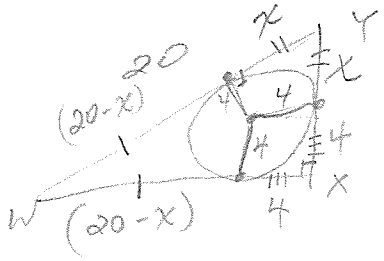


$$(20-x+4)^2 + (x+4)^2 = 20^2$$

$$(24-x)^2 + x^2 + 8x + 16 = 400$$

$$576 - 48x + x^2 + x^2 + 8x + 16 = 400$$

$$2x^2 - 40x + 192 = 0$$

$$2(x^2 - 20x + 96) = 0$$

$$2(x-12)(x-8) = 0$$

$x = 12$ $x = 8$

(both work)

Perimeter = 48

KEY

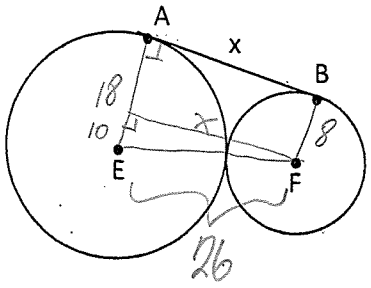
1. A circle with a radius of 8 cm is externally tangent to a circle with a radius of 18 cm. Find the length of the common external tangent segment.

$10^2 + x^2 = 26^2$

$x^2 = 576$

$x = 24$

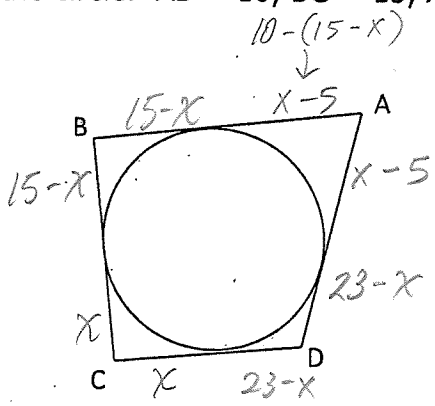
C.E. Tangent = 24



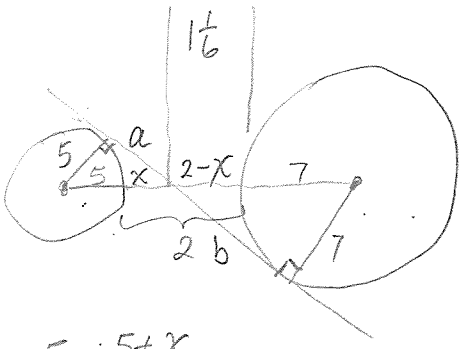
2. Each side of quad ABCD is tangent to the circle. AB = 10, BC = 15, AD = 18. Find CD.

$CD = x + 23 - x$

CD = 23



3. The two centers of two circles with radii 5 and 7 are 14 units apart. Find the length of the common internal tangent.



$\frac{5}{7} = \frac{5+x}{9-x}$

$x = \frac{5}{6}$

$a^2 + 5^2 = \left(5\frac{5}{6}\right)^2$

$a^2 = \frac{1225}{36} - \frac{900}{36}$

$a^2 = \frac{325}{36}$

$a = \frac{5\sqrt{13}}{6}$

$b^2 + 7^2 = \left(8\frac{1}{6}\right)^2$

$b^2 = \frac{2401}{36} - \frac{1764}{36}$

$b^2 = \frac{637}{36}$

$b = \frac{7\sqrt{13}}{6}$

Comm. I.T. $= \frac{5\sqrt{13}}{6} + \frac{7\sqrt{13}}{6} = 2\sqrt{13}$

Geometry (H)
Section 9.4 – Warm up

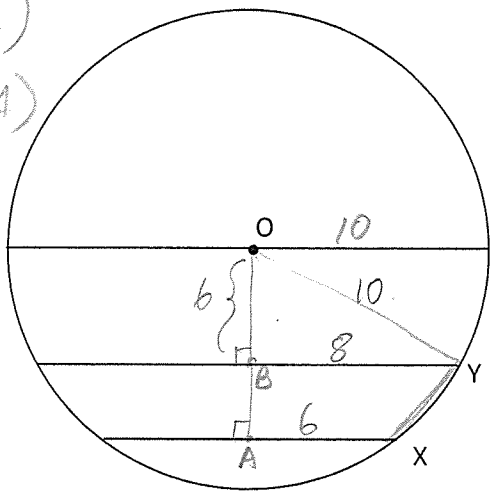
Three parallel chords of ⊙O are drawn as shown. Their lengths are 20, 16 and 12 cm. Find the length of chord $\overline{XY}$ (not shown).

