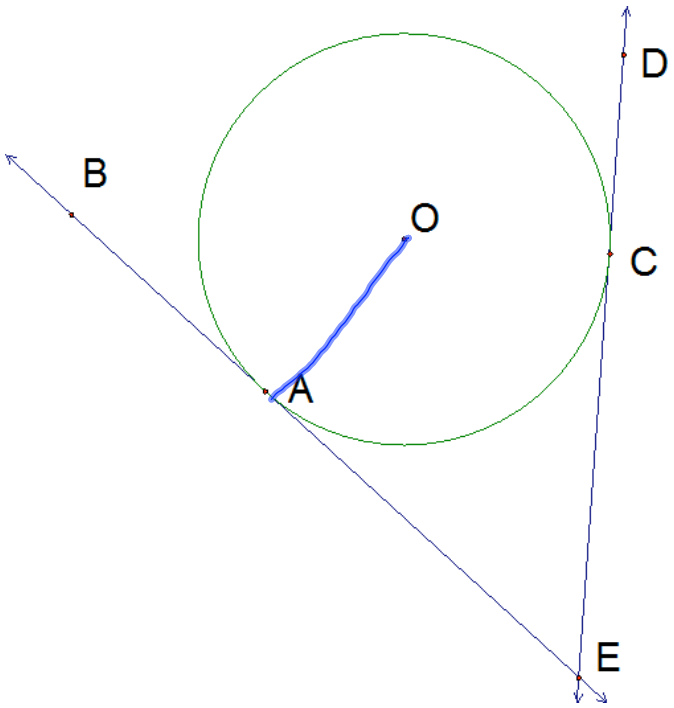
Day 5 - Properties of Tangents and Circles

In the following diagram, line AB is tangent to the circle.
Construct the line segments connecting O and A, and O and C.
Measure <OAB and <OCD.
Also, measure hte length of segments AE and CE.



What two conclusions can you arrive at from the results of the investigation?

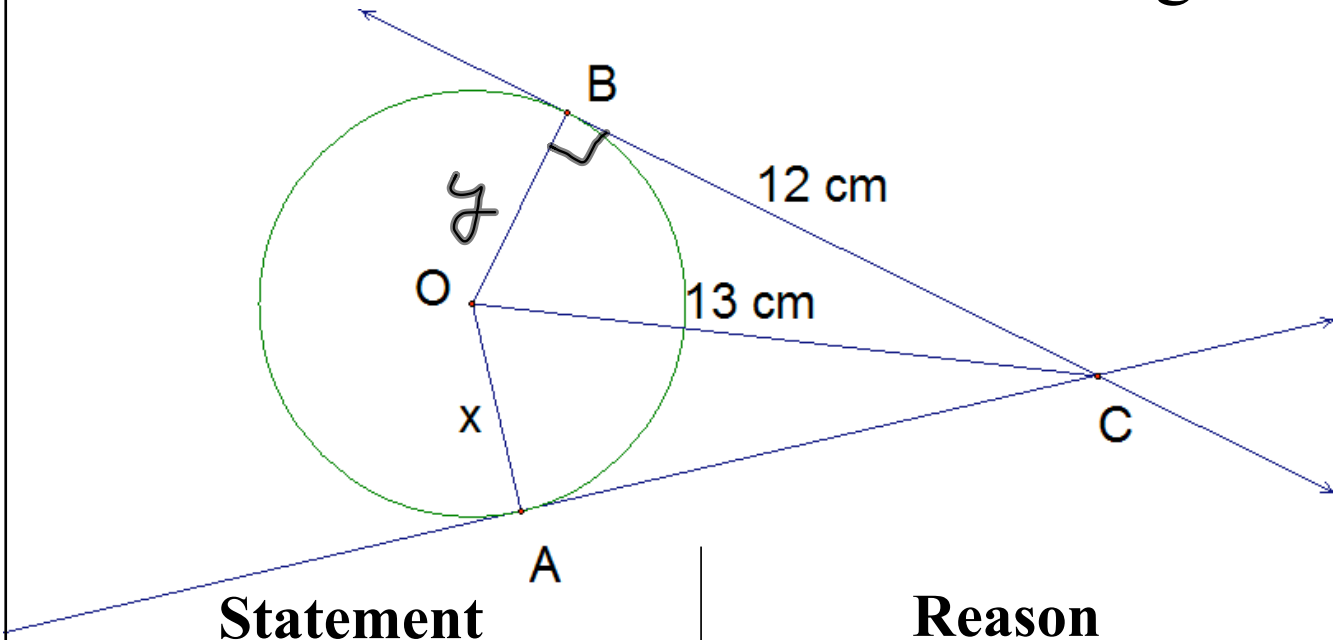
1) Tangent Property #1 (TP1)

