

9.1 Tangent Properties Day 1 Practice
Geometry 3313

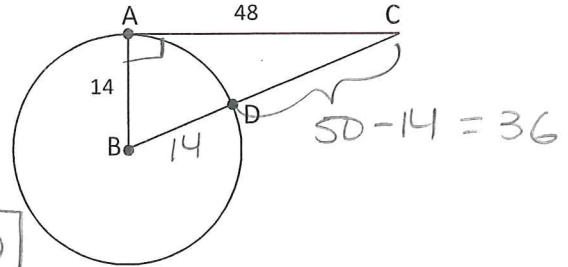
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Use the figure at the right for exercises 1-3.

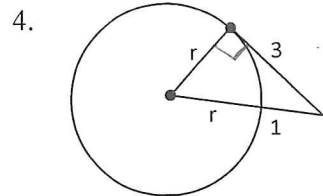
1. Find $m\angle BAC = 90^\circ$

2. Find BC
 $14^2 + 48^2 = (BC)^2$
 $196 + 2304 = (BC)^2$

3. Find DC
 $2500 = (BC)^2$ $BC = 50$



Find the radius of each circle.



$$r^2 + 3^2 = (r+1)^2$$

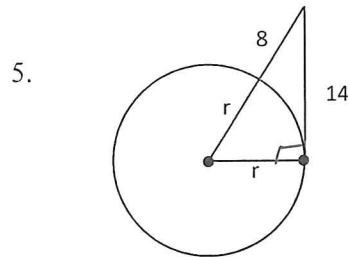
$$r^2 + 9 = (r+1)(r+1)$$

$$r^2 + 9 = r^2 + 1r + 1r + 1$$

$$9 = 2r + 1$$

$$\frac{8}{2} = \frac{2r}{2}$$

$$4 = r$$



$$r^2 + 14^2 = (r+8)^2$$

$$r^2 + 196 = (r+8)(r+8)$$

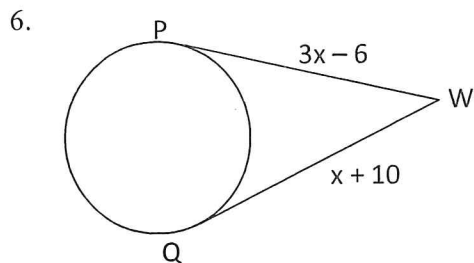
$$r^2 + 196 = r^2 + 8r + 8r + 64$$

$$196 = 16r + 64$$

$$\frac{132}{16} = \frac{16r}{16}$$

$$r = 8.25$$

Find the value of x. The segments are tangent to the circles.



$$3x - 6 = x + 10$$

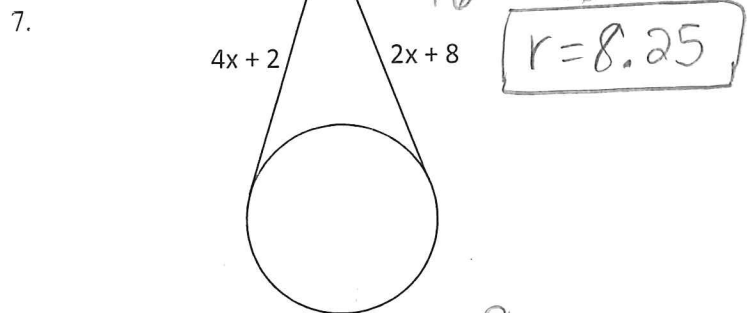
$$-x \quad -x$$

$$2x - 6 = 10$$

$$\quad +6 \quad +6$$

$$\frac{2x}{2} = \frac{16}{2}$$

$$x = 8$$



$$4x + 2 = 2x + 8$$

$$-2x \quad -2x$$

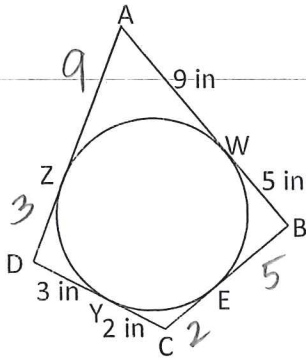
$$2x + 2 = 8$$

$$\quad -2 \quad -2$$

$$\frac{2x}{2} = \frac{6}{2}$$

$$x = 3$$

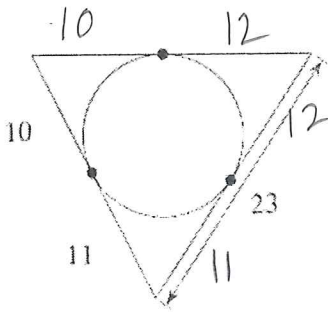
8. Find the perimeter of quadrilateral ABCD.



$$P = 9 + 3 + 3 + 2 + 2 + 5 + 5 + 9$$

$$P = 38$$

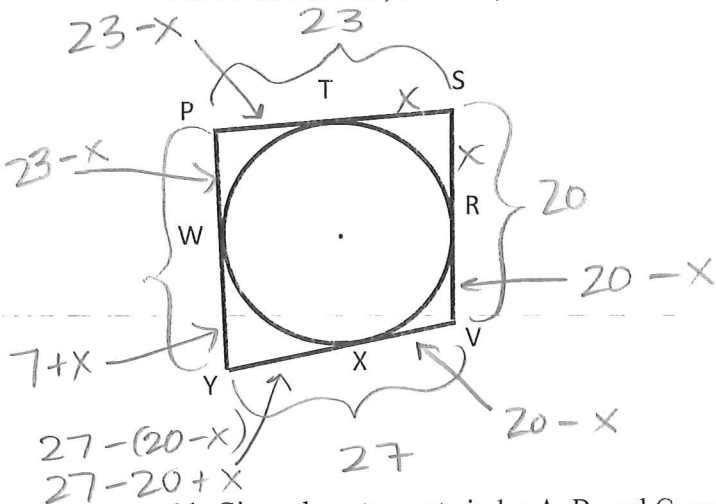
9. Find the perimeter of the triangle below.



