

Chapter 10 CIRCLES

Pages 443-445 (Section 10.1)

- 1 Given: $\odot O$

chord $\overline{AB}$

Prove: $\triangle AOB$ is isosceles.

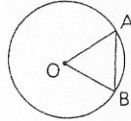
$\angle A \cong \angle B$

- 1 $\odot O$, chord $\overline{AB}$

2 $\overline{OA} \cong \overline{OB}$

3 $\triangle AOB$ is isos.

4 $\angle A \cong \angle B$



- 1 Given

2 Radii of a $\odot$ are $\cong$.

3 If 2 sides of a $\triangle$ are $\cong$, it is isosceles.

4 If $\triangle$ then $\angle$

- 2 Given: $\overline{PR} \perp \overline{ST}$ in $\odot Q$

Prove: $\angle S \cong \angle T$

1 $\overline{PR} \perp \overline{ST}$ in $\odot Q$

2 $\angle 1$ is a rt $\angle$.

3 $\angle 2$ is a rt $\angle$.

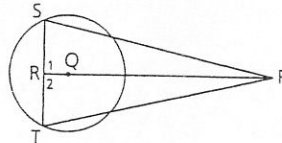
4 $\angle 1 \cong \angle 2$

5 $\overline{RS} \cong \overline{RT}$

6 $\overline{RP} \cong \overline{RP}$

7 $\triangle SRP \cong \triangle TRP$

8 $\angle S \cong \angle T$



- 1 Given

2 $\perp$ lines form rt $\angle$ s.

3 Same as 2

4 Rt $\angle$ s are $\cong$.

5 Radius $\perp$ to chord bis chord.

6 Reflexive prop

7 SAS

8 CPCTC

- 3 Given: $\odot O$

$\overline{OM}$ is a median.

Concl: $\overline{OM}$ an alt of $\triangle BOA$

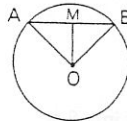
1 $\odot O$

2 $\overline{OM}$ is a median.

3 $\overline{OM}$ bis $\overline{AB}$.

4 $\overline{OM} \perp \overline{AB}$

5 $\overline{OM}$ an alt of $\triangle BOA$



- 1 Given

2 Given

3 The median bis one side ($\overline{OM}$ is part of a radius).

4 Radius that bis chord (not diameter) $\perp$ to chord.

5 An alt is a seg from the vertex of a $\triangle$ $\perp$ to the opp side.

- 4 Given: $\odot Q$, $\overline{QT} \perp \overline{RS}$

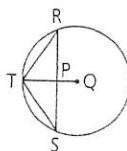
Prove: $\overline{TQ}$ bis $\angle RTS$.

1 $\odot Q$, $\overline{QT} \perp \overline{RS}$

2 $\overline{RP} \cong \overline{PS}$

3 $\angle RPT$ is a rt $\angle$.

4 $\angle SPT$ is a rt $\angle$.



- 1 Given

2 Radius $\perp$ to chord bis chord.

3 $\perp$ lines form rt $\angle$ s.

4 Same as 3

5 $\angle RPT \cong \angle SPT$

6 $\overline{TP} \cong \overline{TP}$

7 $\triangle TPR \cong \triangle TPS$

8 $\angle RTP \cong \angle STP$

9 $\overline{TQ}$ bis $\angle RTS$.

5 Rt $\angle$ s are $\cong$.

6 Reflexive prop

7 SAS

8 CPCTC

9 A ray that divides $\angle$ into two $\cong$ $\angle$ s bis the $\angle$.

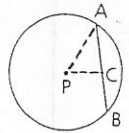
- 5 Draw radius $\overline{PA}$ and segment $\overline{PC} \perp$ to $\overline{AB}$. $\overline{PC}$ is $\perp$ to chord $\overline{AB}$ and bis $\overline{AB}$ —AC is 6. $\triangle ACP$ is rt $\triangle$ and $\overline{PA}$ is 10—Use Pythagorean Theorem.

$$6^2 + PC^2 = 10^2$$

$$36 + PC^2 = 100$$

$$PC^2 = 64$$

$$PC = \sqrt{64} = 8 \text{ mm}$$



- 6 $AB = 15$, $AD = 17$

$\overline{AB} \perp \overline{CD}$

$\triangle ABD$ is a rt $\triangle$.

Use Pythagorean Theorem.

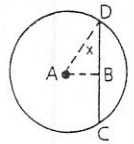
$$x^2 + 15^2 = 17^2$$

$$x^2 + 225 = 289$$

$$x^2 = 64$$

$$x = 8 \quad BD = 8$$

A radius $\perp$ to chord bis chord, so $CD = 16$.



- 7 Given: PQRS is an isos trapezoid with $\overline{SR} \parallel \overline{PQ}$.

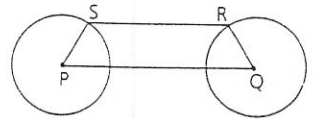
Concl: $\odot P \cong \odot Q$

1 PQRS isos trapezoid

2 $\overline{SR} \parallel \overline{PQ}$

3 $\overline{SP} \cong \overline{RQ}$

4 $\odot P \cong \odot Q$



1 Given

2 Given

3 Legs of isos trapezoid $\cong$.

4 If radii of $\odot$ s $\cong$, then $\odot$ s $\cong$.

- 8 $C = \pi(7.8) = 24.5 \text{ cm}$

$$A = \pi(3.9)^2 = 47.8 \text{ sq cm}$$

- 9 Given: $\odot A \cong \odot B$

$\overline{AD} \parallel \overline{BC}$

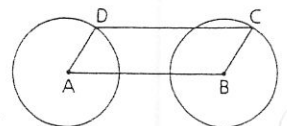
Prove: ABCD is a $\square$.

1 $\odot A \cong \odot B$

2 $\overline{DA} \cong \overline{CB}$

3 $\overline{AD} \parallel \overline{BC}$

4 ABCD is a $\square$.



1 Given

2 Radii of $\cong$ $\odot$ s are $\cong$.

3 Given

4 If 2 sides are both $\parallel$ and $\cong$, then quad is $\square$.