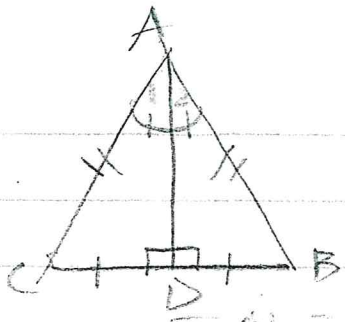
C-28 Vertex Angle Bisector Th

In an isosceles △, the bisector of the vertex angle is also an altitude, a median, and a perpendicular bisector of the base.



$\overline{CD} \cong \overline{BD}$

$\angle 1 \cong \angle 2$

$\overline{CB} \perp \overline{AD}$

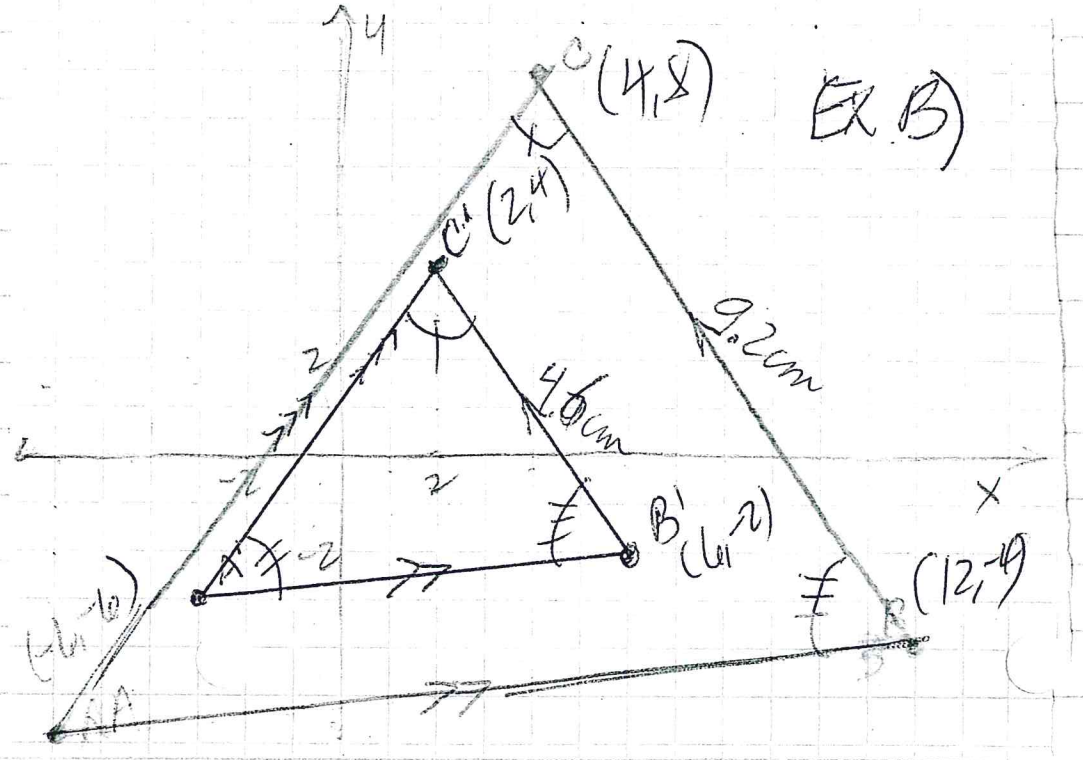
Chapter 3 Test here

Dilation

a non-rigid transformation that enlarges or reduces a geometric figure by a scale factor relative to a point.

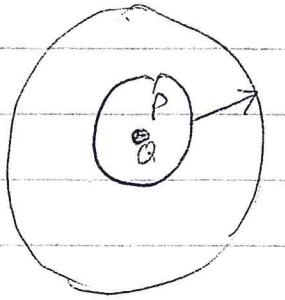
On the grid: $(x,y) \rightarrow (rx, ry)$

$r=1$ congruent $r<1$ reduce $r>1$ enlarge



Ex B)

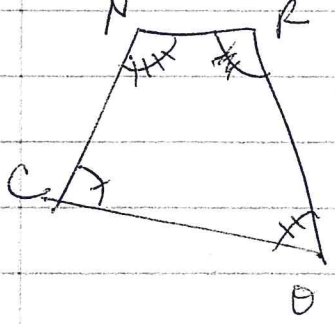
C p372 – Dilation of Circles + C-58
All circles are dilations of each other.
(are similar)



p 374 – similar polygons
polygons with
Congruent corresponding angles
and proportional corresponding sides.

