

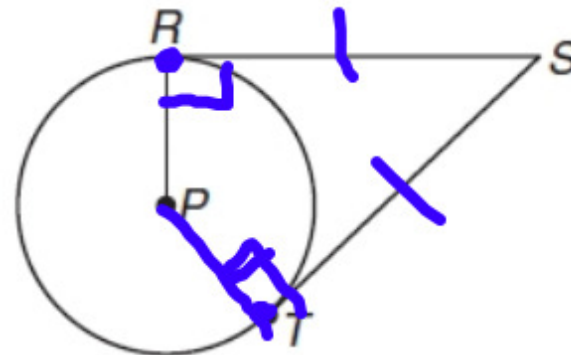
10-5 Tangents

Tangents A tangent to a circle intersects the circle in exactly one point, called the **point of tangency**. There are three important relationships involving tangents.

~~*~~ If a line is tangent to a circle, then it is perpendicular to the radius drawn to the point of tangency.

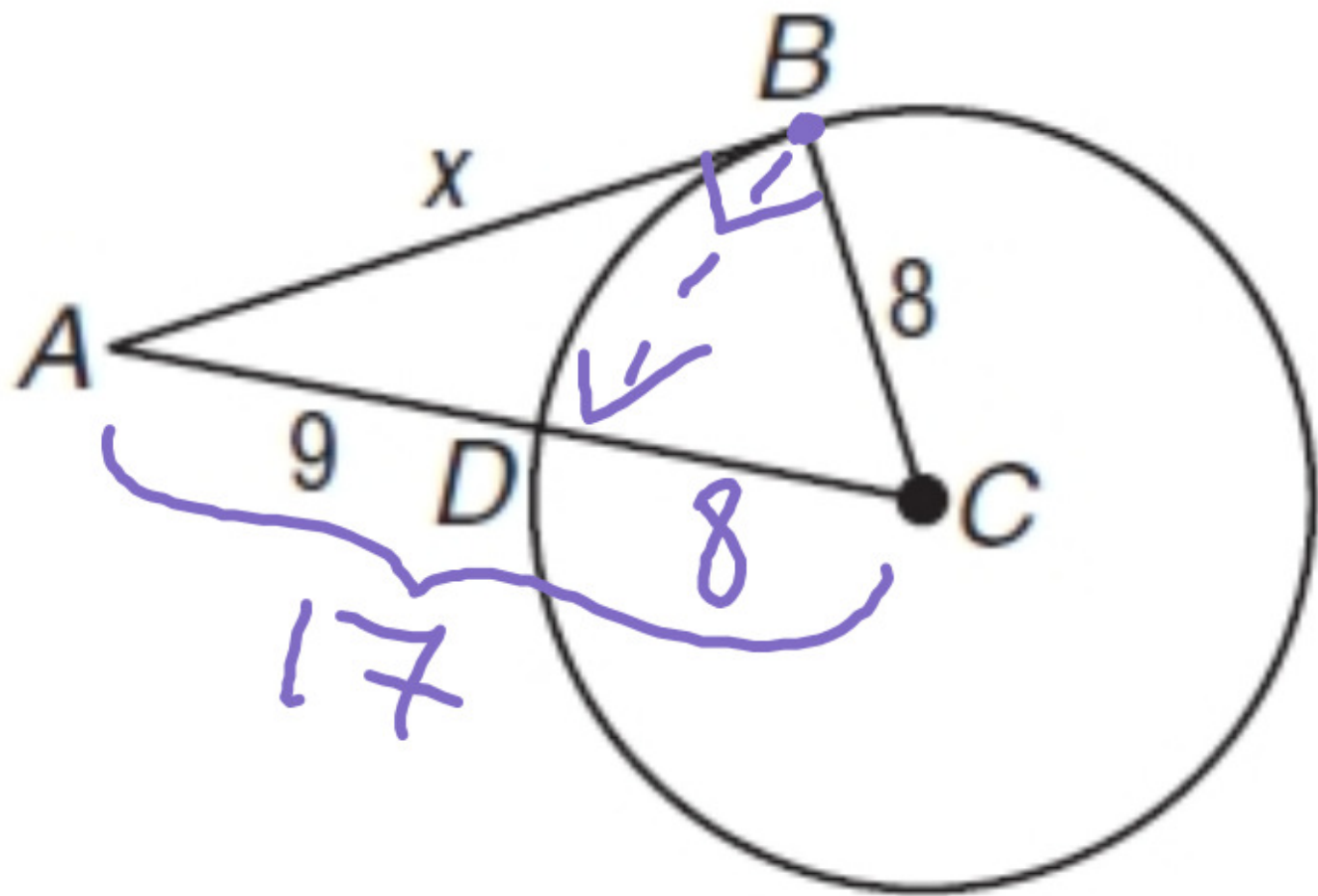
- If a line is perpendicular to a radius of a circle at its endpoint on the circle, then the line is a tangent to the circle.