A radius & a tangent line form a 90° angle

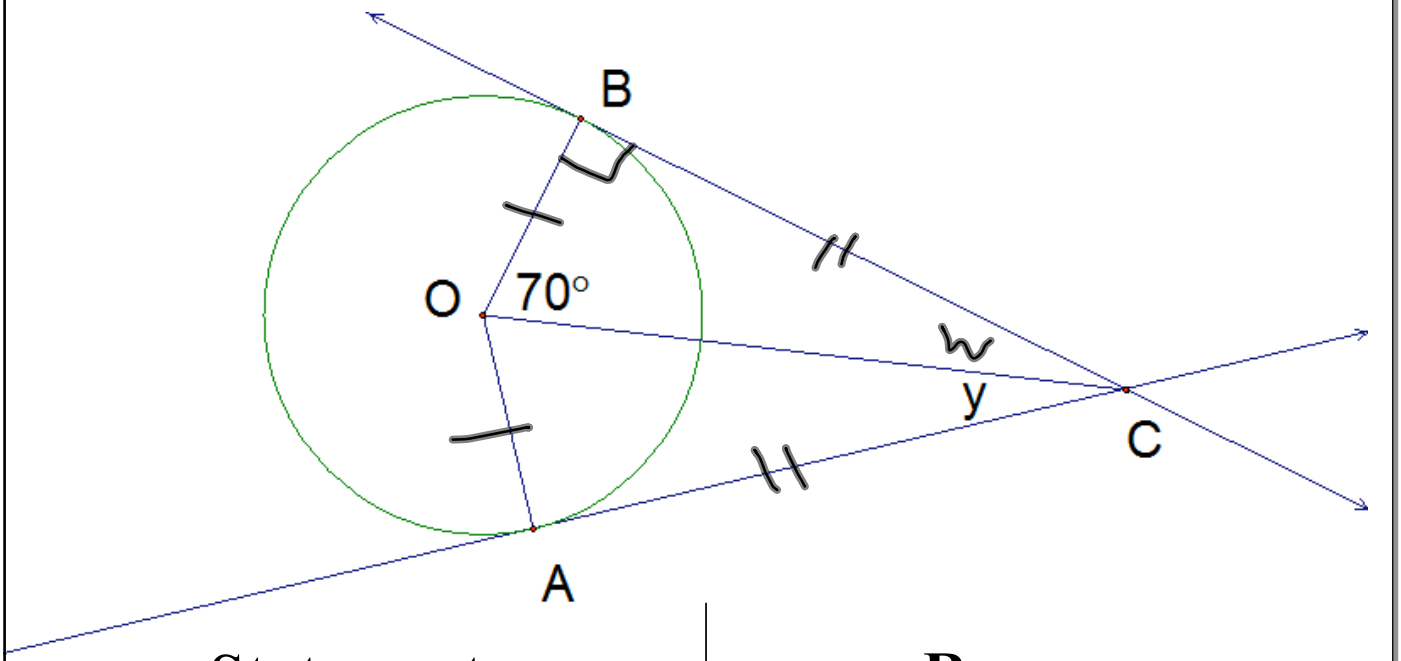
2) Tangent Property #2 (TP2)

2 tangent lines that intersect at a point outside of the circle are equal in length.