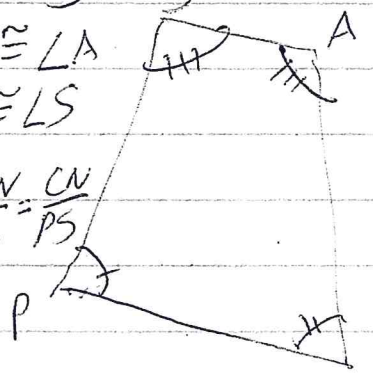
~~(see sketchpad~~
~~dilation~~
~~previous page)~~

CORN ~ PEAS



$\angle C \cong \angle P$ $\angle R \cong \angle A$
$\angle O \cong \angle E$ $\angle N \cong \angle S$

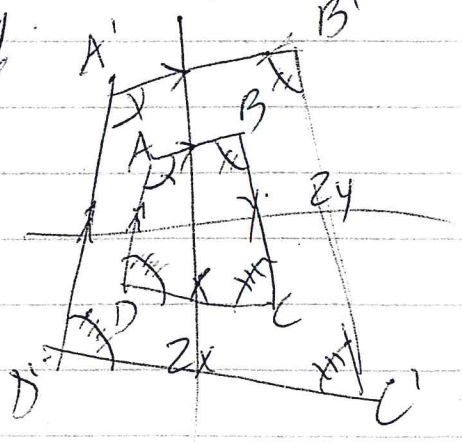
$\frac{CO}{PE} = \frac{OR}{EA} = \frac{RN}{AS} = \frac{CN}{PS}$



p377

C-57 Dilation of a polygon Conj.
p375 If one polygon is the dilated image of another, then the polygons are Similar.

Ex) $(x,y) \rightarrow (2x,2y)$
dilate w/ scale factor of 2.



Similar figures

Two geometric figures are similar if you can map one exactly onto another by a sequence of rigid transformations and/or dilations.

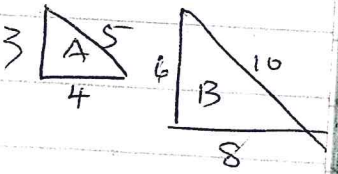
ratio – an expression that compares 2 quantities by division $\frac{a}{b}$ a to b a:b

proportion – a statement of equality between two ratios Ex) $\frac{6}{18} = \frac{1}{3}$

Triangle Similarity Shortcuts

C-59 SSS Similarity Shortcut

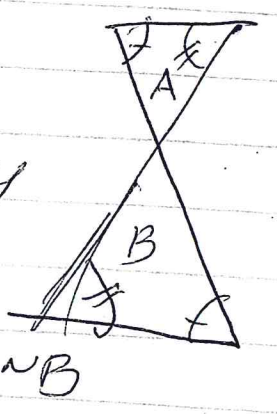
If the corresponding sides of one triangle are proportional to the corresponding sides of another Δ, then the Δ's are Similar



B ~ A

C-60 AA Similarity Shortcut

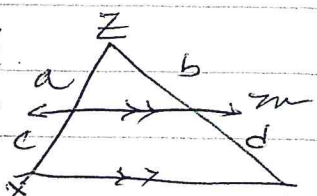
If two angles of one Δ are congruent to two corresponding angles of another Δ, then the Δ's are Similar



A ~ B

C60 p398 **Parallel Proportionality Conj.**

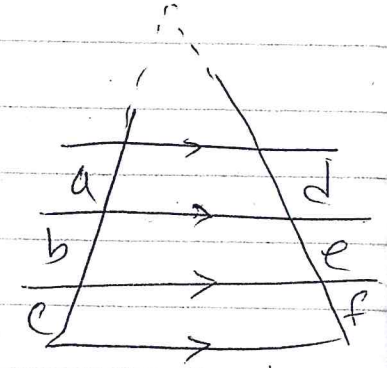
If a line parallel to one side of a triangle passes through the other 2 sides, then it divides the other two sides proportionally. Conversely, if a line cuts 2 sides of a triangle proportionally then it is parallel to the third side.



$\frac{a}{c} = \frac{b}{d}$ $m \parallel \overline{XY}$

C-65 p399 ~~p63~~ **Extended Parallel Proportionality**

If 2 or more lines pass thru 2 sides of a $\triangle$ and are parallel to the third side, then they divide the 2 sides proportionally.



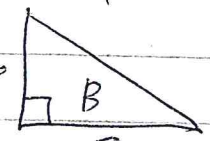
$\frac{a}{b} = \frac{d}{e}$ $\frac{a}{c} = \frac{d}{f}$, etc.

Chap 7

C-61 SAS Similarity Shortcut

~~If 2 L's of one Δ are~~

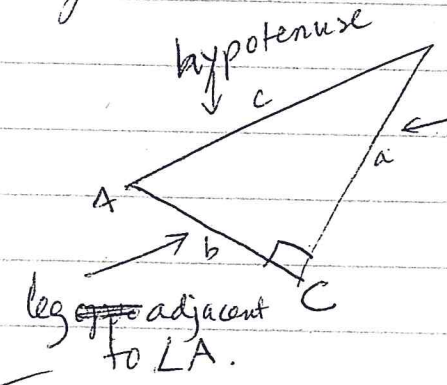
If two corresponding sides of a triangle are proportional to 2 corresponding sides of another triangle and the angle between them is congruent, then the Δ's are similar.



A ~ B

ends here

Trigonometric Ratios



SOH-CAH-TOA

For ~~angle~~ any acute ∠A in a right Δ:

$$\text{sine of } \angle A = \frac{\text{length of opposite leg}}{\text{length of hypotenuse}} \qquad \sin A = \frac{a}{c}$$

$$\text{Cosine of } \angle A = \frac{\text{length of adjacent leg}}{\text{length of hypotenuse}} \qquad \cos A = \frac{b}{c}$$

$$\text{tangent of } \angle A = \frac{\text{length of opposite leg}}{\text{length of adjacent leg}} \qquad \tan A = \frac{a}{b}$$