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



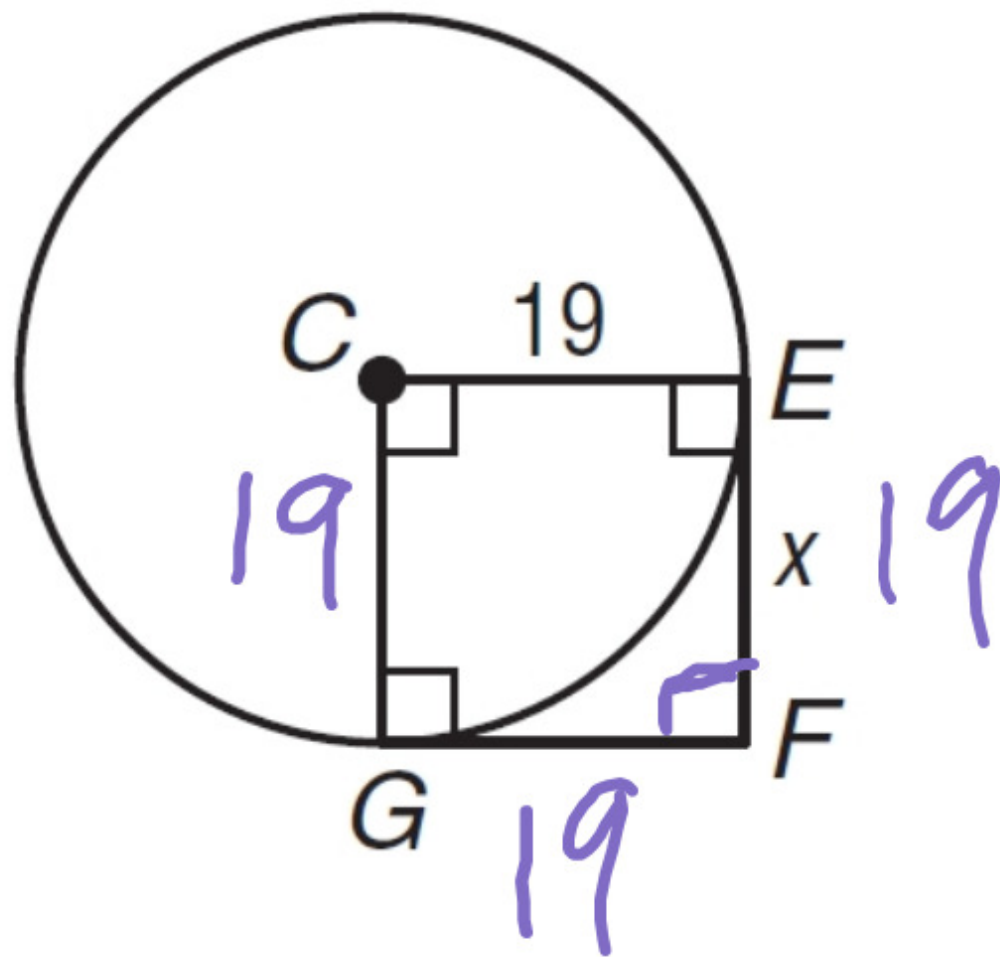
$\overline{RP} \perp \overline{SR}$ if and only if
 \overline{SR} is tangent to $\odot P$.

If \overline{SR} and \overline{ST} are tangent to $\odot P$,
then $\overline{SR} \cong \overline{ST}$.



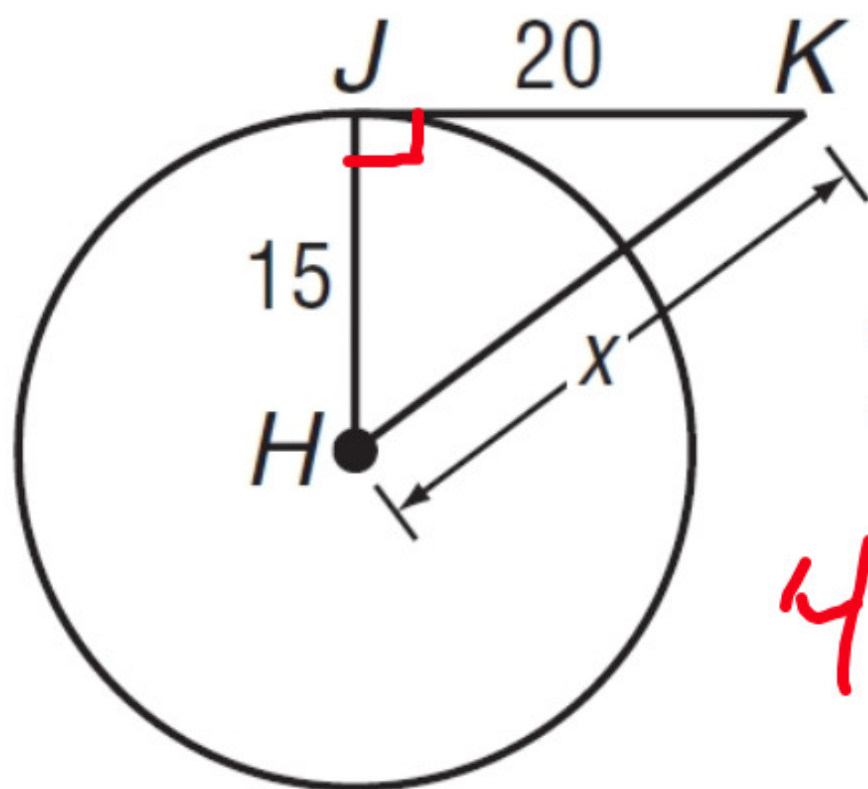
Find x . Assume that segments that appear to be tangent are tangent.

1.



Find x . Assume that segments that appear to be tangent are tangent.

