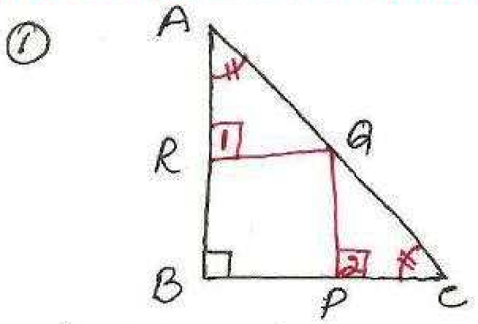
ex 8.4, exemplar IX

(1)



to prove $AQ = CQ$

proof In $\triangle ABC$, $AB = CB$

$\Rightarrow \angle C = \angle A$ (isos. $\triangle$ prop.)

$RQ \parallel BP$ [opp sides of sq.]

$\Rightarrow \angle 1 = \angle B = 90°$ (corres. $\angle$s)

Similarly $\angle 2 = \angle B = 90°$

In $\triangle ARQ$ and $\triangle CPQ$

$\angle A = \angle C$ (proved)

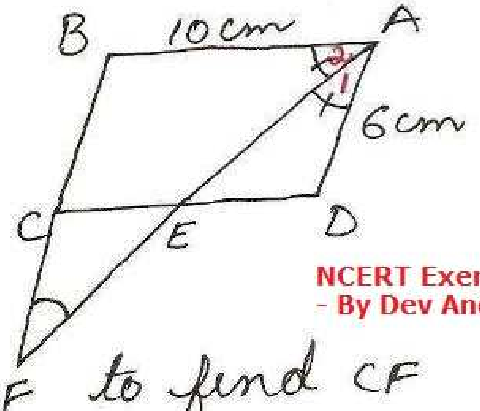
$\angle 1 = \angle 2 = 90°$

$RQ = PQ$ (sides of square)

$\therefore \triangle ARQ \cong \triangle CPQ$ by AAS cor.

$AQ = CQ$ (cpct)

(2)



NCERT Exemplar Solutions
- By Dev Anoop (Bathinda)

to find CF

Sol $BC \parallel AD$ (opp. sides of a ||gm)

$\Rightarrow FB \parallel DA$

$\angle F = \angle 1$ (alternate inter. $\angle$s)

But $\angle 1 = \angle 2$ ($\because$ AE bisects $\angle A$)

$\therefore \angle F = \angle 2$

In $\triangle BAF$, $\angle F = \angle 2$

$\Rightarrow AB = BF$ (converse of isos $\triangle$ prop)

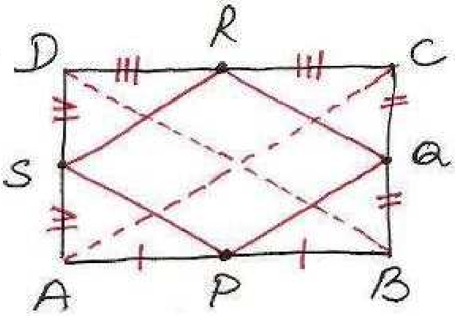
$10 = BC + CF$

$10 = 6 + CF$ [$BC = AD = 6cm$ opp sides of ||gm]

$\Rightarrow CF = 10 - 6$

$= 4cm$

(3)



to prove - $\square PQRS$ is a rhombus

proof PQ joins midpts of sides AB and BC resp.

$PQ \parallel AC$ ... (i) [Midpt theorem]

$PQ = \frac{1}{2} AC$ ... (ii)

Similarly $SR \parallel AC$ ... (iii)

$SR = \frac{1}{2} AC$ ... (iv)

From (i), (iii) | From (ii) (iv)

$PQ \parallel SR$ | $PQ = SR$

$\therefore \square PQRS$ is a ||gm

In $\triangle DAB$ SP joins midpts of sides DA and AB resp.

$SP = \frac{1}{2} BD$ ... (v) (Midpt. theorem)

$AC = BD$ ... (vi) (given)

from (ii), (v), (vi)

$SP = PQ$

$\therefore$ ||gm PQRS is a rhombus