

BE - Geometry 11 Monday 9-27-10

- ① Who wrote "THE" book of Geometry that was used for a MATH textbook for > 2000 years and can still be used to teach Geometry today?
 - ② WHAT WAS THE title of the book?
 - ③ WHAT ARE the "tools" used by this author?
 - ④ Approximately when did he live?
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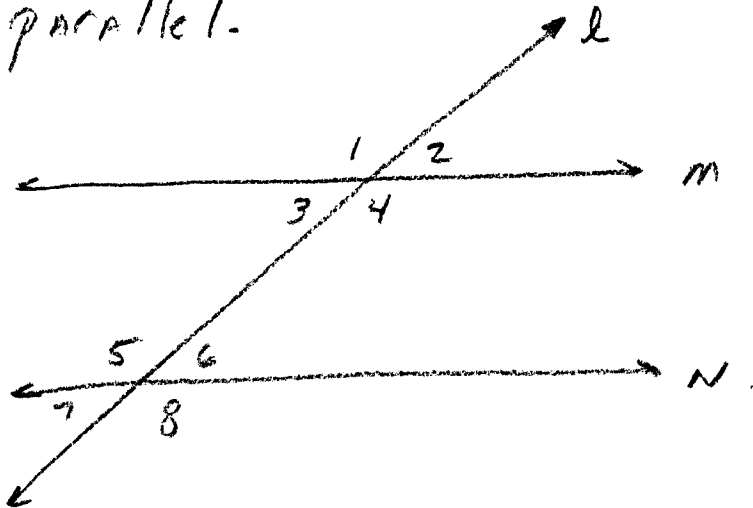
Euclid's "Elements". TOOLS = • UNMARKED straightedge
• COMPASS

Lived ~ 300 BC

Ch. 3-5 Proving Lines PARALLEL

POSTULATE 3-4

IF two lines in a PLANE ARE CUT BY A TRANSVERSAL so that corresponding angles are congruent, then the lines ARE parallel.



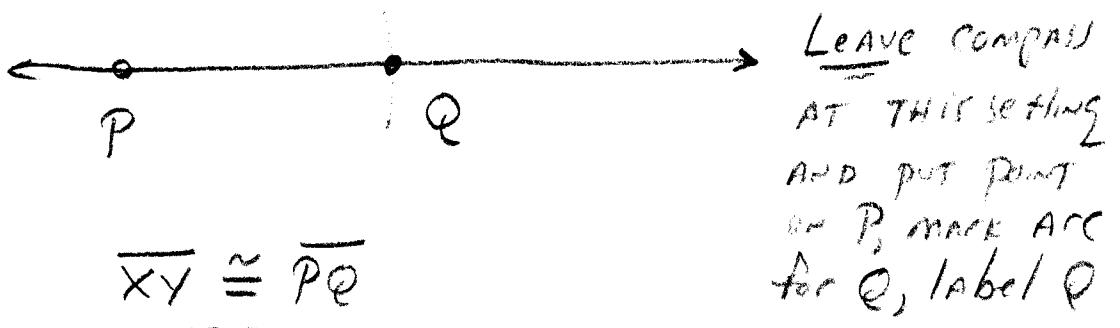
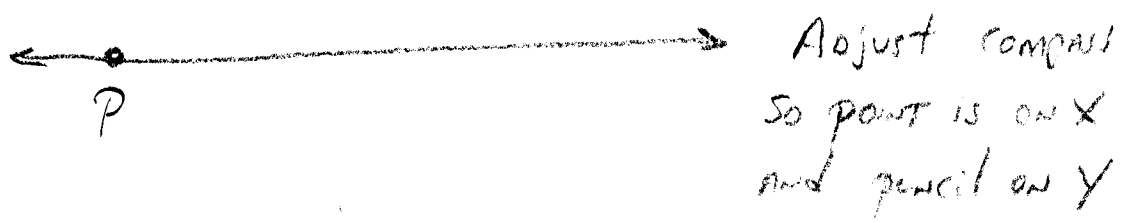
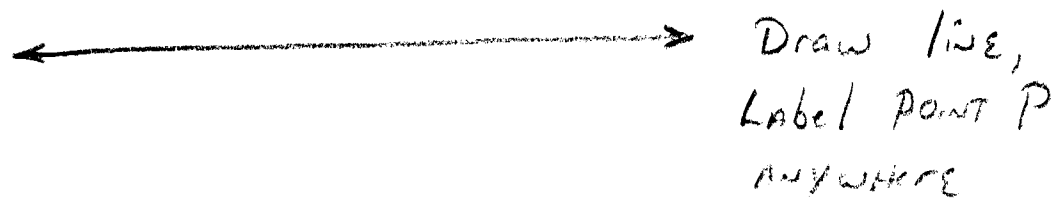
IF corr. \angle s ARE \cong , then lines ARE \parallel

