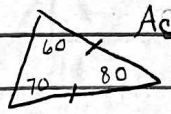
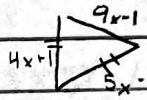
Sec. 4.1: Classifying Triangles

- Acute Δ: Δ w/ 3 acute ∠'s
- Obtuse Δ: Δ w/ 1 obtuse ∠
- RT Δ: Δ w/ 1 RT ∠
- Equilateral Δ: All sides congruent
- Equiangular: All ∠'s congruent
- Isosceles: At least 2 ≅ sides
- Scalene: No congruent sides

Ex) 

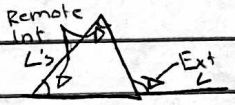
Acute Triangle
Acute isosclese Δ

Ex) 

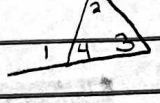
Find all missing sides

Section 4.2 ~ Angles of Δ

- Δ Sum Theorem: The ∠'s in a Δ add up to 180°
- Exterior ∠ of a Δ:



Th: An exterior ∠ of a Δ = the sum of the remote interior



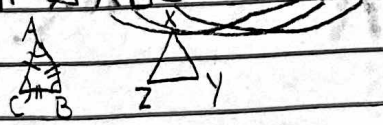
$\Rightarrow \angle 1 = \angle 2 + \angle 3$

Polygon: Closed figure

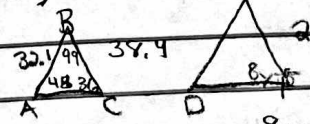
Sec 4.3 ~ ≅ Polygons:

- Congruent Figures: Same size & same shape
- Congruent Polygon: If 2 polygons are congruent, then all their corresponding parts are ≅.

Ex) If $\Delta ABC \cong \Delta XYZ$



Ex) $\Delta ABC \cong \Delta DEF$



Find x + y

$8y - 5 = 36$
$+5 \quad +5$
$\frac{8y}{8} = \frac{41}{8}$
$y = \frac{41}{8}$

$2y + x = 38.4$
$2\left(\frac{41}{8}\right) + x = 38.4$

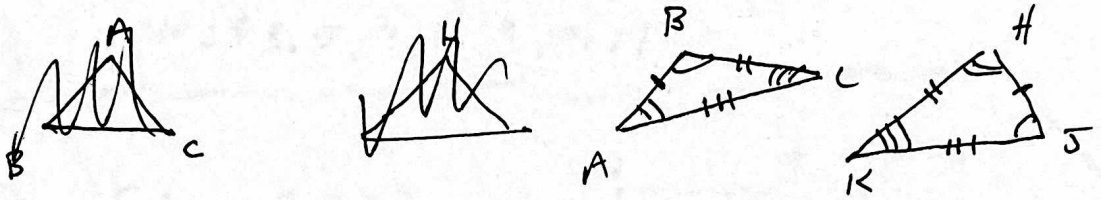
Formal Sec 4.2

Th^{m}: If all 6 corresponding parts of 2 $\triangle$s are $\cong$, then 2 $\triangle$s are $\cong$

Congruent: same shape / same size

Th.^{13}: If polygons are $\cong$, then all corresponding parts are $\cong$ — CPCTC

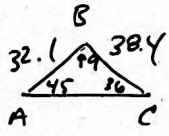
Congruent polygons: all corresponding parts are $\cong$ ($\angle$'s & sides)

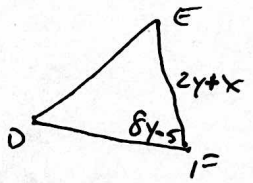


$\triangle ABC \cong \triangle HJK$

If $\triangle XYZ \cong \triangle MNP$ – which sides are $\cong$.

Ex] $\triangle ABC \cong \triangle DEF$

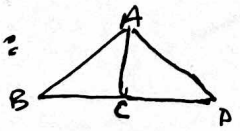




Find x & y.

Th^{m}: If 2 $\angle$'s of 1 $\triangle$ are $\cong$ to 2 $\angle$'s of another then the 3RD $\angle$'s are $\cong$.

