BE- Geometry II Monday 10-3-11

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?

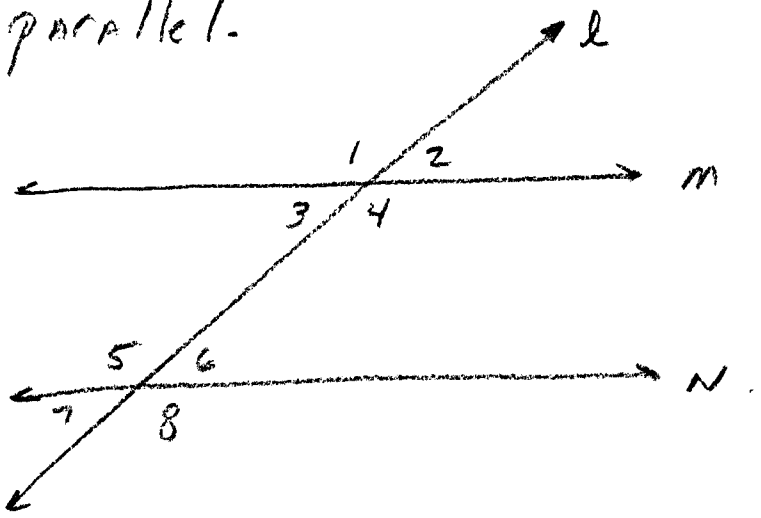
Euclid's "Elements". Tools = • unmarked straightedge
• compass

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 $m \parallel N$

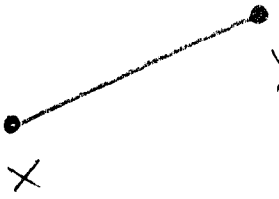
if $\angle 3 \cong \angle 7$, then $m \parallel N$

if $\angle 4 \cong \angle 8$, then $m \parallel N$

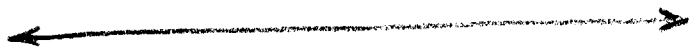
Constructions

Euclids Tools ⇒ • unmarked straightedge
• Compass

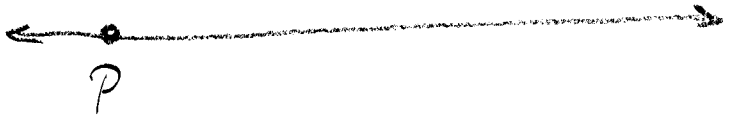
(Ex) Copy a Line Segment (Pg 15)



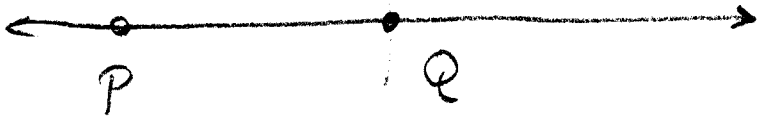
copy $\overline{XY}$



Draw line, Label point P anywhere



Adjust compass so point is on X and pencil on Y

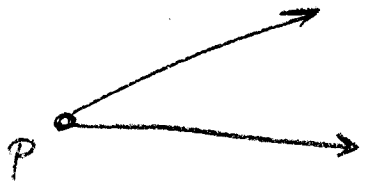


Leave compass at this setting and put point on P, make arc for Q, label Q

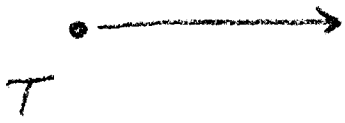
$\overline{XY} \cong \overline{PQ}$

{Congruent} ⇒ same shape and measure

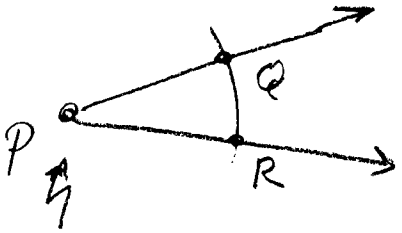
Construction: Copy an Angle (pg 31)



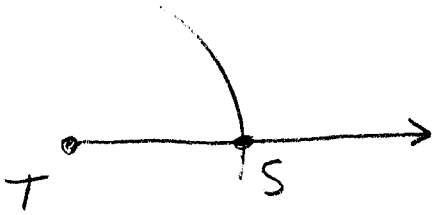
To copy ∠P, draw a ray T

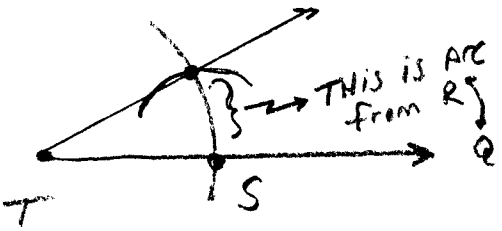


Go back to P and draw an arc with the compass, label points Q, R.