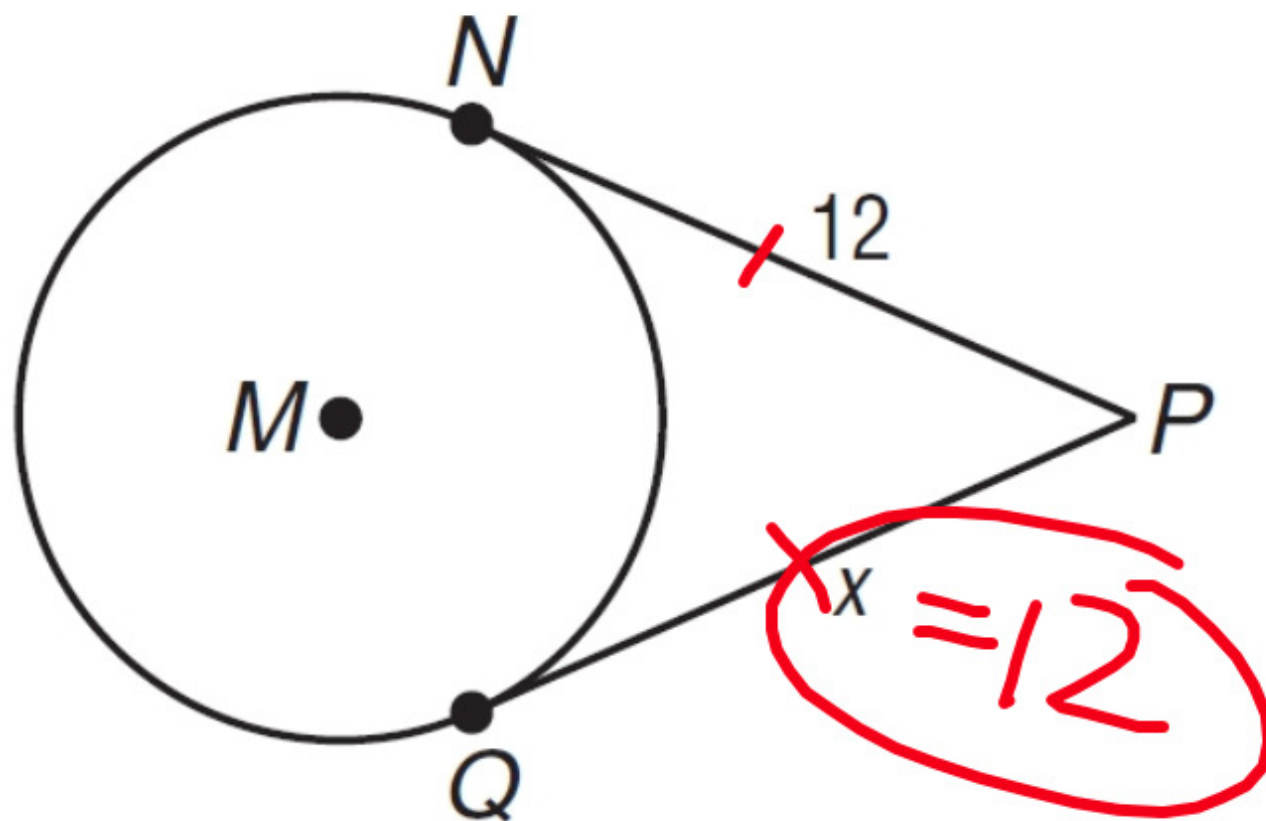
2.



$$\begin{aligned}20^2 + 15^2 &= x^2 \\400 + 225 &= x^2 \\\sqrt{625} &= \sqrt{x^2} \\x &= 25\end{aligned}$$

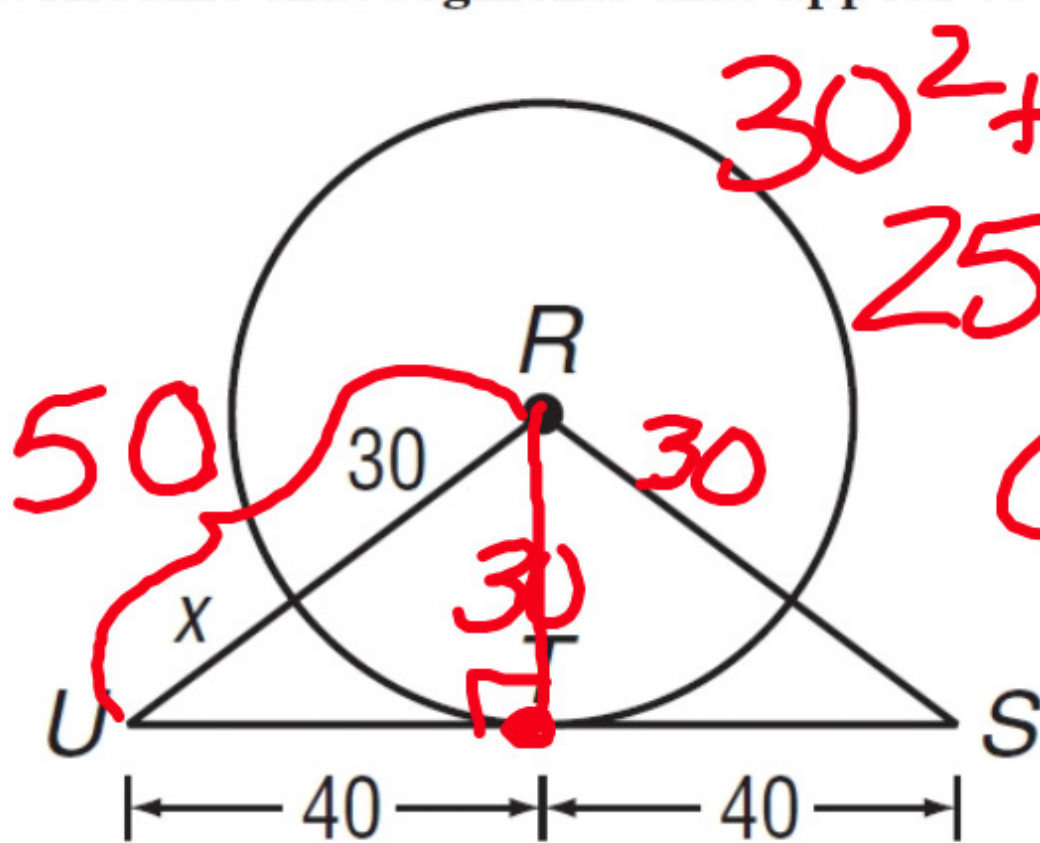
Find x . Assume that segments that appear to be tangent are tangent.