- (EX) if $\angle 1 \cong \angle 5$, then $m \parallel n$
if $\angle 2 \cong \angle 6$, then $m \parallel n$
if $\angle 3 \cong \angle 7$, then $m \parallel n$
if $\angle 4 \cong \angle 8$, then $m \parallel n$

CONSTRUCTIONS

Euclids TOOLS \Rightarrow • unmarked straightedge
• COMPASS

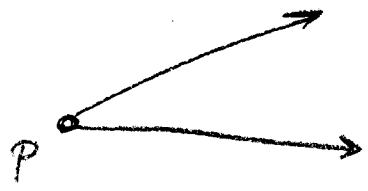
⊗ Copy A Line Segment (pg 15)



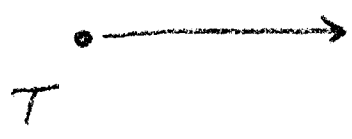
$$\overline{XY} \cong \overline{PQ}$$

CONGRUENT \Rightarrow SAME SHAPE AND MEASURE

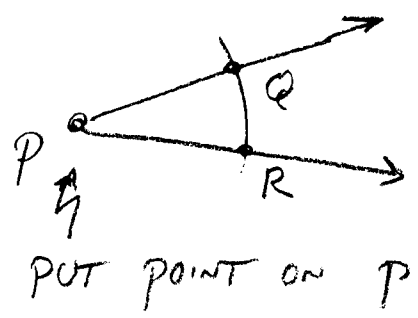
Construction: Copy an Angle (Pg 31)



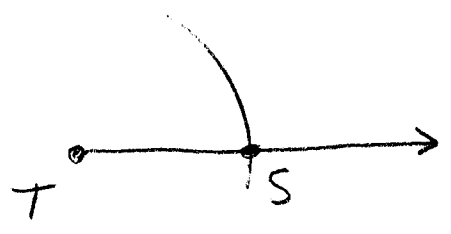
To copy $\angle P$, draw a ray T



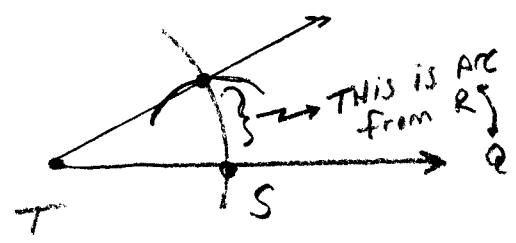
Go back to P and draw an arc with the compass, label points Q, R .



Keep compass the same, draw same arc from T , label point S

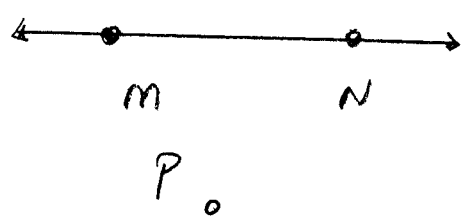


Go back to P , put compass between Q, R , then using this width, put point on S and draw arc, label Q , draw $\angle STQ$

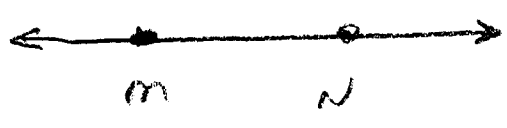


PRACTICE COPYING ANGLES

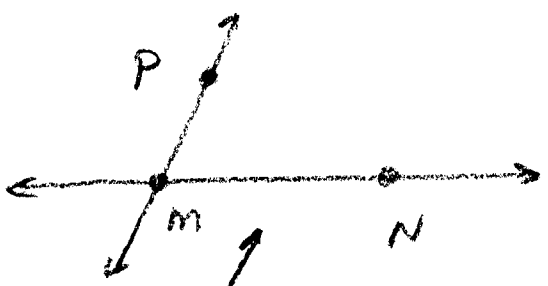
CONSTRUCTION: PARALLEL LINE through
 ANY POINT NOT ON THE
 LINE → pg 151



