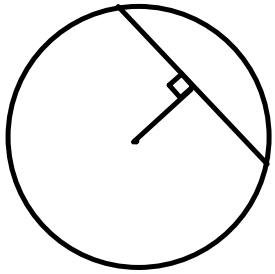
# Warm Up

1. Draw Circle O
2. Draw radius OR
3. Draw diameter DM
4. Draw chord PQ (that does not go through O)

5. Find the length of a chord that is 15 cm from the center of a circle with a radius of 17 cm.



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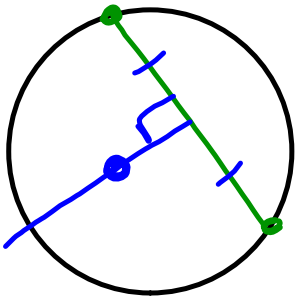
# Theorems

If a radius is perpendicular to a chord, then it bisects the chord.

If a radius bisects a chord, then it is perpendicular to the chord.

The perpendicular bisector of a chord passes through the center of the circle.



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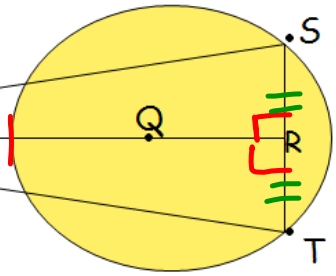
Given: Circle Q
$\overline{PR} \perp \overline{ST}$

Prove: $\overline{PS} \cong \overline{PT}$ : $\Delta$'s $\cong$ by CPCTC




| Statements | Reasons |
|---|---|
| 1) $\odot Q$ | 1) Given |
| 2) $\overline{PR} \perp \overline{ST}$ | 2) $\perp$ lines form $\cong$ 90° $\angle$'s |
| 3) $\angle QRS \cong \angle TRQ$ | 3) Reflexive Prop |
| 4) $\overline{PR} \cong \overline{PR}$ | 4) If a radius is $\perp$ to a chord it bis the chord |
| 5) $\overline{SR} \cong \overline{TR}$ | 5) SAS |
| 6) $\Delta SPR \cong \Delta TPR$ | 6) CPCTC |
| 7) $\overline{PS} \cong \overline{PT}$ | |

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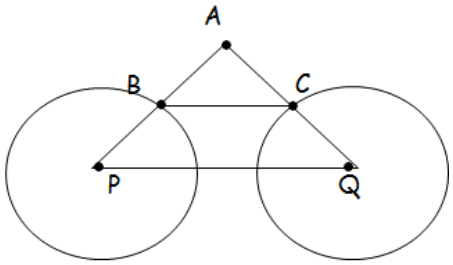
Given: △ ABC is isosceles ($\overline{AB} \cong \overline{AC}$)

(s) P and Q

$\overline{BC} \parallel \overline{PQ}$




Prove: (•) P ≅ (•) Q

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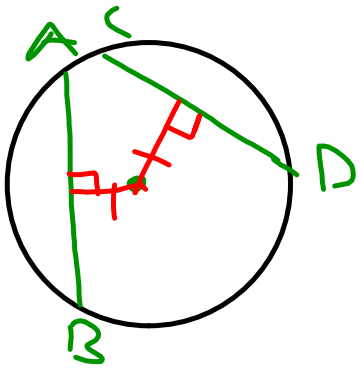
# Theorems

If two chords are equidistant from the center, they are congruent.

If two chords of a circle are congruent, then they are equidistant from the center.

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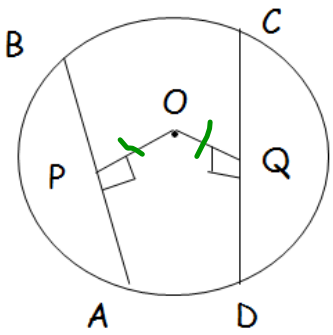
Given: $\odot O$, $\overline{AB} \cong \overline{CD}$

$OP = 12x - 5$, $OQ = 4x + 19$

Find: $OP$




$OP = 31$

$12(3) - 5$

$\overline{OP} \cong \overline{QO}$

$12x - 5 = 4x + 19$

$-4x \quad -4x$

$8x - 5 = 19$

$+5 \quad +5$

$8x = 24$

$x = 3$

$x = 3$

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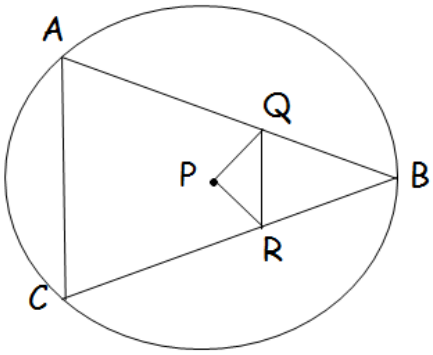
Given: $\triangle ABC$ is isosceles with base $\overline{AC}$.
$\odot P$, $\overline{PQ} \perp \overline{AB}$, $\overline{PR} \perp \overline{CB}$

Prove : $\triangle PQR$ is isosceles.

