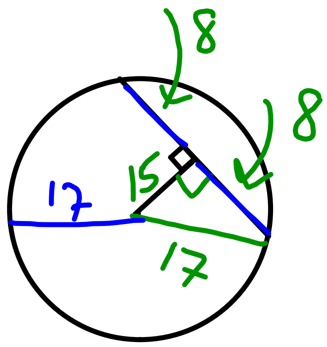
Warm Up

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.



16cm

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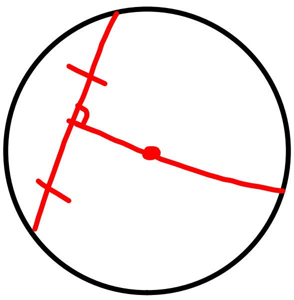
Theorems

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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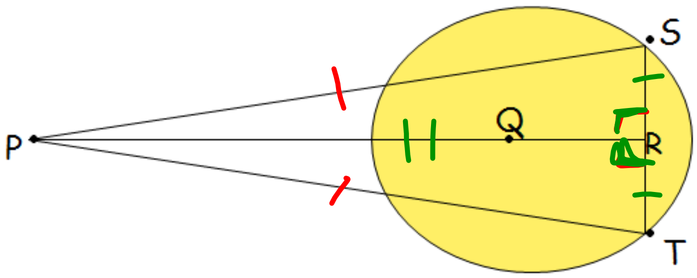
Given: Circle Q

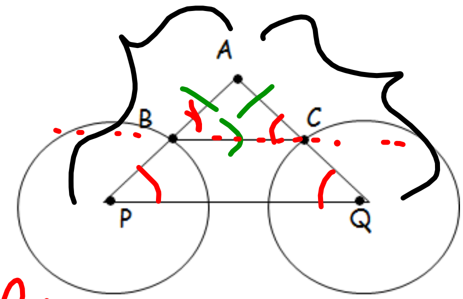
$\overline{PR} \perp \overline{ST}$

Prove: $\overline{PS} \cong \overline{PT}$



Statements	Reasons
1. Circle Q	1. Given
2. $\overline{PR} \perp \overline{ST}$	2. Given
3. $\angle QRT \cong \angle QRS$	3. $\perp$ lines form $\cong 90°\angle$'s.
4. $\overline{SR} \cong \overline{RT}$	4. If a radius is $\perp$ to a chord then it bis the chord
5. $\overline{PR} \cong \overline{PR}$	5. Reflexive Property
6. $\triangle PSR \cong \triangle PTR$	6. SAS
7. $\overline{PS} \cong \overline{PT}$	7. CPCTC

Given: △ ABC is isosceles ($\overline{AB} \cong \overline{AC}$)
ⓢ P and Q (all radii ≅)
$\overline{BC} \parallel \overline{PQ}$



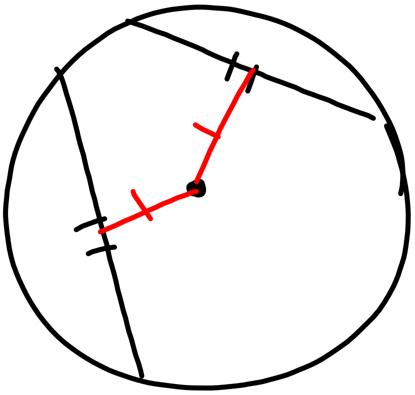
Prove: ⊙ P ≅ ⊙ Q ← Radii are ≅.

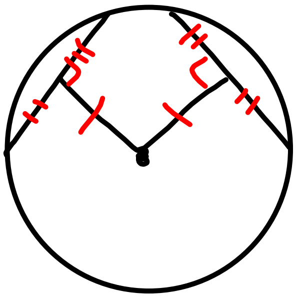
S	R
① $\overline{AB} \cong \overline{AC}$	① Given
② P + Q are ⓢ	② Given
③ $\overline{BC} \parallel \overline{PQ}$	③ Given
④ $\angle ABC \cong \angle ACB$	④ If △ then △
⑤ $\angle B \cong \angle P$	⑤ Corresponding ∠'s
⑥ $\angle C \cong \angle Q$	⑥ Same as 5
⑦ $\overline{AP} \cong \overline{AQ}$	⑦ △ then △
⑧ $\overline{BP} \cong \overline{CQ}$	⑧ Subtraction Prop.

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.

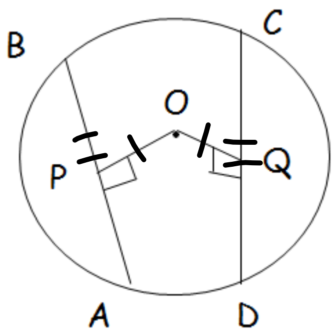




Given: $\odot O$, $\overline{AB} \cong \overline{CD}$

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

Find: $OP = 12(3) - 5 = \boxed{31}$



$$12x - \cancel{5} = 4x + 19$$
$$\quad\; + \cancel{5} \qquad\quad\; +5$$

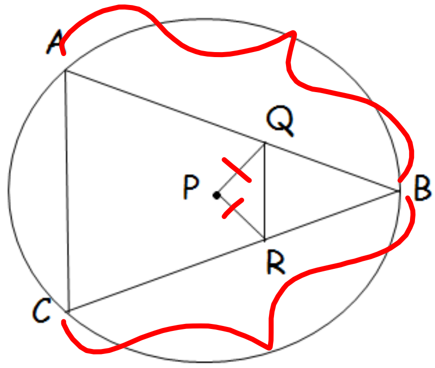
$$\frac{12x}{4} = \frac{\cancel{4}x}{\cancel{4}} + \frac{24}{4}$$

$$3x = x + 6$$
$$-x \quad\; -x$$
$$2x = 6$$

$$x = 3$$

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.



S	R
① $\triangle ABC$ is isos.	① G
② $\odot P$, $\overline{PQ} \perp \overline{AB}$, $\overline{PR} \perp \overline{CB}$	②
③ $\overline{AB} \cong \overline{AC}$	③ Def. of Isosc.
④ $\overline{QP} \cong \overline{PR}$	④ If 2 chords are $\cong$, they are equidistant from the center
⑤ $\triangle PQR$ is isosc.	⑤ Isosc. $\triangle$ has 2 $\cong$ sides

Homework

E E P M
P P 5, 6, 7, 8

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

M M

- pg. 447 #2-5, 11, 12

2, 3, 4, 5 M H
M P P P

- Proofs
- Easy
- Medium
- Hard

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