

# Lesson 10-5

## Tangents

Lesson Objectives

- Use properties of tangents
- Solve problems involving circumscribed polygons

CCSS Addressed: G.CO.12 & G.C.4

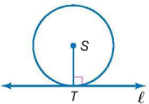
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### Two theorems...very straightforward!

**Theorem 10.10**

**Words** In a plane, a line is tangent to a circle if and only if it is perpendicular to a radius drawn to the point of tangency.

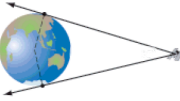
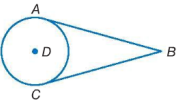
**Example** Line  $\ell$  is tangent to  $\odot S$  if and only if  $\ell \perp \overline{ST}$ .



**Theorem 10.11**

**Words** If two segments from the same exterior point are tangent to a circle, then they are congruent.

**Example** If  $\overline{AB}$  and  $\overline{CB}$  are tangent to  $\odot D$ , then  $\overline{AB} \cong \overline{CB}$ .

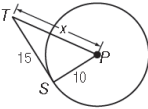


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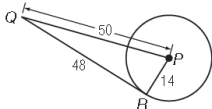
### Examples:

For 1, 3, and 4, assume segments that appear to be tangent are tangent. Find x.

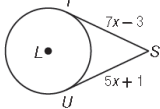
**1**



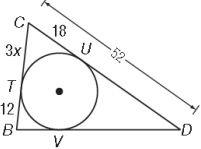
**2** Is  $\overline{QR}$  tangent to  $\odot P$ ?



**3**



**4** Find x, then the perimeter.



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