

Problem 8.5.2

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Abstract—This a document explaining a question having concepts as follow:

- 1:- Congruency of Triangles.
- 2:- Properties of Circles.

Problem 1. GIVEN :

- 1:-A Congruent circles with Radius R and Centre C.
- 2:-Each circle has a chord which extend angle[LETS SAY 60 DEGREES] with centre of respective circles.

TO PROVE:-

If Angles subtended by chords of Congruent circleS with corresponding centre are equal, then,Chords are equal.

PROOF 01:-

Lets take Centre of both circles be C.

Circle 1:-
Chord be AB.
Angle ACB =60.

Circle 2:-
Chord be DE.
Angle DCE =60.

NOW,
In Triangles ACB and DCE.

We use CONGRUENCY OF TRIANGLE to prove it.

$$\text{Angle ACB} = \text{Angle DCE};$$

$$\text{AC} = \text{DC};$$

$$\text{BC} = \text{EC};$$

SO, By SAS [SIDE-ANGLE-SIDE PROPERTY]

Since both triangle are CONGRUENT.

THEREFORE,

$$\text{AB} = \text{DE} \text{ [i.e. both Chords are equal]}$$

HENCE PROVED.

PROOF 02:-

Lets take Centre of both circles be C.

Circle 1:-
Chord be AB.
Angle ACB =60.

Circle 2:-
Chord be DE.
Angle DCE =60.

NOW,

USING CIRCLE THEOREMS:
It states:-

"TWO CHORDS SUBTENDING SAME ANGLE WITH CENTRE OF CIRCLE,ARE EQUAL"

THEREFORE,

$$\text{AB} = \text{DE} \text{ [i.e. both Chords are equal]}$$

HENCE PROVED.