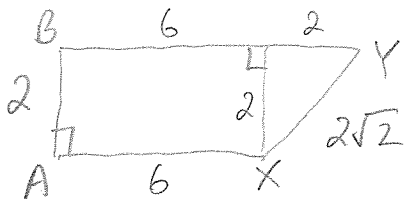
$BO = 6$ (part of 3, 4, 5 Δ)

$AO = 8$ (part of 3-4-5 Δ)

$AB = 2$

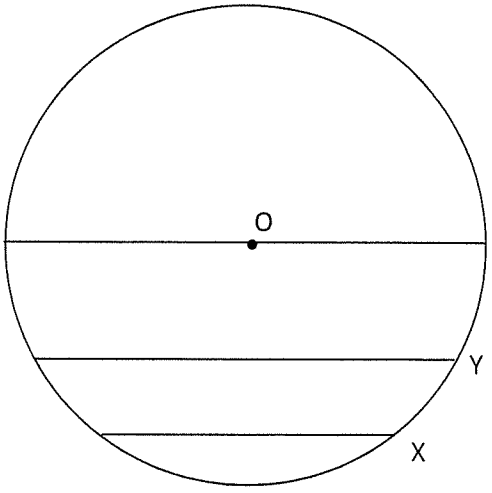
$XY = 2\sqrt{2}$





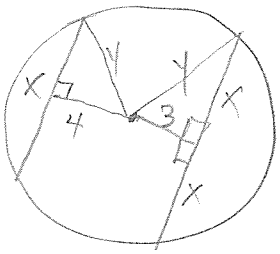
Geometry (H)
Section 9.4 – Warm up

Three parallel chords of ⊙O are drawn as shown. Their lengths are 20, 16 and 12 cm. Find the length of chord $\overline{XY}$ (not shown).



Geometry (H)
Section 9.4 – Warm up

The ratio of two chords in ⊙O is 1:2. If the shorter chord is 4 units from the center and the longer chord is 3 units from the center, find the length of each chord.



$3^2 + x^2 = y^2$ $\quad 4^2 + \left(\frac{1}{2}x\right)^2 = y^2$

$3^2 + x^2 = 4^2 + \frac{1}{4}x^2$

$9 + x^2 = 16 + \frac{1}{4}x^2$

$x^2 = 7 + \frac{1}{4}x^2$

$4x^2 = 28 + x^2$

$3x^2 = 28$

$x^2 = \frac{28}{3}$

$x = \frac{2\sqrt{7}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{2\sqrt{21}}{3}$

short chord $= \frac{2\sqrt{21}}{3}$

long chord $= \frac{4\sqrt{21}}{3}$

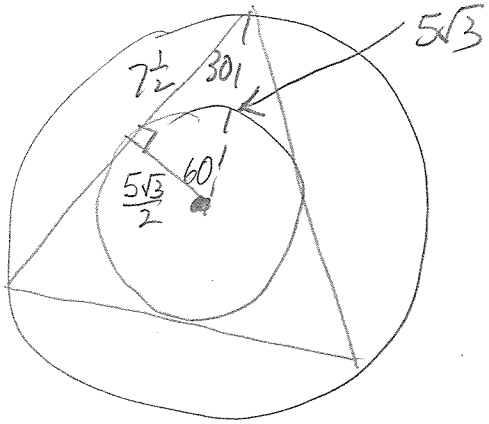
Geometry (H)
Section 9.4 – Warm up

The ratio of two chords in ⊙O is 1:2. If the shorter chord is 4 units from the center and the longer chord is 3 units from the center, find the length of each chord.

Geometry (H) Name: KEY

Classwork Review WS #3

1. An equilateral triangle having a perimeter of 45 cm is inscribed in a circle and circumscribed about another circle. Find the length of the radius of both the inscribed circle and the circumscribed circle.



radius of inscribed ⊙ = $\frac{5\sqrt{3}}{2}$

radius of circumscribed ⊙ = $5\sqrt{3}$

use 30-60-90 △.

