Note Title 10/8/2015

Proofs

(1) Which pair of △s do you need to prove ≅?
- Draw them separately
- Mark all diagrams

(2) Decide which postulate (ie SSS, SAS, or ASA) can be used.

(3) After you've proven ≅ △s, then use CPCTC.

8. $\triangle ABC \cong \triangle DEF$ Given

CPCTC

$\angle A = \angle D$

$90^2 = \sqrt{z}^2$

$8100 = z$

$\angle B = \angle E$

$50 = 12x + 30$

$-30 \quad -30$

$\frac{20}{4} = \frac{12x}{4}$

$5 = 3x$

$5/3 = x$

$\angle C = \angle F$

$40 = \frac{y}{2} - 10$

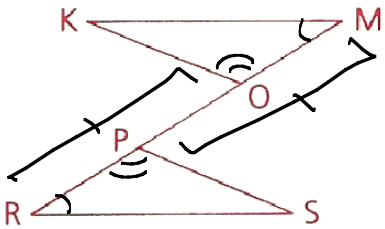
$+10 \quad +10$

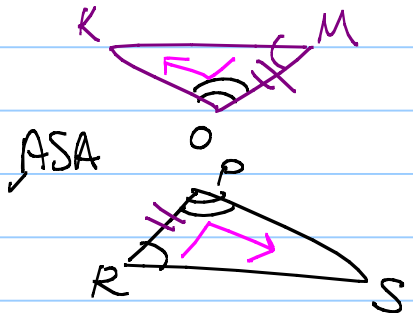
$(2)\,50 = \frac{1}{2}y\,(2)$

$100 = y$

10 Given: $\angle M \cong \angle R$,
$\angle RPS \cong \angle MOK$,
$\overline{MP} \cong \overline{RO}$

Conclusion: $\overline{KM} \cong \overline{RS}$



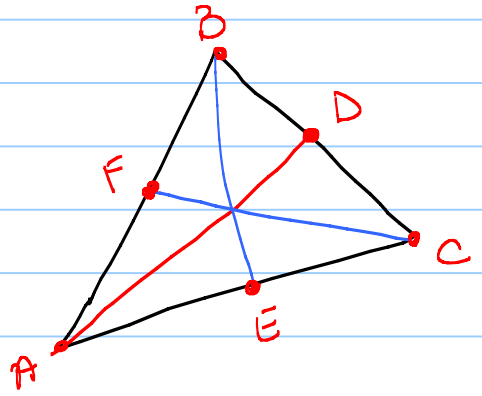


S		R
A 1.	$\angle M \cong \angle R$	1. GIVEN
2.	$\overline{MP} \cong \overline{RO}$	2. GIVEN
3.	$\overline{OP} \cong \overline{PO}$	3. REFLEXIVE
S 4.	$\overline{MO} \cong \overline{RP}$	4. SUBTRACT (2,3)
A 5.	$\angle MOK \cong \angle RPS$	5. GIVEN
6.	$\triangle MOK \cong \triangle RPS$	6. ASA (1 4 5)
7.	$\overline{KM} \cong \overline{SR}$	7. CPCTC (6)

3.4 Beyond CPCTC

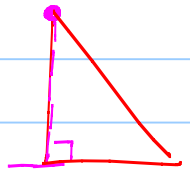
Definition A ***median*** of a triangle is a line segment drawn from any vertex of the triangle to the midpoint of the opposite side. (A median divides into two congruent segments, or bisects the side to which it is drawn.)

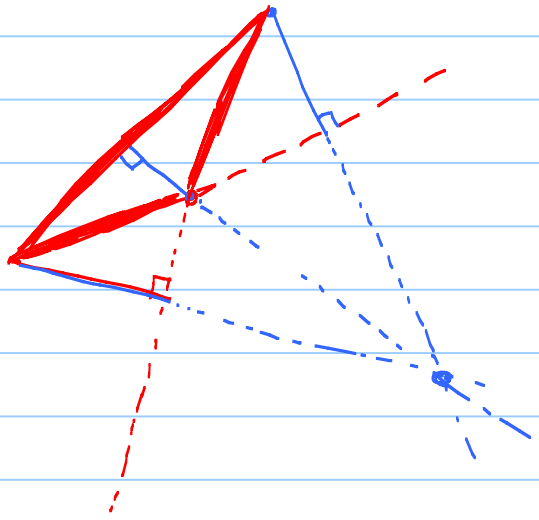
middle
mdpt

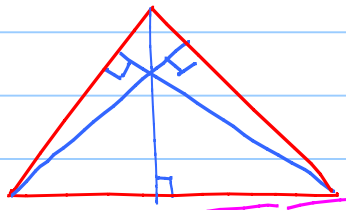


(med ⇔ mdpt)
(med ⇔ ≅ segs) ✓
(med ⇔ bis)

Definition An ***altitude*** of a triangle is a line segment drawn from any vertex of the triangle to the opposite side, extended if necessary, and perpendicular to that side. (An altitude of a triangle forms right [90°] angles with one of the sides.)