3.



Find x . Assume that segments that appear to be tangent are tangent.

4.



$$30^2 + 40^2 = C^2$$

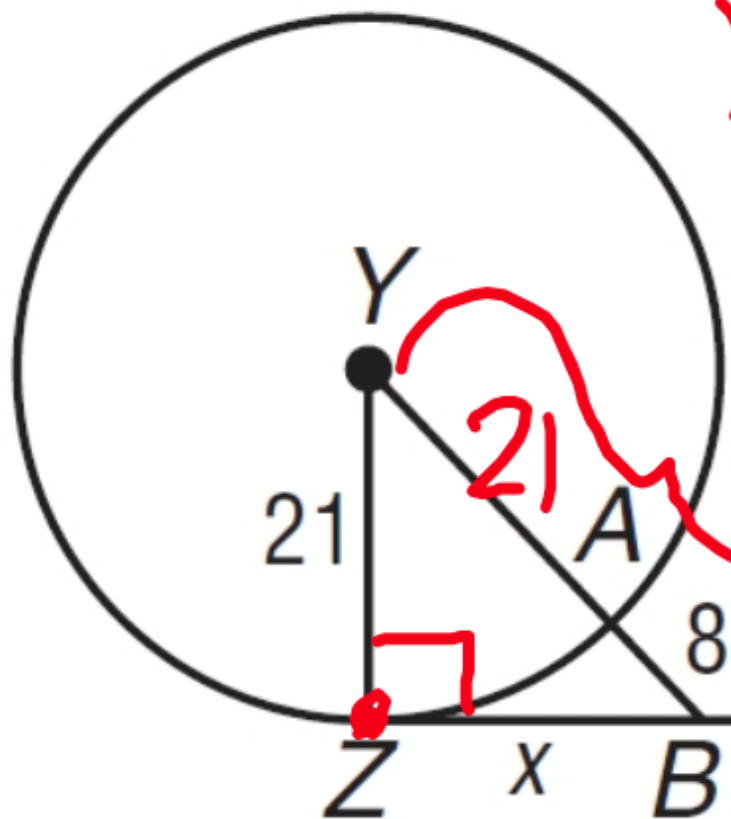
$$2500 = C^2$$

$$C = 50$$

$$x = 20$$

Find x . Assume that segments that appear to be tangent are tangent.

5.



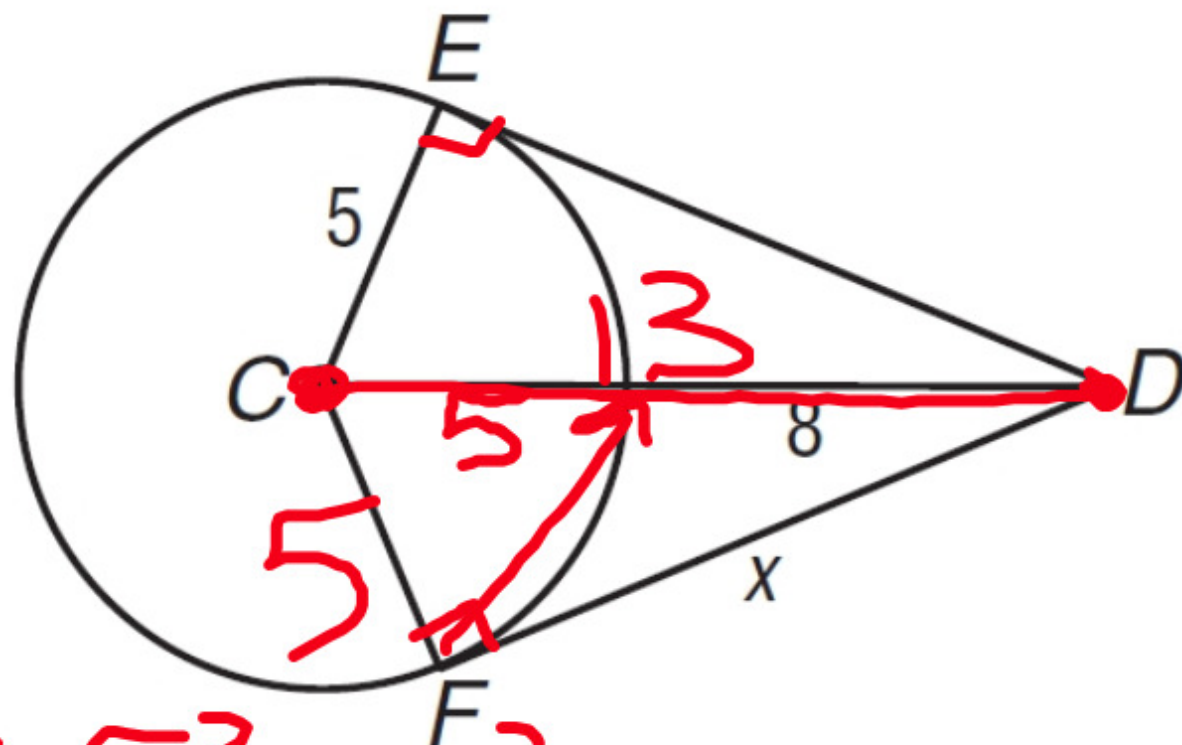
$$x^2 + 21^2 = 29^2$$
$$x^2 + 441 = 841$$
$$\begin{array}{r} -441 \\ \hline \end{array}$$

$$\sqrt{x^2} = \sqrt{400}$$

$$x = 20$$

Find x . Assume that segments that appear to be tangent are tangent.