2. In circle O, OP = 15, QP = 4 and RQ = 10. Find SP.

$4(14) = x(x + 2(15-x))$

$56 = 30x - x^2$

$x^2 - 30x + 56 = 0$

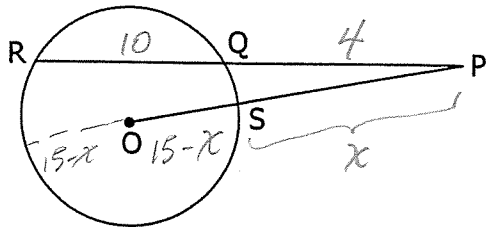
$(x-28)(x-2) = 0$

$x = 28$ OMIT $x = 2$

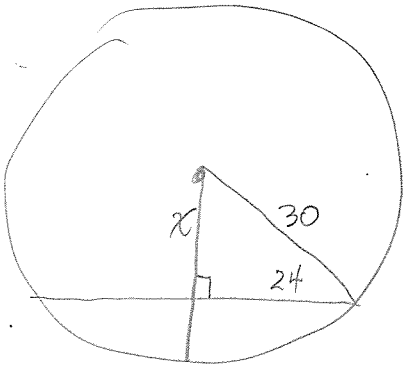
CK

$4(14) = 2(28)$ ✓

SP = 2



3. The diameter of a circle is 60 inches and a chord of in the same circle is 48 inches. How far is the chord from the center of the circle?



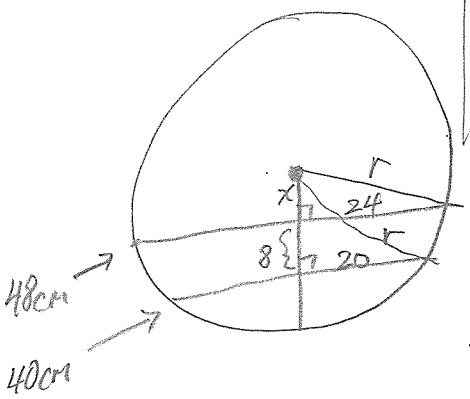
$x^2 + 24^2 = 30^2$

$x^2 = 324$

$x = 18$

Chord is 18" from center.

4. Find the radius of a circle in which a 48 cm chord is 8 cm closer to the center than a 40 cm chord.



$x^2 + 24^2 = r^2$

$(x+8)^2 + 20^2 = r^2$

$x = 7$

So, radius = 25 cm

5. In circle E, BD = 8 and AC = 24. Find ED.

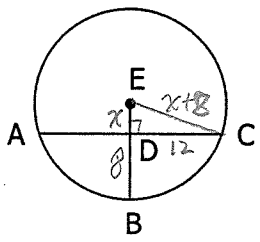
$x^2 + 12^2 = (x+8)^2$

$x^2 + 144 = x^2 + 16x + 64$

$80 = 16x$

$5 = x$

ED = 5

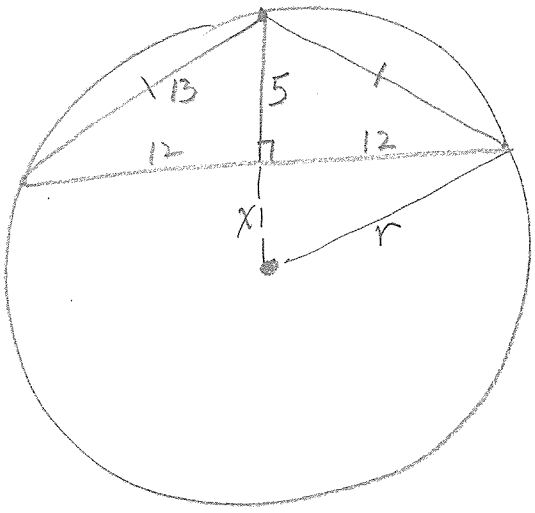


ck

$5^2 + 12^2 = 13^2$

$169 = 169$

6. An isosceles triangle with legs measuring 13 is inscribed in a circle. If the altitude to the base of the triangle is 5, find the radius of the circle. (Note: No sides of the triangle pass through the center of the circle.)



radius $(r) = 5 + x$

$x^2 + 12^2 = r^2$

$x^2 + 12^2 = (x+5)^2$

$x = \frac{119}{10} = 11\frac{9}{10}$

radius $= 5 + 11\frac{9}{10} = 16\frac{9}{10}$

This diagram and work is incorrect: