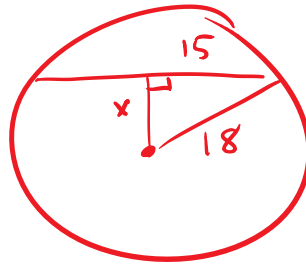


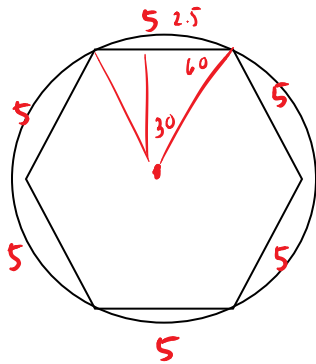
Honors Geometry 10.1-10.4, 10.9 Review Problems – USE EXACT VALUES!

1. Find the distance from the center of a circle to a chord 30 m long if the diameter of the circle is 36 m.



$$\begin{aligned} x^2 + 15^2 &= 18^2 \\ x^2 + 225 &= 324 \\ x^2 &= 99 \\ x &= \sqrt{99} \\ &= 3\sqrt{11} \end{aligned}$$

2. A regular hexagon with a perimeter of 30 is inscribed in a circle. How far from the center is each side?



$$2.5\sqrt{3}$$

3. What is the length of the radius of a circle if a 30 degree arc has a length of 3π ?

$$3\pi = \frac{30}{360} \cdot C$$

$$3\pi = \frac{1}{12} \cdot C$$

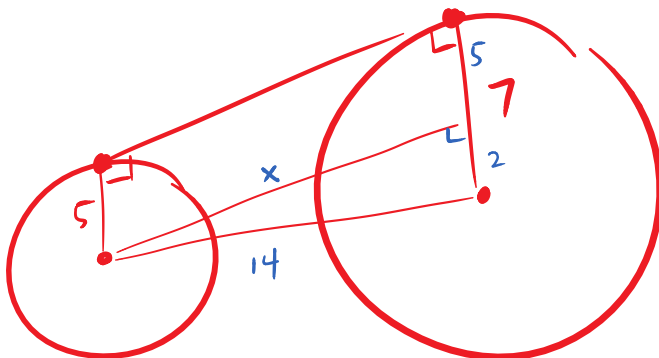
$$36\pi = C$$

$$\begin{aligned} C &= \pi d \\ C &= 36\pi \end{aligned}$$

$$d = 36$$

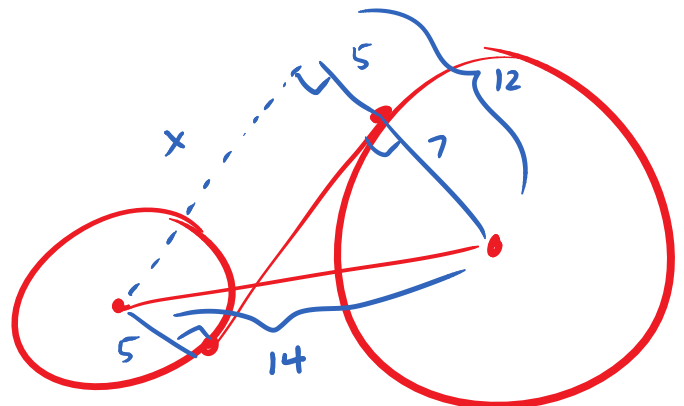
$$r = 18$$

4. Find the common external and internal tangents of two circles with radii of 5 and 7 if the centers are 14 units apart.



$$\begin{aligned} x^2 + 2^2 &= 14^2 \\ x^2 + 4 &= 196 \\ x^2 &= 192 \\ x &= 4\sqrt{3} \end{aligned}$$

$$x = 8\sqrt{3}$$

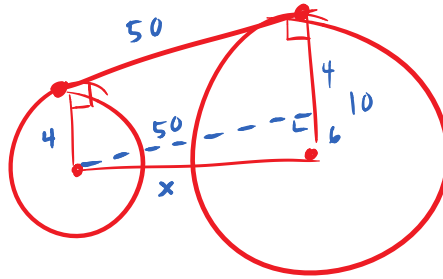


$$\begin{aligned} x^2 + 12^2 &= 14^2 \\ x^2 + 144 &= 196 \\ x^2 &= 52 \\ x &= \sqrt{52} \\ &= 2\sqrt{13} \end{aligned}$$

$$2\sqrt{13}$$

5. How far apart are the centers of two circles if the length of the common external tangent is 50, and the circles' radii are 4 and 10?

$$\boxed{2\sqrt{634}}$$



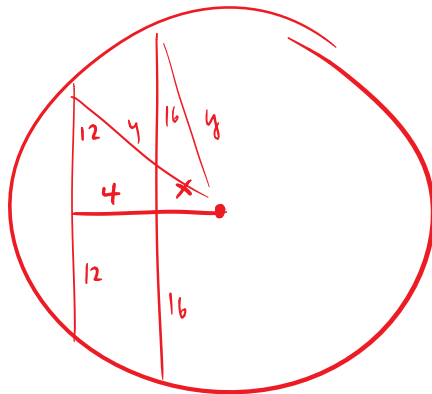
$$6^2 + 50^2 = x^2$$

$$3^2 + 25^2 = x^2$$

$$634 = x^2$$

$$\boxed{x = \sqrt{634}}$$

6. Find the radius of a circle in which a 32 cm chord is 4 cm closer to the center of the circle than a 24 cm chord.



$$x^2 + 16^2 = y^2$$

$$(x+4)^2 + 12^2 = y^2$$

$$x^2 + 256 = x^2 + 8x + 16 + 144$$

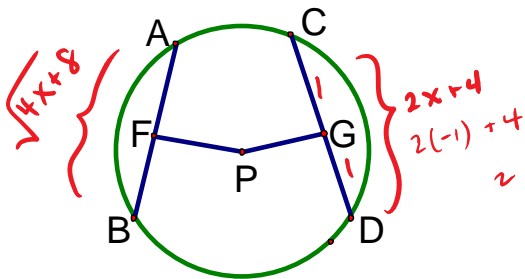
$$256 = 160 + 8x$$

$$96 = 8x$$

$$\boxed{12 = x}$$

$$\boxed{r = 20}$$

7. $AB = \sqrt{4x+8}$, $DC = 2x+4$, $FP = GP$, P is the center of the circle. Find the length of CG



$$(\sqrt{4x+8})^2 = (2x+4)^2$$

$$4x+8 = 4x^2 + 16x + 16$$

$$0 = 4x^2 + 12x + 8$$

$$0 = 4(x^2 + 3x + 2)$$

$$0 = 4(x+2)(x+1)$$

$$x = -2, -1$$

$$\boxed{CG = 1}$$

8. Given: Circle O
 $PQ = 16$, $RQ = 40$, and $PO = 39$

Find: $PS = 14$

