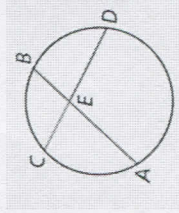


OBJECTIVE 1: Products of Chords, Secants, and Tangents

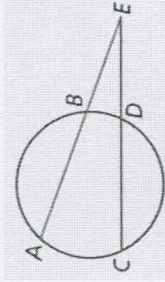
CHORD-CHORD Product Theorem:

- Multiply the two parts of the same chord and equal it to the intersecting chord.
- $(CE)(ED) = (AE)(EB)$



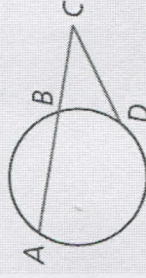
• SECANT-SECANT Product Theorem:

- Outside part times its whole secant length equal to the same for the other secant.
- $(AE)(BE) = (CE)(DE)$



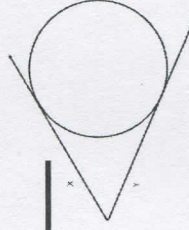
• SECANT-TANGENT Product Theorem:

- Tangent times itself equals the outside of the secant times the entire secant.
- $(AC)(BC) = (DC)^2$



• TANGENT-TANGENT Theorem:

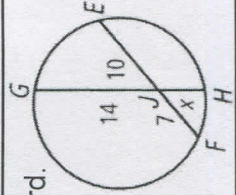
- Tangent times itself equals the other tangent times itself.
- $x^2 = y^2$



STEPS:

1. Determine which of the four theorems you are applying to the segments of the circle.
2. Fill in the parts to solve for the variable.
3. Check that you have answered the actual question, not just the missing variable.
4. Check your answer if time allows.

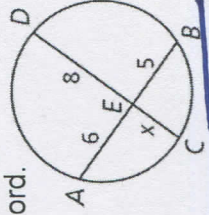
a) Find the value of x and the length of each chord.



$FJ(JE) = GJ(JH)$
 $7(10) = 14(x)$
 $70 = 14x$
 $5 = x$

$FE = 17u$
 $GH = 19u$

b) Find the value of x and the length of each chord.



$AE(EB) = CE(ED)$
 $6(8) = x(5)$
 $30 = 5x$
 $\frac{30}{5} = \frac{5x}{5}$
 $6 = x$

$AB = 11u$

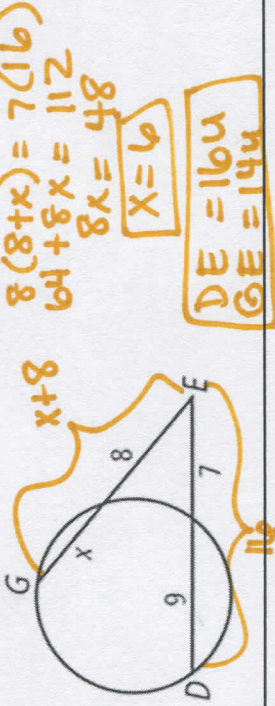
$DC = \frac{15}{4} + \frac{8}{1} = \frac{15}{4} + \frac{32}{4} = \frac{47}{4}$

c) Solve for x.

$$\begin{aligned} 4(13) &= 3(3+x) \\ 52 &= 9 + 3x \\ 43 &= 3x \\ \frac{43}{3} &= x \end{aligned}$$

$$x \approx 14.333$$

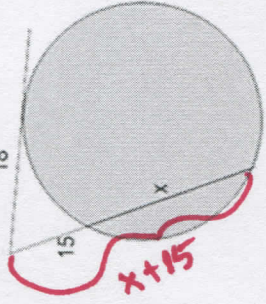
d) Find x & the length of each secant segment.



e) Solve for x.

$$\begin{aligned} LK^2 &= 15(4x) \\ x^2 &= 5(20) \\ x^2 &= 100 \\ x &= 10 \\ LK &= 10u \end{aligned}$$

f) Solve for x. Then find the length of the secant segment.



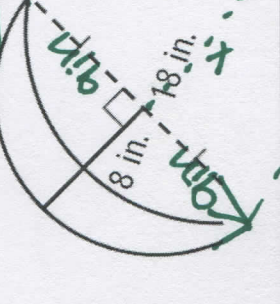
TASK 2: Real World Application $d^2 = 3 + 12 = 15 \text{ in}$

a) Melinda, an

archeologist/anthropologist, found part of an ancient plate on her dig in Egypt. If the length of chord AB was 12 inches. How big was the original plate? (HINT: Find the area.)

$$A = 56.25 \pi \text{ in}^2 \approx 176.718 \text{ in}^2$$

b) The art department is contracted to construct a wooden moon for a play. One of the artists creates a sketch of what it needs to look like by drawing a chord and its perpendicular bisector. Find the diameter of the circle used to draw the outer edge of the moon.



c) The floral archway provided was used in my friend's wedding in Hawaii. \overline{LN} is the perpendicular bisector of \overline{KM} . $KM = 6$ feet and $LN = 2$ feet. What is the diameter of the circle that contains arc KM ?

$$\begin{aligned} 3(3) &= 2(x) \\ \frac{9}{2} &= x \\ x &\approx 4.5 \\ d &= 2 + \frac{9}{2} = \frac{4}{2} + \frac{9}{2} = \frac{13}{2} \\ &= 6.5 \text{ ft} \end{aligned}$$

Still need help with:

