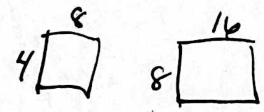
Sec 7.1

Formel

Dilation: enlargement or Reduction - Proportionally

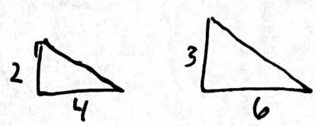
- Scale Factor determines E or R.
- Scale Factor (K) = how much bigger or smaller
  - Determined by Ratio of corresponding sides

Ex]



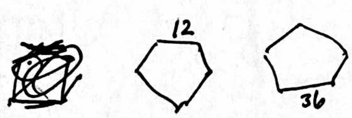
$\Rightarrow SF = \frac{4}{8}$ or $\frac{8}{4}$

$= 1/2 \qquad \frac{2}{1} =$



$\Rightarrow SF =$

Blue - pre image
green image



SF =

- $K > 1$ Enlargement

  $0 < K < 1$ Reduction.

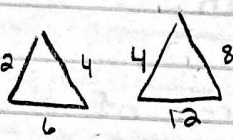
~~Pg~~ ~~15-18~~ ~~21-26~~

Pg 497
15-18
21-27

7.2 - Similar Polygons

Similar ($\sim$) Polygons: The same shape but different size.

Th^m: Figures are only similar if their corresponding sides are proportional (equal ratios) and corresponding $\angle$'s $\cong$

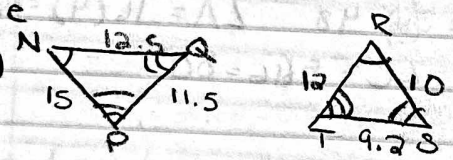
Ex) 

Similar? $\triangle FGH \sim \triangle JKL$

Yes

$\frac{2}{4} = \frac{1}{2}$ $\frac{4}{8} = \frac{1}{2}$ $\frac{6}{12} = \frac{1}{2}$

Scale Factor: Ratio of any corresponding side

Ex) 

1) Are they $\sim$? $\frac{15}{10} = \frac{5}{4}$

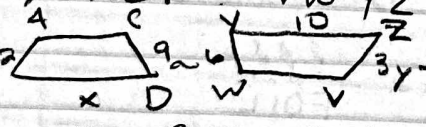
$\frac{12.5}{10} = \frac{125}{100} = \frac{5}{4}$

$\frac{11.5}{9.2} = \frac{115}{92} = \frac{5}{4}$

Yes $\sim$

2) Find the scale factor? $\frac{5}{4}$ or $\frac{4}{5}$

Ex) $ACDF \sim VWYZ$



$\frac{x}{10} = \frac{9}{6}$ $\frac{3x-1}{12} = \frac{10}{15}$

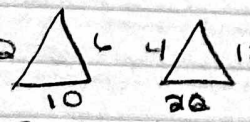
$\frac{6x}{6} = \frac{90}{6}$

$x = 15$

Perimeters of Polygons:

Th^m: If 2 polygons are similar then the ratio of their perimeter = the scale factor

Ex)



P = 18 P = 36 $\frac{1}{2}$

Ratio of P = 18 : 36

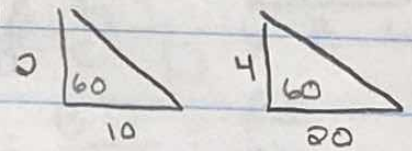
1 : 2

7.3/7.4 - Triangle Similarity

$\triangle$ are $\sim$ by:

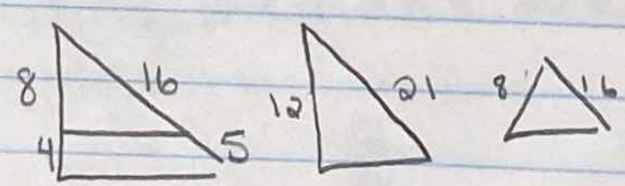
- A-A- (angle-angle) $\sim$: If 2 $\angle$'s of one $\triangle$ are $\cong$ to 2 $\angle$'s in a 2nd then $\sim$
- S-A-S (side-angle-side) $\sim$: 2 sets of corresponding sides are proportional and the included $\angle$ $\cong$.

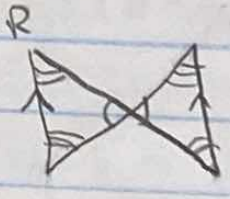
Ex)



- S-S-S (side-side-side) $\sim$: All sides have same ratio.

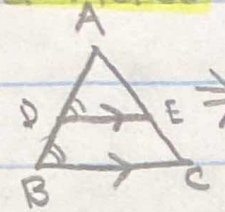
Ex)





7.5 - Parallel Lines + Proportions

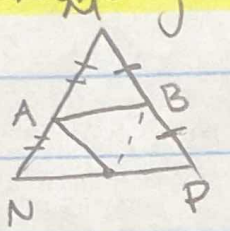
- Th^{m}: If a line is parallel to one side of a △ and intersects the other 2 sides, then it divides those sides proportionally.



$\Rightarrow \frac{AD}{DB} = \frac{AE}{EC}$ $\frac{AD}{AE} = \frac{AB}{AC}$

$\frac{AD}{AB} = \frac{AE}{AC}$

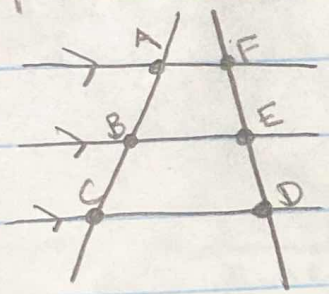
- Midsegment of △:



AB is a midsegment

1) AB // NP
2) $AB = \frac{1}{2}(NP)$

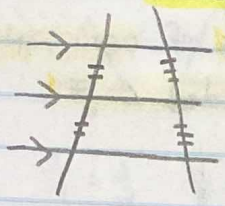
- Th^{m}: If 3 or more // lines intersect 2 transversals then the sides are divided proportionally



$\frac{AB}{BC} = \frac{FE}{ED} = \frac{AC}{FD} = \frac{AB}{FE}$

7.5

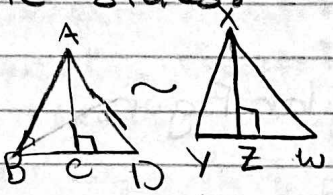
°Th^{m}: If 3 or more // lines cut off ≅ segments in one transversal then they cut off ≅ segments in the other transversal



Sec. 7.6:

• Thm: If 2 Δ's are similar then their corresponding altitudes are proportional to the sides.

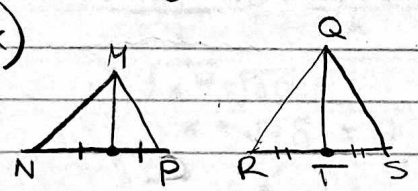
Ex)



$\frac{AC}{XZ} = \frac{BD}{YW} = \frac{AB}{XY}$

• Thm: If 2 Δ's are similar then their corresponding medians are proportional to the sides

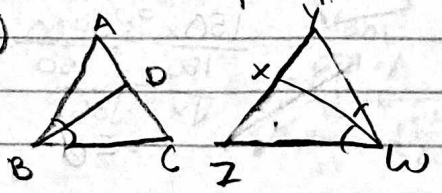
Ex)



$\frac{ML}{QT} = \frac{MP}{QS}$

• Thm: If 2 Δ are ~ then their corresponding ∠ bisectors are proportional to the side

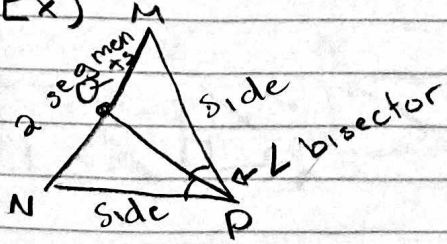
Ex)



$\frac{BD}{WX} = \frac{BC}{WZ}$

★ • Thm: An ∠ bisector in one Δ seperates the opposite side into 2 segments that are proportional to the 2 sides.

Ex)



$\frac{NQ}{MQ} = \frac{NP}{MP}$