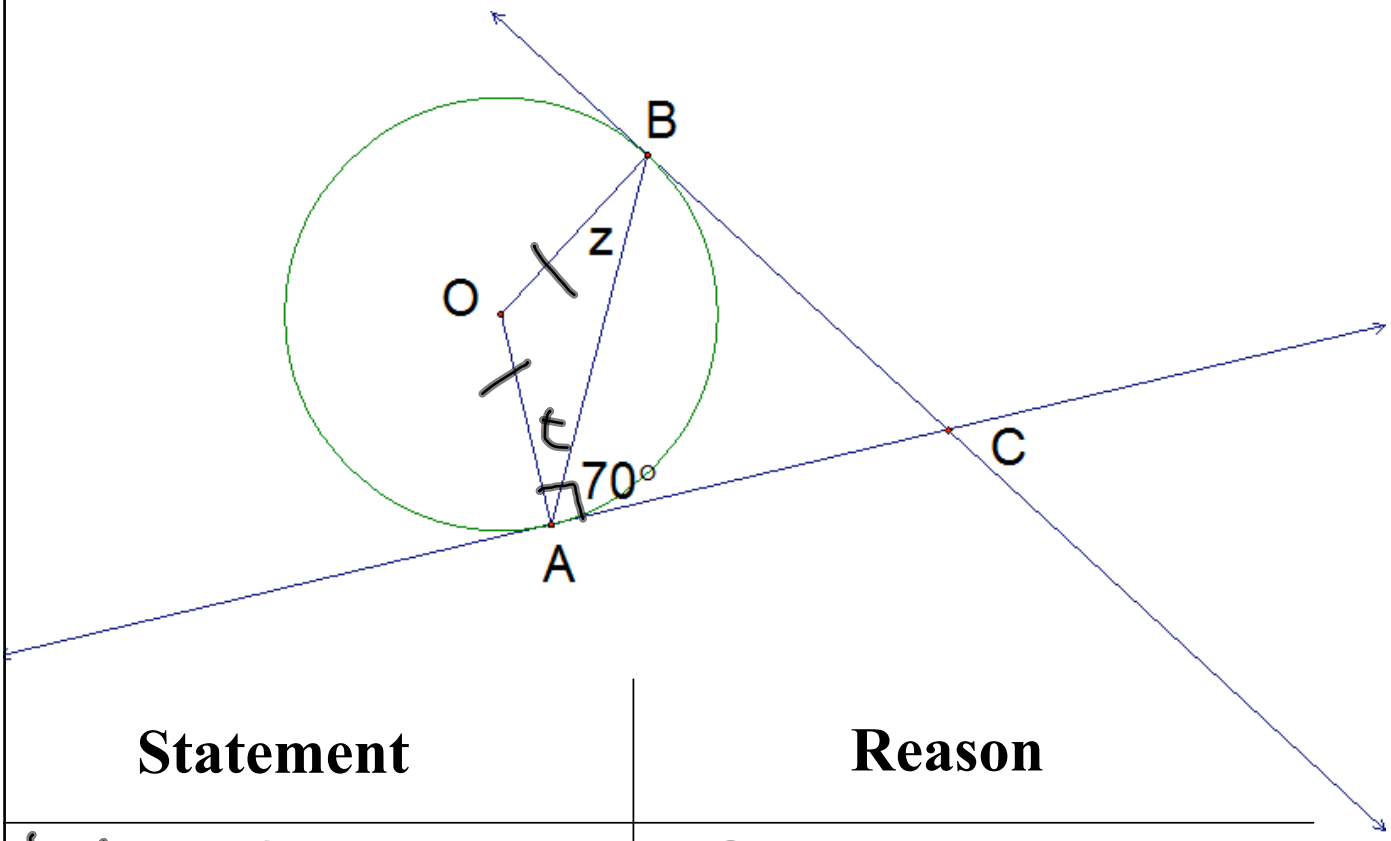
In the following diagrams, determine the values of the indicated sides and angles.



Statement	Reason
1. $\angle B = 90^\circ$	1. TP1
2. $y^2 + 12^2 = 13^2$ $y^2 + 144 = 169$ $y^2 = 25$ $y = 5$	2. Pythagorean Theorem.
3. $x = 5$	3. Radius



Statement	Reason
1. $\angle B = 90^\circ$	1. TP 1
2. $\angle w = 180 - 90 - 70 = 20^\circ$	2. Def Δ.
3. $OA = OB$	3. Radii
4. $BC = AC$	4. TP 2
5. $\Delta OAC \cong \Delta OBC$	5. SAS
6. $\angle y = \angle w = 20^\circ$	6. Corresp Part.



Statement	Reason
1. $OA = OB$	1. Radii
2. $\angle OAC = \angle OBC = 90°$	2. TP ⊥
3. $\angle t = 20°$ ($90 - 70$)	3. Calc.
4. $\angle z = \angle t = 20°$	4. Isosceles $\triangle$.

Assignment:
Pg. 485 2, 4-6, 9, 10