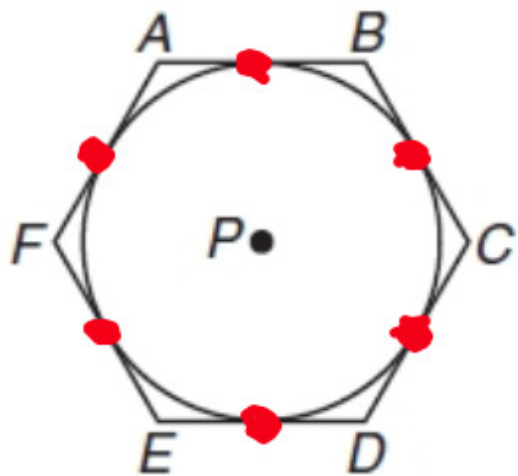
6.



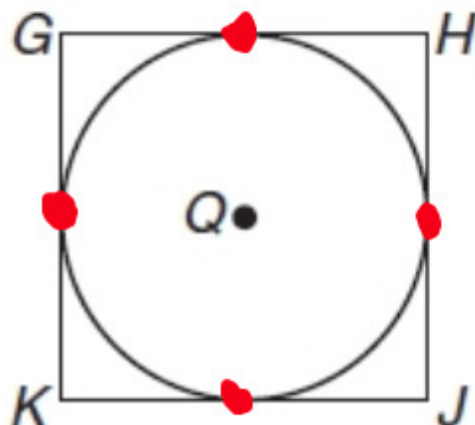
$$x^2 + 5^2 = 13^2$$

$$x = 12$$

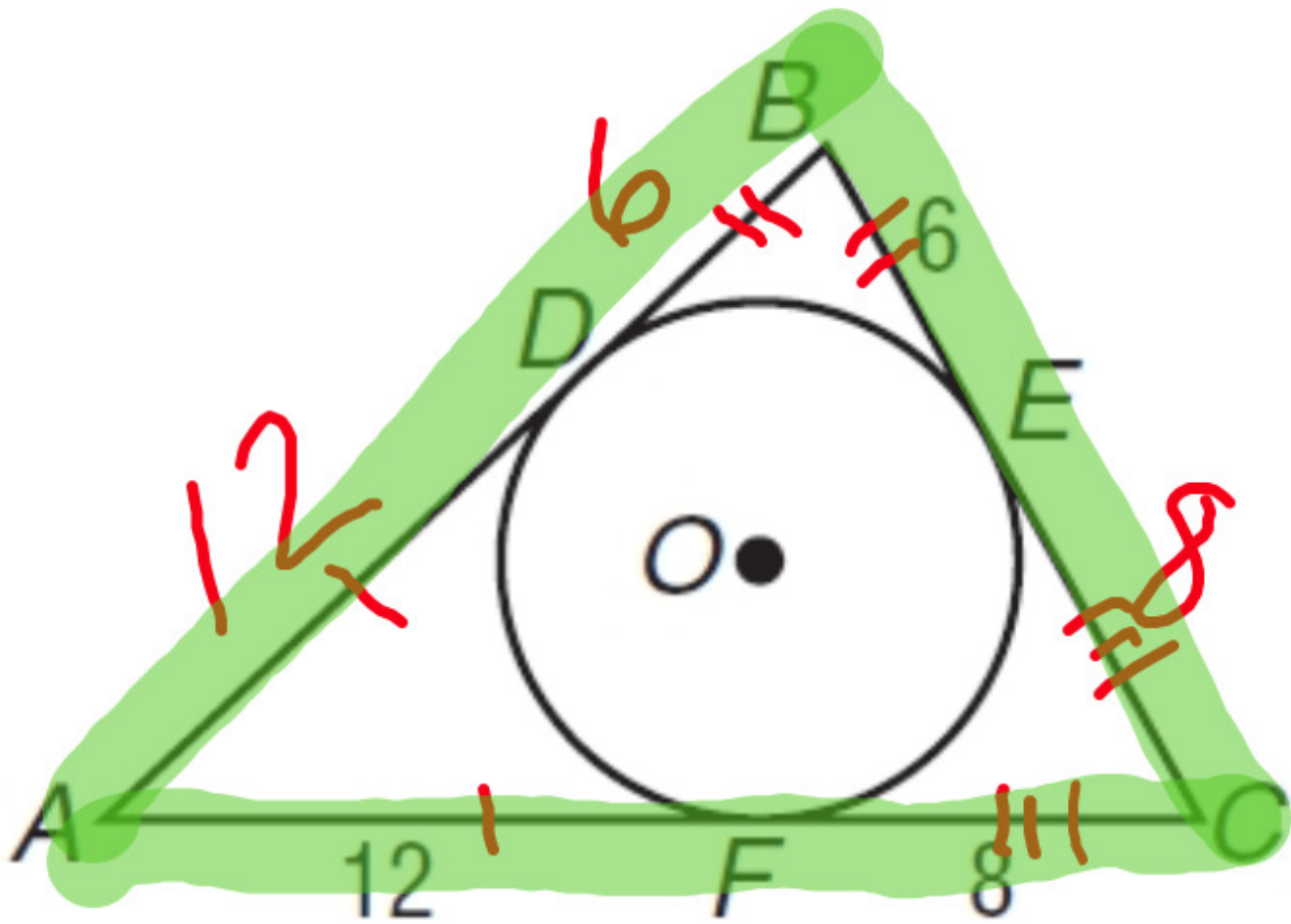
Circumscribed Polygons When a polygon is circumscribed about a circle, all of the sides of the polygon are tangent to the circle.



Hexagon $ABCDEF$ is circumscribed about $\odot P$.
 \overline{AB} , \overline{BC} , \overline{CD} , \overline{DE} , \overline{EF} , and \overline{FA} are tangent to $\odot P$.