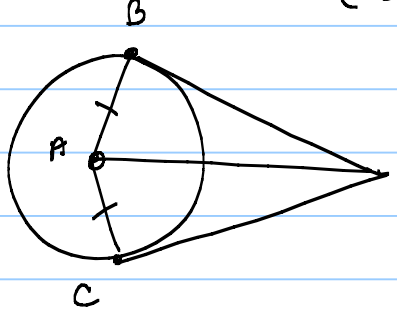




(alt ⇔ rt∠)
(alt ⇔ ⊥)

Postulate ***Two points determine a line (or ray or segment).***

(2 pts ⇔ seg) (Aux)



⊙A
Draw $\overline{AB}$ & $\overline{AC}$
$\overline{AB} \cong \overline{AC}$

Aux
⊙ ⇒ ≅ rad

M alt

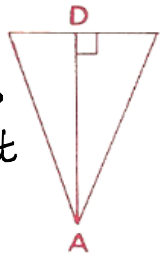
1 For the following figures, identify $\overline{AD}$ as a median, an altitude, neither, or both according to what can be proved.

none

a

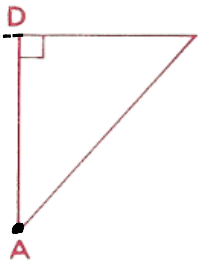
2≅segs ⇒ M

b



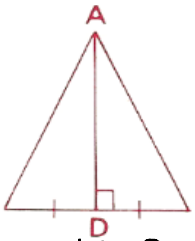
⊥ ⇒ alt

c



rt∠ ⇒ alt

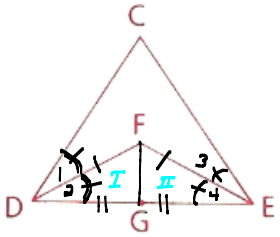
d

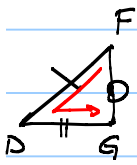


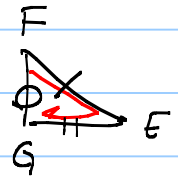
2≅segs ⇒ M
rt∠ ⇒ alt } both

11 Given: $\overrightarrow{DF}$ bisects ∠CDE.
$\overrightarrow{EF}$ bisects ∠CED.
G is the midpt. of $\overline{DE}$.
$\overline{DF} \cong \overline{EF}$

Prove: ∠CDE ≅ ∠CED







S		R
S	1. $\overline{FD} \cong \overline{FE}$	1. Given
	2. G mdpt $\overline{DE}$	2. Given
S	3. $\overline{DG} \cong \overline{EG}$	3. mdpt ⇒ 2≅segs
	4. Draw $\overline{FG}$	4 Aux (2 pts ⇒ seg)
S	5. $\overline{FG} \cong \overline{FG}$	5. Ref
	6. △FDG ≅ △FEG	6. SSS (1,3,5)
	7. ∠2 ≅ ∠4	7. CPCTC (6)
	8. $\overrightarrow{DF}$ bis ∠CDE $\overrightarrow{EF}$ bis ∠CED	8. Given
	9. ∠CDE ≅ ∠CED	9. Mult (7&8)

HINTS (2-9) homework

2. SAS

3. SAS

4. ASA

5 SSS

6 $\overline{SW} \cong \overline{VW}$ (med $\Rightarrow \cong$ segs)

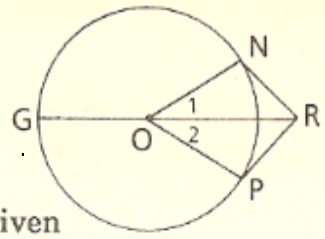
7 SSS

8 ASA

9 Given: $\odot O$

$\angle NOG \cong \angle POG$

Concl: $\overrightarrow{RO}$ bis $\angle NRP$.



1	$\odot O$	1 Given
2	$\overline{ON} \cong \overline{OP}$	2
3	$\angle NOG \cong \angle POG$	3 Given
4	$\angle 1$ is supp to $\angle NOG$.	4
5	$\angle 2$ is supp to $\angle POG$.	5
6	$\angle 1 \cong \angle 2$	6
7	$\overline{OR} \cong \overline{OR}$	7
8	$\triangle ONR \cong \triangle OPR$	8
9	$\angle NRO \cong \angle PRO$	9
10	$\overrightarrow{RO}$ bis $\angle NRP$.	10