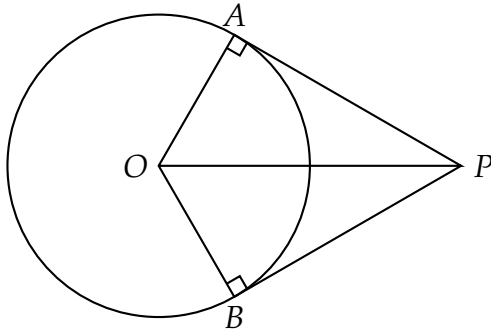


Geometry for Elementary Teachers – Quiz 10 (Key)

Provide an elementary proof of each of the following.

1.



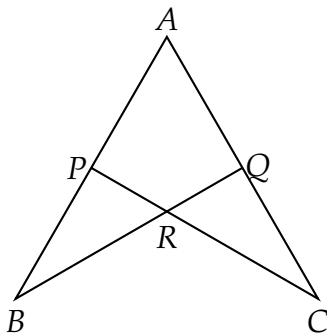
Given: Points A, B are on a circle with center O , $\overline{AP} \perp \overline{AO}$, $\overline{BP} \perp \overline{BO}$

To Prove: $AP = BP$.

Proof:

$AO = BO$ (radius)
 $\angle A = \angle B$ (both are right angles)
 $OP = OP$ (shared side)
 $\triangle AOP \cong \triangle BOP$ (RHL)
 $\therefore AP = BP$ (CPCT) or (corr. sides of $\cong \triangle s$.)

2.



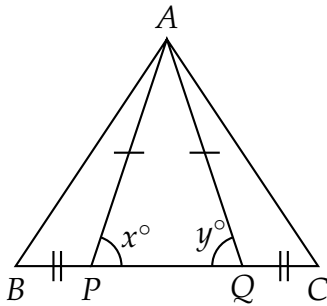
Given: $AB = AC$, $AP = AQ$.

To Prove: $BQ = CP$.

Proof:

$AB = AC$ (Given)
 $\angle A = \angle A$ (Shared Angle)
 $AQ = AP$ (Given)
 $\triangle ABQ \cong \triangle ACP$ (SAS)
 $\therefore BQ = CP$ (CPCT) or (corr. sides of $\cong \triangle s$.)

3.



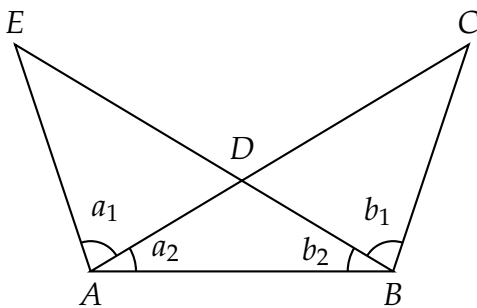
Given: $BP = CQ, AP = AQ, x = y.$

To Prove: $AB = AC.$

Proof:

$x = y$ (Given)
 $\angle BPA = 180 - x$ (\angle s on a line.)
 $\angle CQA = 180 - y$ (\angle s on a line.)
 $\angle BPA = \angle CQA$
 $BP = CQ$ (Given)
 $AP = AQ$ (Given)
 $\triangle ABP \cong \triangle ACQ$ (SAS)
 $\therefore AB = AC$ (CPCT) or (corr. sides of $\cong \triangle$ s.)

4.



Given: $a_1 = b_1, a_2 = b_2.$

To Prove: $AC = BE.$

Proof:

$a_1 = b_1$ (Given)
 $a_2 = b_2$ (Given)
 $a_1 + a_2 = b_1 + b_2$
 $AB = BA$ (Shared Side)
 $\triangle ABC \cong \triangle BAE$ (ASA)
 $\therefore AC = BE$ (CPCT) or (corr. sides of $\cong \triangle$ s.)