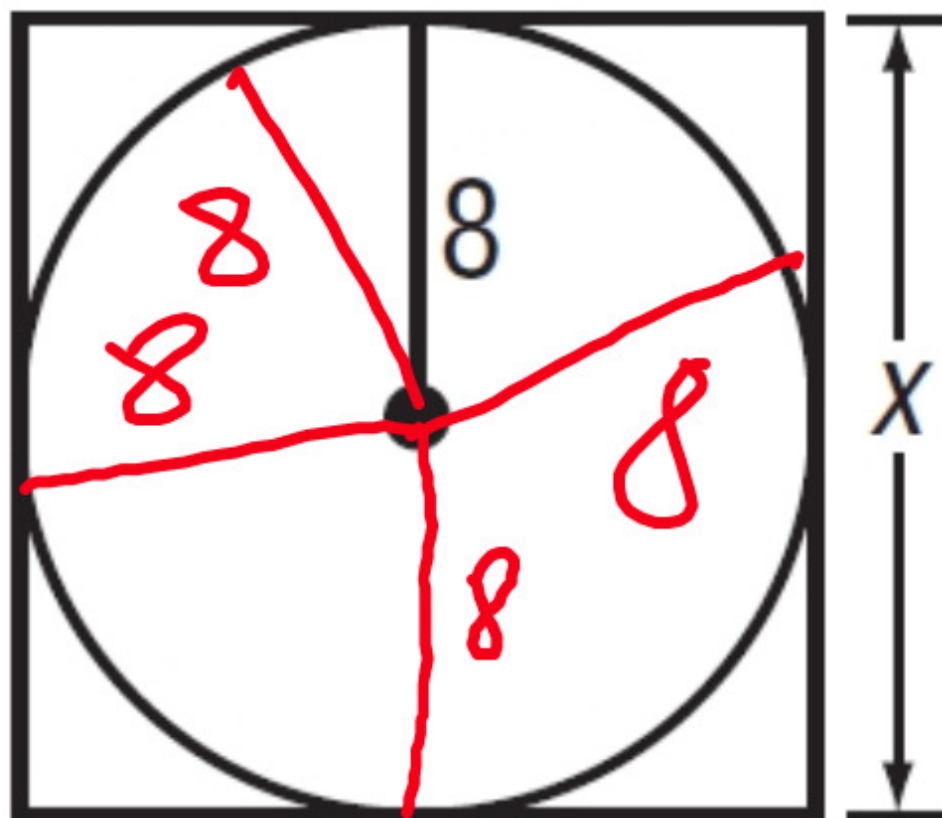


Square $GHJK$ is circumscribed about $\odot Q$.
 \overline{GH} , \overline{JH} , \overline{JK} , and \overline{KG} are tangent to $\odot Q$.



Find x . Assume that segments that appear to be tangent are tangent.

1.