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## Homework

Proofs

- pg. 443 #1, 3, 5-8, 11, 12
- pg. 447 #2 11, 12

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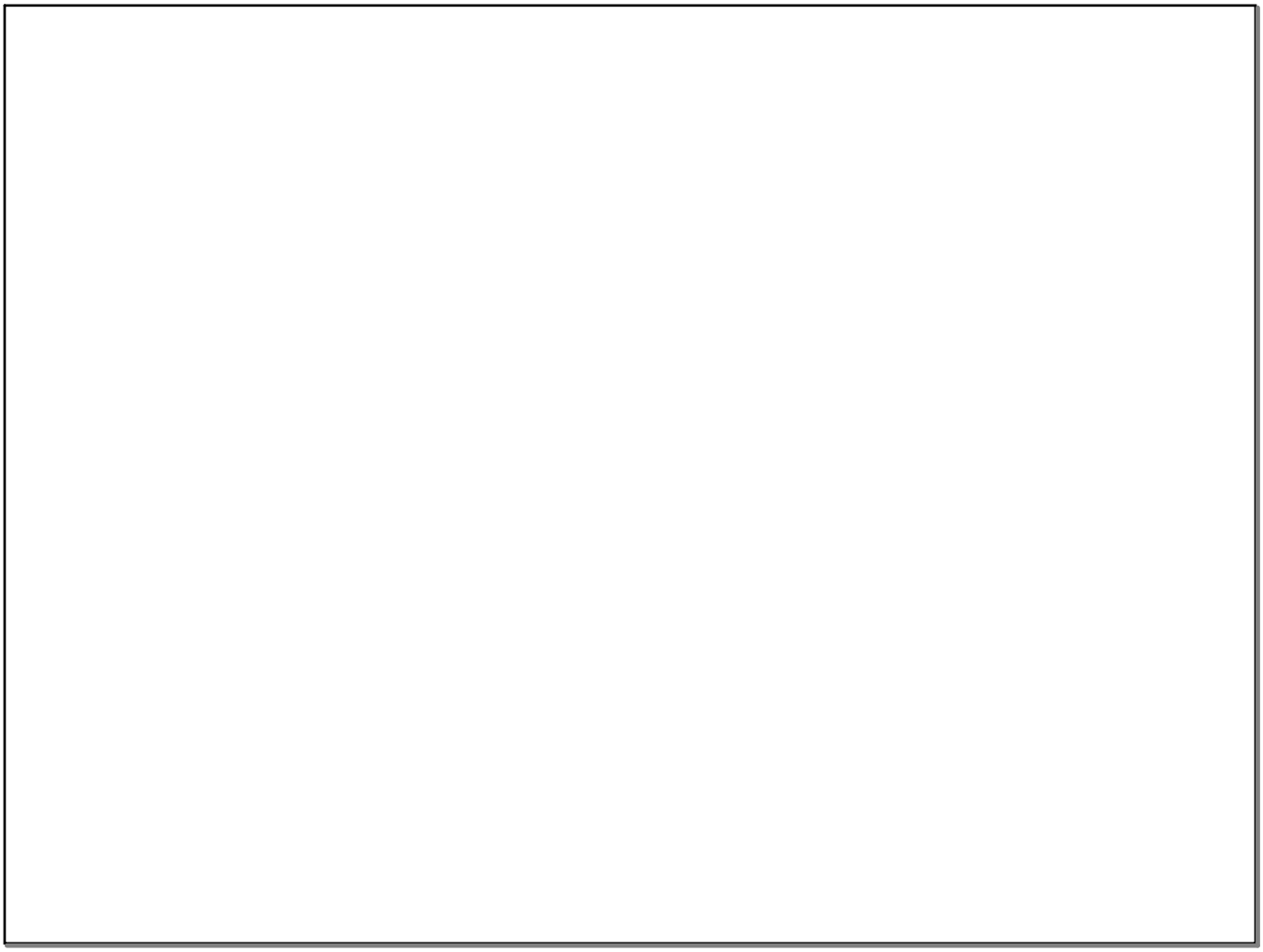

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