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

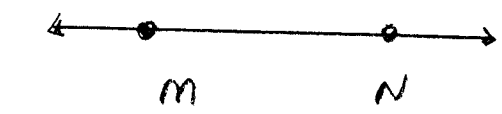




Go back to P, put compass between QR, then using this width, put point on S and draw arc, label Q, draw ∠STQ

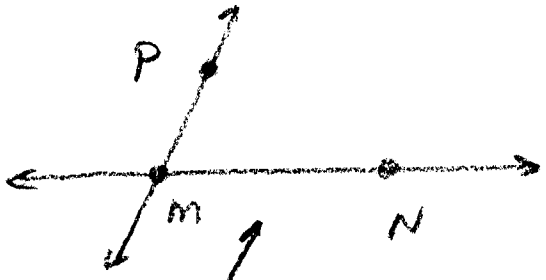
PRACTICE COPYING ANGLES

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

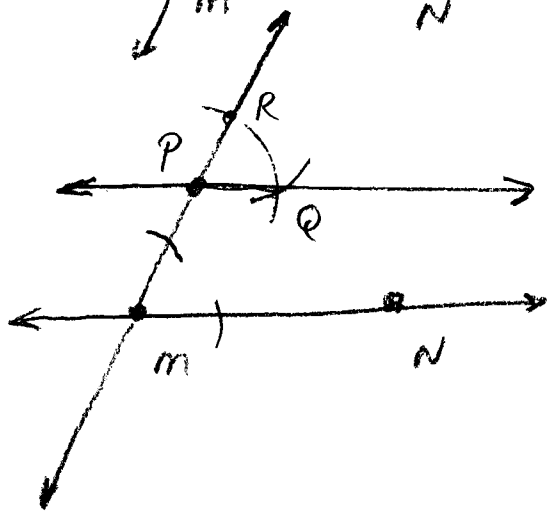


TAKE ANY STARTING LINE, label M, N

Label P, NOT ON the LINE



Draw $\overleftrightarrow{PM}$

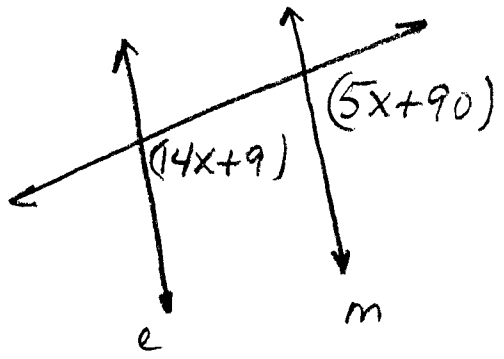


Copy $\angle PMN$ to NEW VERTEX AT P

Example:

Pg 154 # 8 & 9, Find X so lines are ||

(8)



$\angle(14x+9) \cong \angle(5x+90)$ Corresponding Angles must be $\cong$ if $\ell \parallel m$

$14x+9 = 5x+90$ if $\angle$s are $\cong$, measures are $=$

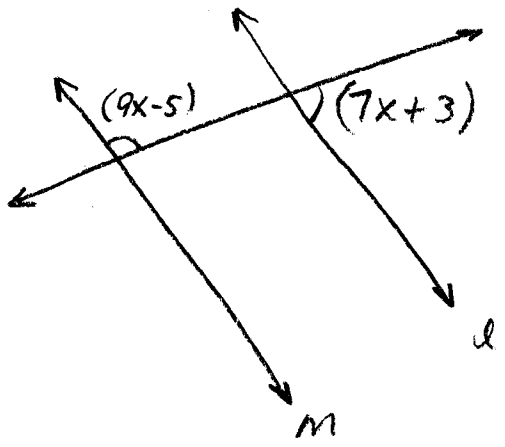
$-5x \qquad -5x$

$9x+9 = 90$

$9x \quad = 81$

$\boxed{x = 9}$

(9.)



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

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

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

$16x - 2 = 180$

$16x = 182$

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

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

```
  11.375
8|91.00
 8
 --
 11
  8
 --
  30
  24
 --
   60
   56
  --
    4
```

Homework:

Pg. 155 #26 - 31