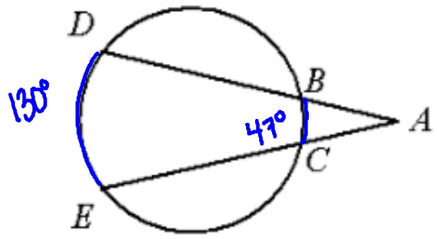
Launch:

$m(\text{arc } DE) = 130$ and $m(\text{arc } BC) = 47$. Find $m\angle A$.



$m\angle A = \frac{1}{2}(130-47)$

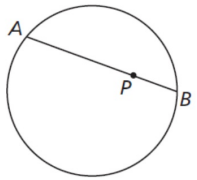
$m\angle A = 41.5°$

5.11 Power of a Point

Objectives: To apply the theory of proportion to chords, secants, and tangents of circles.

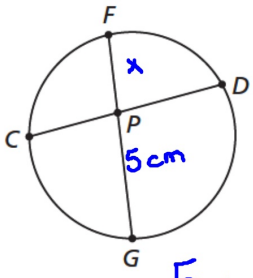
Definition

The **power of a point** *P* with respect to a circle is the product (*PA*) (*PB*), where *A* and *B* are the points of intersection of a line through *P* and the circle.



8. Standardized Test Prep In the figure, $CD = 7$ cm, $CP = 3$ cm, and $PG = 5$ cm. What is FP?

A. 2.0 cm
B. 2.4 cm
C. 2.5 cm
D. 4.2 cm

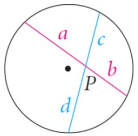


Power of P = 12

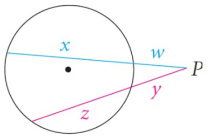
$5x = 12$

$x = 2.4$

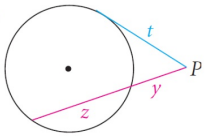
Theorem 5-15

I. 

$a \cdot b = c \cdot d$

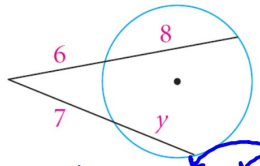
II. 

(x + w)w = (z + y)y

III. 

(z + y)y $= t^2$

Examples Find the value of the variable.

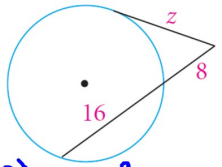
a. 

$(6+8)6 = (7+y)7$

$84 = 49 + 7y$

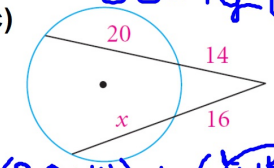
$-49 \quad -49$

$35 = 7y$ $\quad y = 5$

b. 

$(16+8)8 = z^2$

$192 = z^2$ $\quad z \approx 13.86$

c) 

$(20+14)14 = (x+16)16$

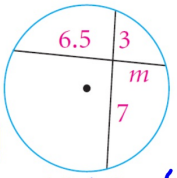
$476 = 16x + 256$

$-256 \quad -256$

$220 = 16x$

$\div 16 \quad \div 16$

$x = 13.75$

d) 

$(3)(7) = (6.5)(m)$

$21 = 6.5m$

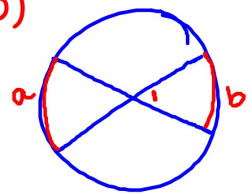
$m \approx 3.23$

On Your Own

Worksheet 5.10/5.11

(1-7, 13-15)

$m\angle 1 = \frac{1}{2}(a+b)$



$m\angle 2 = \frac{1}{2}(a-b)$