Proofs

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

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

③ <u>After</u> you've proven ≅ △s, then use CP<u>C</u>TC.

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

$\angle A = \angle D$ $\angle B = \angle E$ $\angle C = \angle F$

$90^2 = \sqrt{z}^2$ $50 = 12x + 30$ $40 = \frac{y}{2} - 10$
                                 $\underset{-30}{} \quad \underset{-30}{}$ $\underset{+10}{} \quad \underset{+10}{\phantom{\frac{y}{2}}}$

$\boxed{8100 = z}$ $\frac{20}{4} = \frac{12x}{4}$ $(2)\,50 = \frac{1}{2}y\,(2)$

                                 $5 = 3x$ $\boxed{100 = y}$

                                 $\boxed{5/3 = x}$

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

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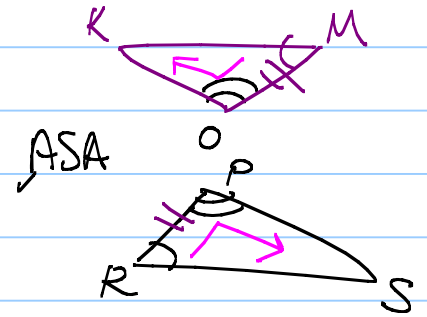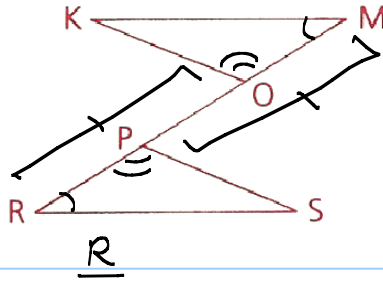
ASA

$\underline{S}$ | $\underline{R}$

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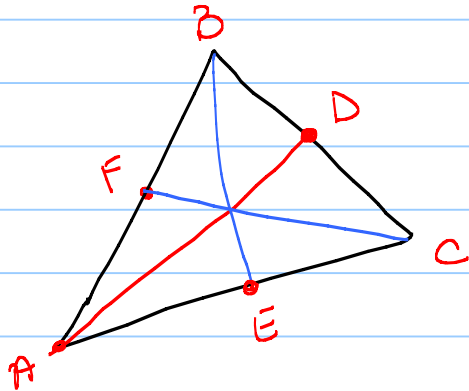
Definition   A ***median*** of a triangle is a line segment drawn from any vertex of the triangle to the midpoint of the opposite side. (A median divides into two congruent segments, or bisects the side to which it is drawn.)
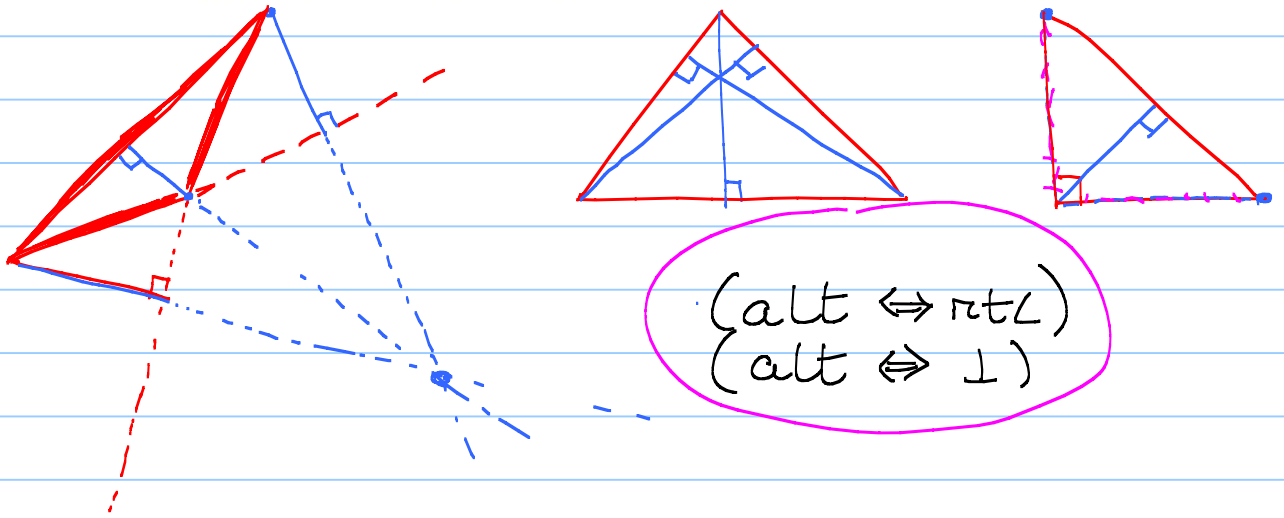
middle
mdpt

(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 ⟺ ⊥)

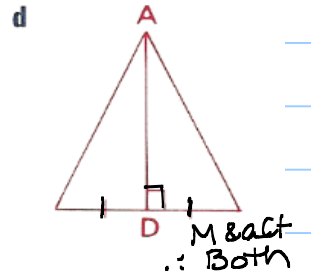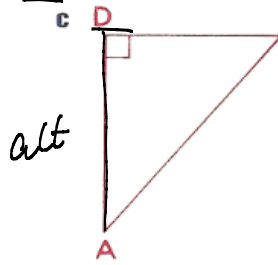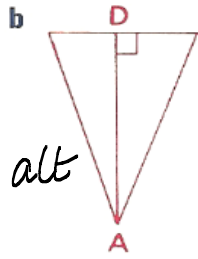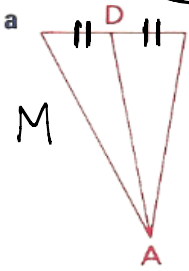**Postulate**   *Two points determine a line (or ray or segment).*
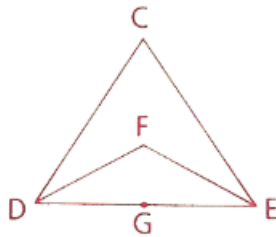
(2 pts ⟺ seg)   (Aux)

none

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

M *alt*

a *M*

b *alt*

c *alt*

d *M & alt* ∴ Both

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

Prove: $\angle CDE \cong \angle CED$

HINTS   (2-9) homework

2. SAS

3. SAS

4. ASA

5 SSS

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

7 SSS

8 ASA

9 Given: ⊙O

$\angle NOG \cong \angle POG$

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

1 ⊙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	