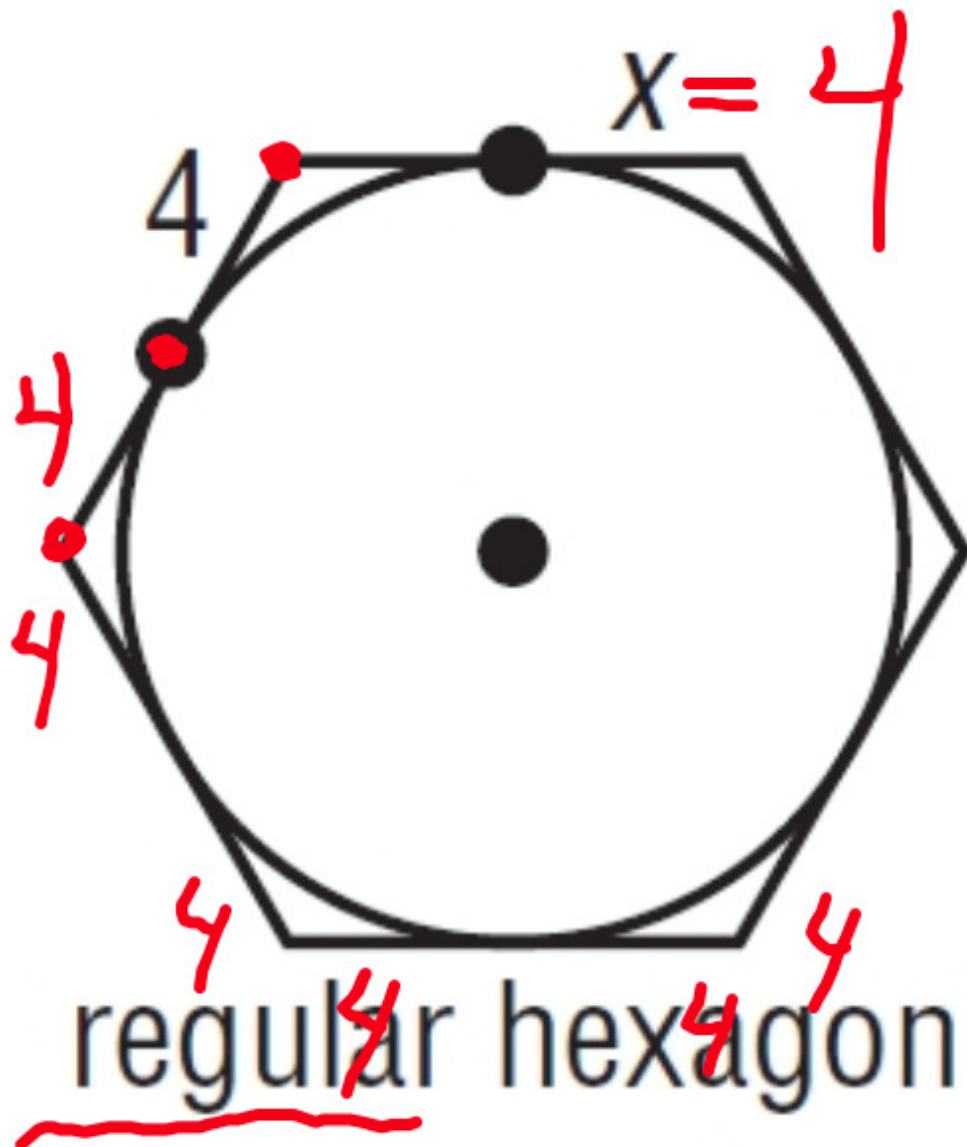


16

square

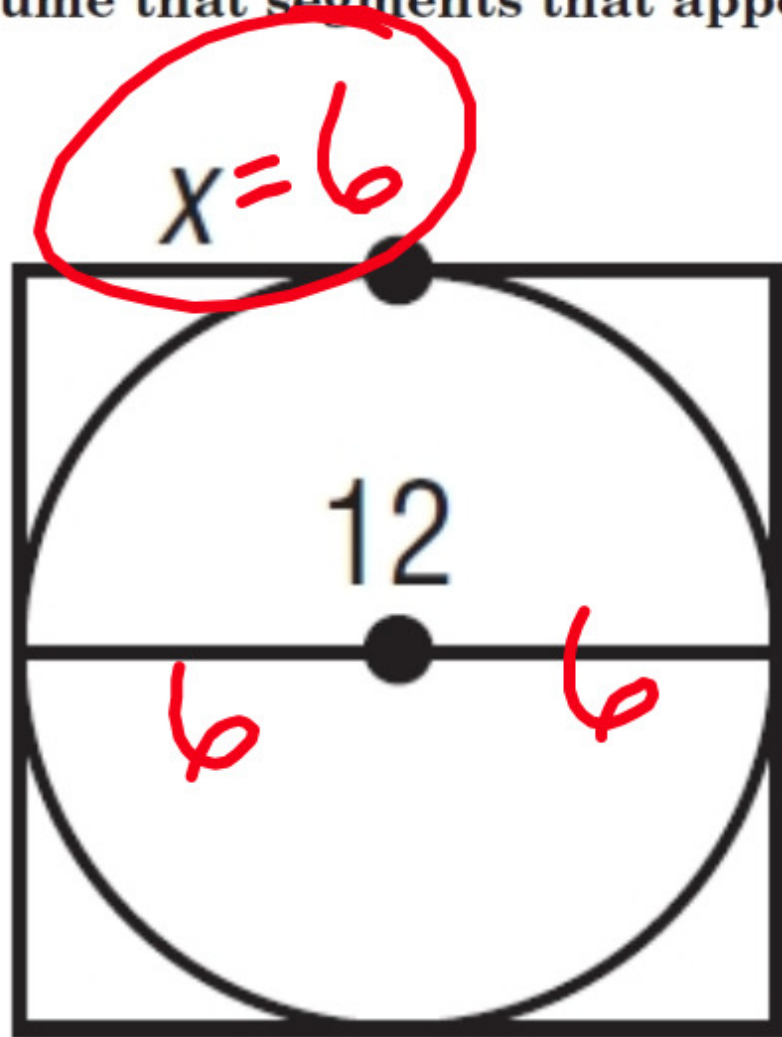
Find x . Assume that segments that appear to be tangent are tangent.

2.



Find x . Assume that segments that appear to be tangent are tangent.

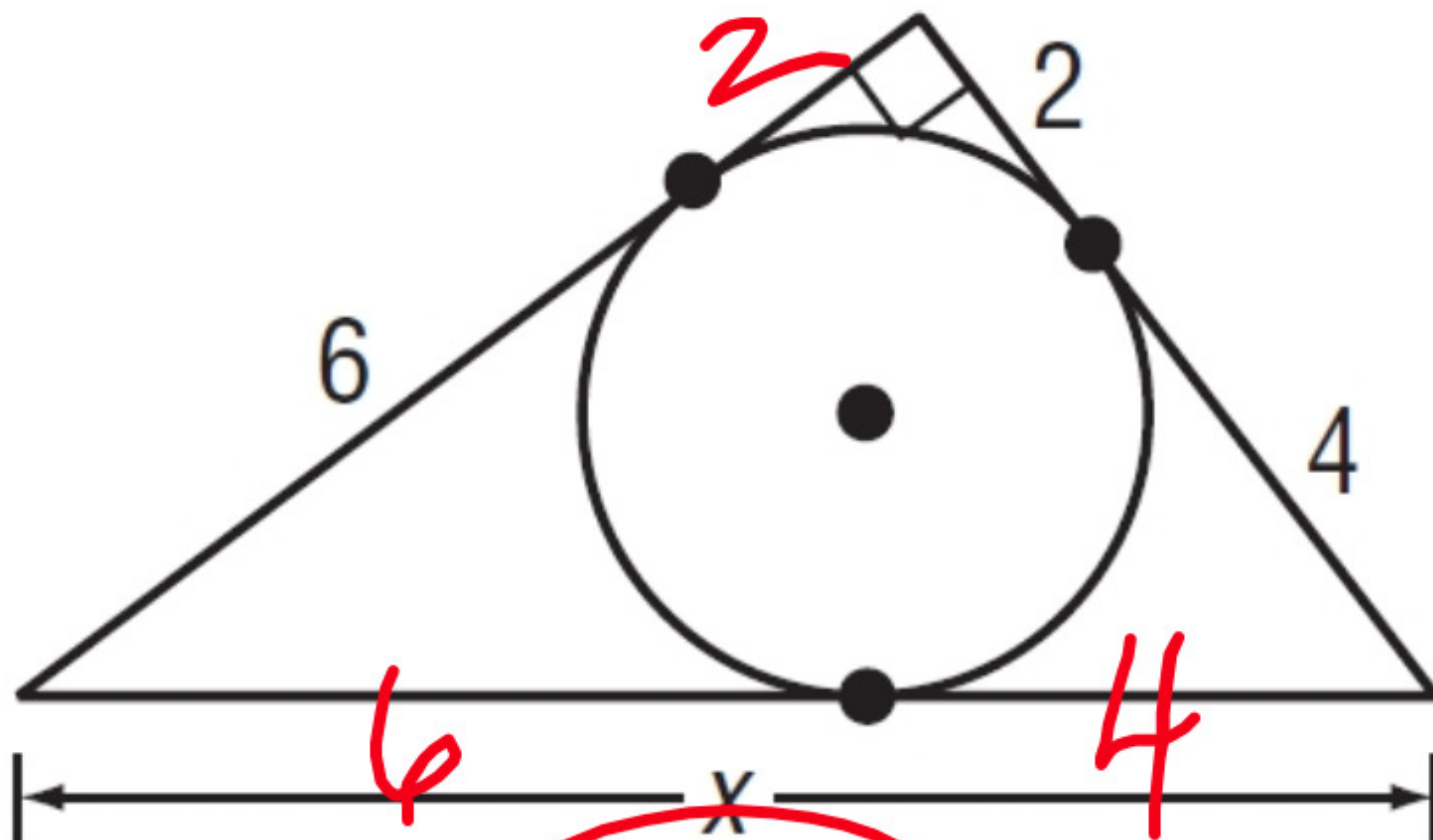
3.