$$P = 10 + 12 + 12 + 11 + 11 + 10$$

$$P = 66$$

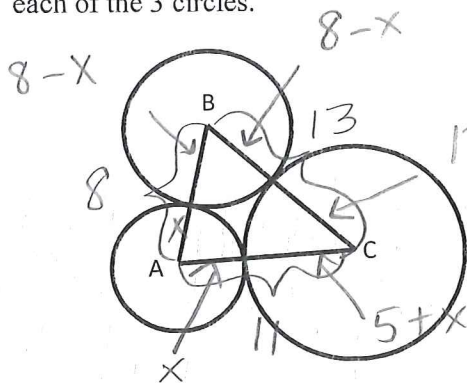
10. Given $PS = 23$, $SV = 20$, $VY = 27$. Find PY .



$$PY = 23 - x + 7 + x$$

$$PY = 30$$

11. Given three tangent circles A, B, and C such that $AB = 8$, $BC = 13$, and $AC = 11$, find the radii of each of the 3 circles.



$$11 = 5 + x + x$$

$$6 = \frac{2x}{2}$$

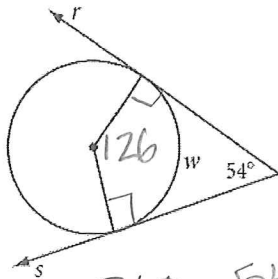
$$3 = x$$

Radius Circle A = 3
 Radius Circle B = 5

9.1 Tangent Properties Day 2 Practice
 Geometry 3313

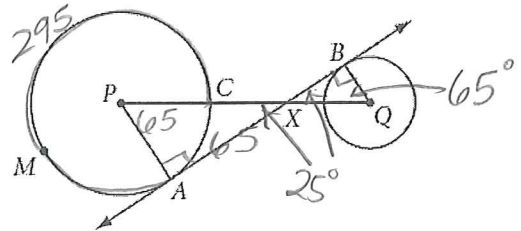
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1. Rays r and s are tangents. $w = \underline{126^\circ}$



$$360 - 54 - 90 - 90 = 126$$

2. \overline{AB} is tangent to both circles and $m\widehat{AMC} = 295^\circ$. $m\angle BQX = \underline{65^\circ}$

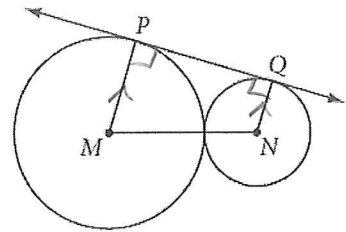


3. \overline{PQ} is tangent to two externally tangent noncongruent circles, M and N.

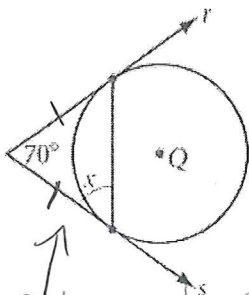
a. $m\angle NQP = \underline{90^\circ}$, $m\angle MPQ = \underline{90^\circ}$

b. What kind of quadrilateral is $MNQP$? Explain your reasoning.

Trapezoid. It has one pair of parallel opposite sides.



4. Rays r and s are tangent to circle Q. Find x .

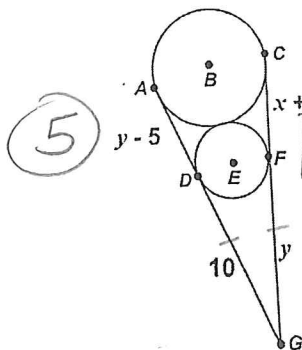


$$\begin{aligned} 70 + x + x &= 180 \\ 70 + 2x &= 180 \\ -70 & \quad -70 \\ \hline 2x &= 110 \\ \frac{2x}{2} &= \frac{110}{2} \end{aligned}$$

$$\boxed{x = 55}$$

* isosceles triangle, so base angles are congruent

6. Solve for the values of x and y in the figure below.



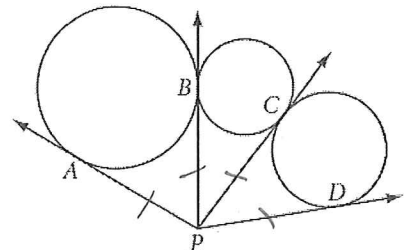
$$\begin{aligned} \text{AD} &= y - 5 \\ \text{AD} &= 10 - 5 = 5 \\ x + 4 &= 5 \\ -4 & \quad -4 \\ \hline x &= 1 \end{aligned}$$

$\boxed{5}$

$$\boxed{y = 10}$$

$$\boxed{x = 1}$$

5. \overline{PA} , \overline{PB} , \overline{PC} , and \overline{PD} are tangents. Explain why $\overline{PA} \cong \overline{PD}$.



$\overline{PA} \cong \overline{PB}$
 $\overline{PB} \cong \overline{PC}$
 $\Rightarrow \overline{PA} \cong \overline{PC}$
 by transitive property

$\overline{PA} \cong \overline{PC}$
 $\overline{PC} \cong \overline{PD}$
 $\Rightarrow \overline{PA} \cong \overline{PD}$ by Transitive

$$x = \underline{1}$$

$$y = \underline{10}$$