* Reflexive in $\triangle$'s:



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Formal Notes

c. Hypotenuse Leg 4.5

Theorem - Put on your Thm Page:

- If ASA (angle-side-angle) [Included], then Δ's are ≅

  2 angles ≅ and
  Included side ≅

  Ex)  } Δ's are ≅ by ASA

  Included side (between the angles)

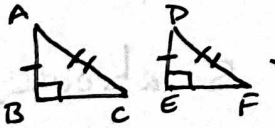
  Ex)  - In this problem we are given the tick marks. We also have vertical angles so we can get ASA

If AAS (angle-angle-side), then Δ's are ≅

2 angles ≅ and one side in consecutive order.

Ex)  } Δ's are ≅ by AAS

- Δ's are ≅ by HL (hypotenuse Leg)
  - This means you have to have RT Δ's (so we have hypotenuse's) and one set of Legs ≅, and the Hypotuse ≅. (3 things - always 3 things)

Ex) 

→ This IS NOT SSS or SAS or ASA or AAS

But this is HL because:

1) ΔABC is a RT Δ and ΔDEF is a RT Δ
2) Hypotenuse $\overline{AC}$ ≅ Hypotenuse $\overline{DF}$
3) Leg $\overline{AB}$ ≅ Leg $\overline{DE}$

Therefore ΔABC ≅ ΔDEF by HL

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OVER

Summary:

1) YouTube search Triangle congruence by Hypotenuse Leg and watch video

2) IN Proof, to Prove Δ's $\cong$, you must Show/Have [3] Pieces in any of the methods.

3) There are 5 ways for Δ's to be $\cong$:

   a) SSS - show all 3

   b) SAS - show all 3

   c) ASA - show all 3

   d) AAS - show all 3

   e) HL - show all 3

      1) RT Δ's
      2) Hypotenuse $\cong$
      3) Leg $\cong$

4) There is <u>NO</u> such thing as:

   - A-A-A

   OR

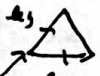
   - A-S-S

IN Δ Congruence. Only the 5 above.

- Quiz Next Class - 10/25

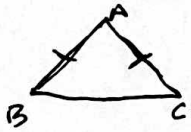
Formal sec 4.6

Isosceles △: △ with at least 2 ≅ sides

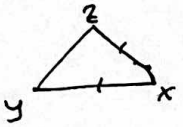
Ex)  or  

Vertex angle. leg leg Base angles

Thm: If 2 sides of |1| △ are ≅, then ∠'s opposite are ≅.



Since $\overline{AB} \cong \overline{AC}$
Then: $\angle B \cong \angle C$

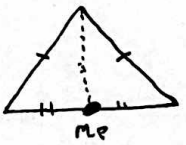


C:
R:

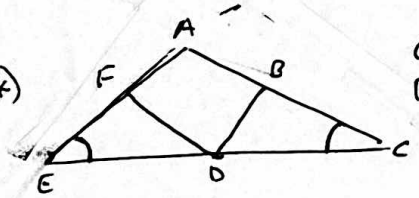
Thm: If 2 ∠'s in |1| △ are ≅, then the sides opposite are ≅

C: $CB \cong AB$

Why are these Thms True:



Find mP
Draw line.
△'s ≅ by SSS
CPCTC

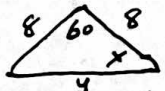
Ex) 

C:
R:

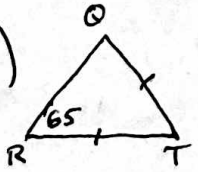
Equilateral △: △ with 3 ≅ sides.

- what do you know about ∠'s ??

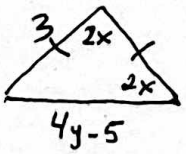
Equilateral = Equiangular.

Ex) 

Find x / Explain
Find y

Ex) 

Find measure of Vertex ∠
Explain.

Ex) 

Find x, y

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Quadratic

Students work in groups