square

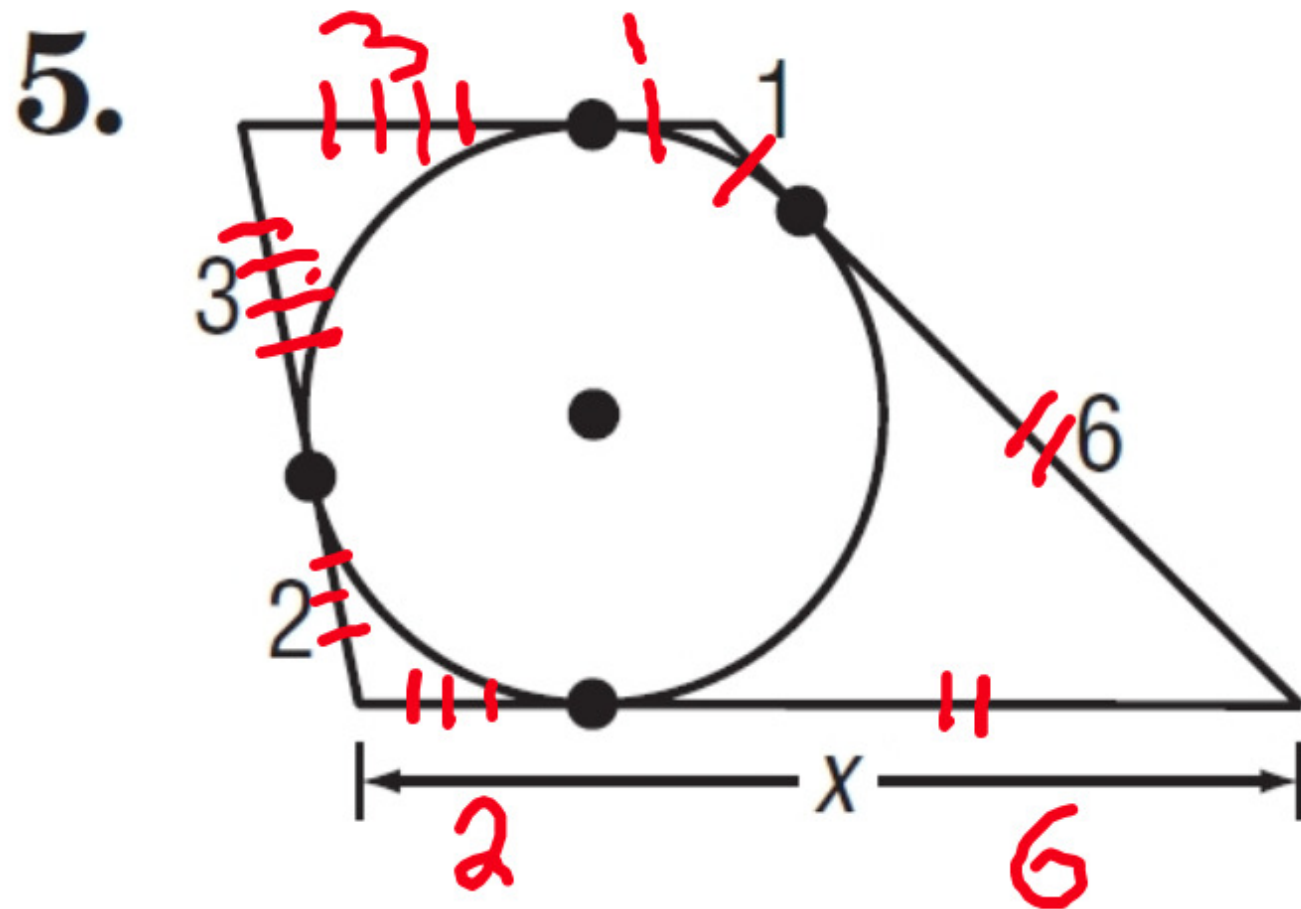
Find x . Assume that segments that appear to be tangent are tangent.

4.



$$x = 10$$

Find x . Assume that segments that appear to be tangent are tangent.



$$x = 8$$

Find x . Assume that segments that appear to be tangent are tangent.

6.

$x = 4$

