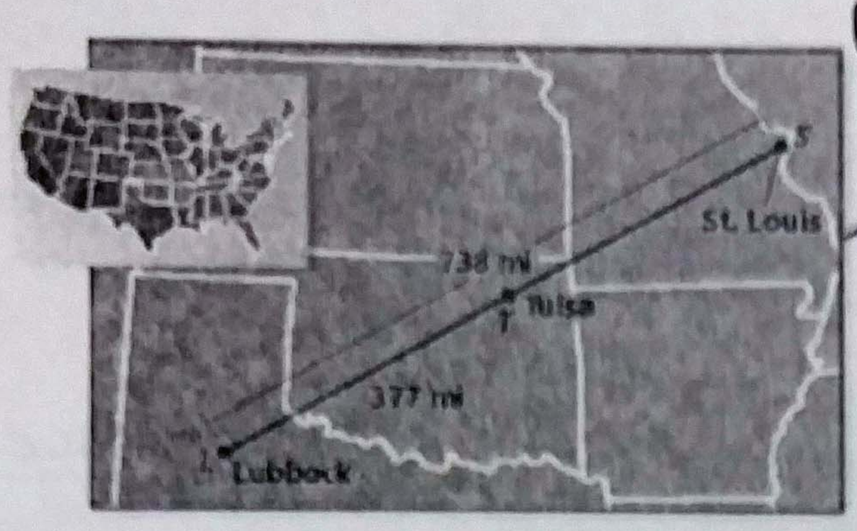
$DF = DE + EF$
$DF = 23 + 35$ → $DF = 58$

4. Find GH.



$FH = FG + GH$
$36 = 21 + GH$
$15 = GH$

5. How far is Tulsa from St. Louis?



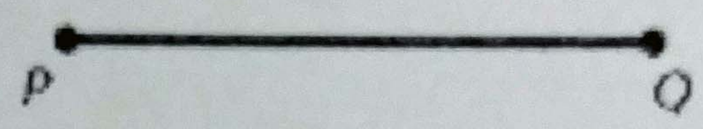
LS = 738 MILES
LT = 377 MILES
TS = ?

LS = LT + TS
738 = 377 + TS
361 = TS

TULSA IS 361 MILES FROM ST. LOUIS.

Midpoints and Segment Bisectors

Midpoint: The midpoint of a segment is the point that divides the segment into _____.



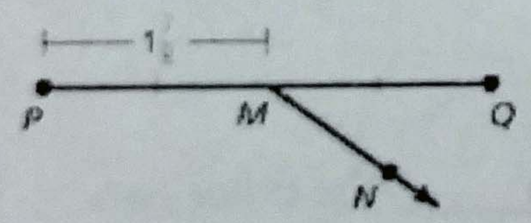
Segment Bisector: A segment bisector is a _____ that intersects the segment at its _____.

Examples:

1. Make a sketch of the following phrase: "$\overline{VW}$ bisects $\overline{XY}$ at point T."

2.

3. Identify the segment bisector of $\overline{PQ}$. Then find PQ.



Using Algebra with Segment Lengths

Example: 4. Point M is the midpoint of $\overline{VW}$. Find the length of $\overline{VM}$.