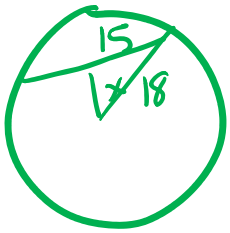
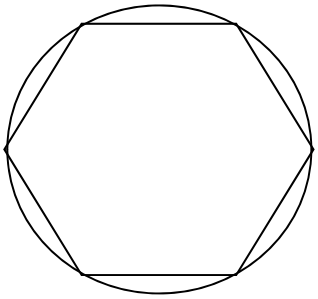
Honors Geometry **10.1-10.4, 10.9 Review Problems – USE EXACT VALUES!**

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.



$3\sqrt{11}$

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?

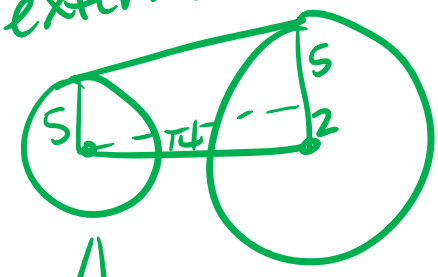
$\frac{30}{360} = \frac{1}{12}$

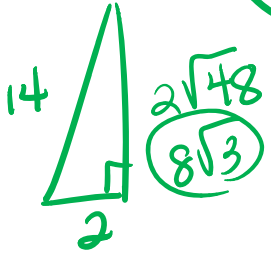
$C = 36\pi$

$r = 18$

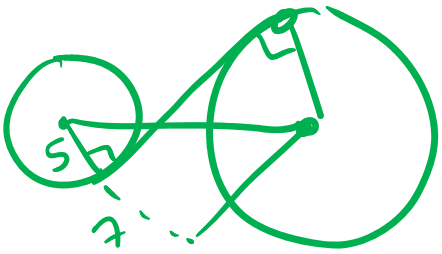
4. Find the common external and internal tangents of two circles with radii of 5 and 7 if the centers are 14 units apart.

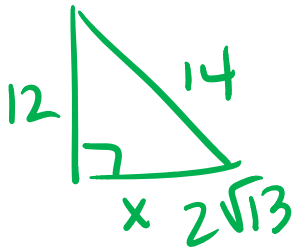
Common external $= 8\sqrt{3}$



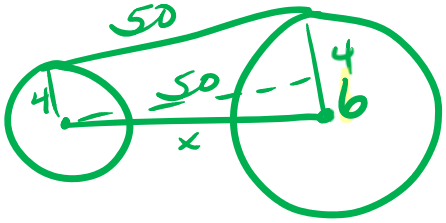


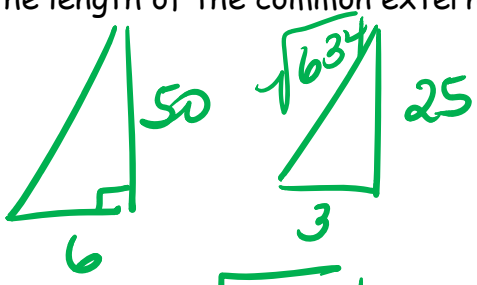
Common internal $= 2\sqrt{13}$





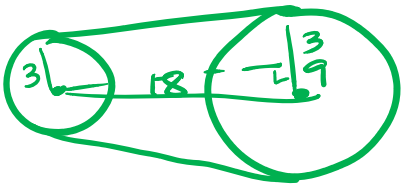
5. How far apart are the centers of two circles if the length of the common external tangent is 50, and the circles' radii are 4 and 10?





$2\sqrt{634}$

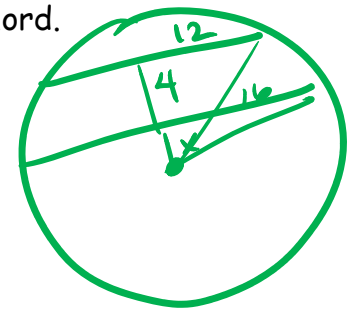
6. Find the length of a belt that is wrapped around two wheels of radii 3 cm and 12 cm if the distance between the centers of the wheels is 18 cm.



$18\sqrt{3} + \frac{1}{3} \cdot 6\pi + \frac{2}{3} \cdot 24\pi$

$18\sqrt{3} + 18\pi$

7. 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.



$r^2 = 16^2 + x^2$

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

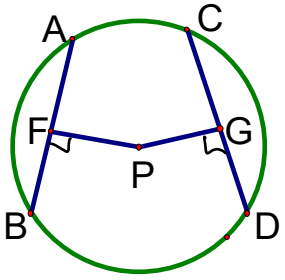
$256 + x^2 = x^2 + 8x + 16 + 144$

$96 = 8x$

$12 = x$

$r = 20$

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



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

$x = -1, -2$

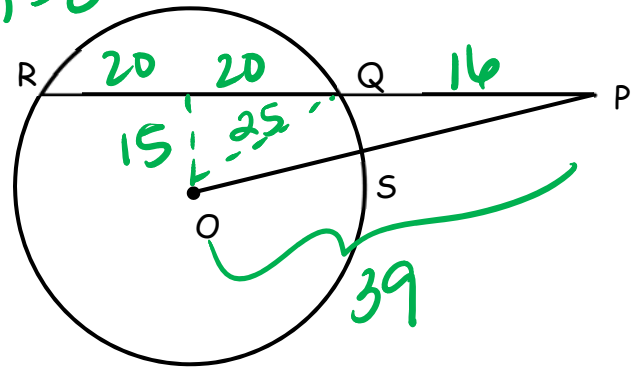
$4x^2 + 12x + 8 = 0$

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

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

$GD = 1$

9. Given: *Circle* O
PQ = 16, RQ = 40, and PO = 39



Find: PS

$PS = 14$