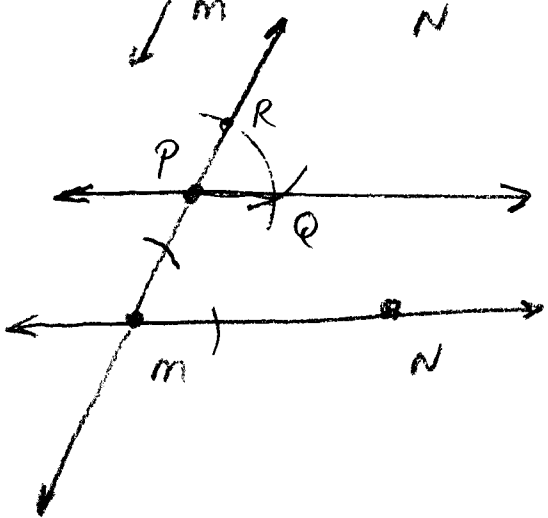
TAKE ANY STARTING
 line, label M, N



Label P, not on the
 line



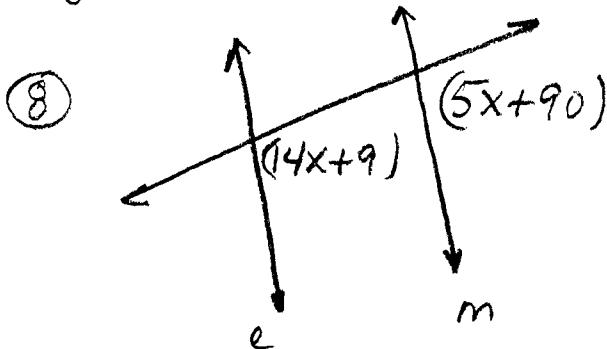
Draw \overleftrightarrow{PM}



Copy $\angle PMN$ to new
 vertex AT P

Example:

Pg 154 # 8 & 9, Find x so lines are \parallel



$$\angle(14x+9) \cong \angle(5x+90)$$

Corresponding angles
must be \cong if
 $e \parallel m$

$$14x+9 = 5x+90$$

if \angle s are \cong ,
measures are =

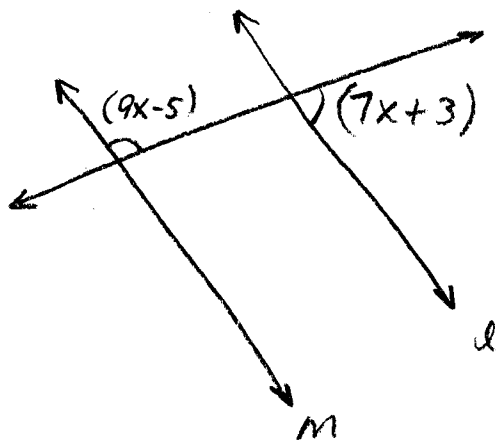
$$-5x \quad -5x$$

$$9x+9 = 90$$

$$9x = 81$$

$$\boxed{x = 9}$$

9.



$$(9x-5) + (7x+3) = 180$$

$$9x-5 + 7x+3 = 180$$

$$16x - 2 = 180$$

$$16x = 182$$

$$x = \frac{182}{16} = \frac{91}{8}$$

$$x = \frac{91}{8} = 11.375$$

Since for lines m and l to be \parallel , these two angles must be supplementary (ADD to 180°)

$$\begin{array}{r} 11.375 \\ 8 \overline{) 91.00} \\ \underline{8} \\ 11 \\ \underline{8} \\ 30 \\ \underline{24} \\ 60 \\ \underline{56} \\ 4 \end{array}$$

Homework:

Pg. 155 #26-31