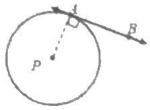
7.4 Tangents

Name: _____

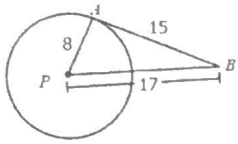
Tangents



- A **tangent line** intersects a circle at exactly one point, called the **point of tangency.**
- A line is tangent to a circle if and only if it is perpendicular to a radius drawn to the point of tangency.

Directions: Determine if $\overline{AB}$ is tangent to circle P.

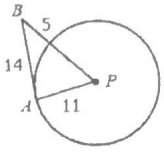
1.



$8^2+15^2 \square 17^2$

$\overline{AB}$ is tangent to circle P since $\angle PAB = 90°$

2.



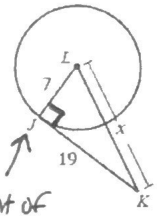
$11^2+14^2 \square 16^2$

$\overline{AB}$ is not tangent to circle P since $\angle PAB$ is not 90°

Directions: If $\overline{JK}$ is tangent to circle L, find x.

point of tangency

3.

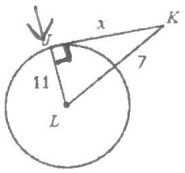


point of tangency

$7^2+19^2 = x^2$

$20 \approx x$

4.



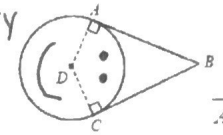
$11^2+x^2 = 18^2$

$x \approx 14$

More Tangent Line Properties

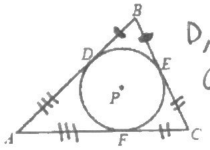
If **two segments from the same external point** are **tangent** to a circle, then they are **congruent.**

PARTY HAT



$\overline{AB} \cong \overline{CB}$

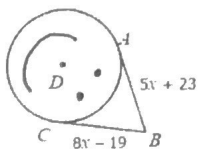
If a **polygon is circumsribed** around a circle, then **all sides are tangent.**



D, E, F are all points of tangency

Directions: Find each value or measure. Assume that segments that appear to be tangent are tangent.

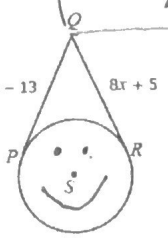
10. Find x.



$5x+23 = 8x-19$

$x = 14$

11. Find PQ. = 29



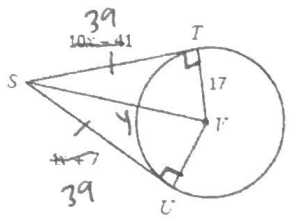
$14x-13 = 8x+5$

$x = 3$

7.4 Tangents

Name: _____

12. Find SV.



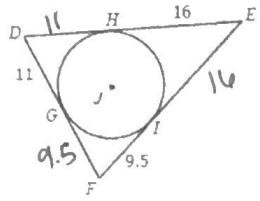
$10x-41=4x+7$

$x=8$

$39^2+17^2=y^2$

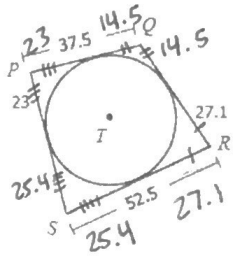
$43 \approx y$

13. Find the perimeter of ΔDEF.



$P=73$

14. Find the perimeter of quadrilateral $PQRS$.



$P=180$