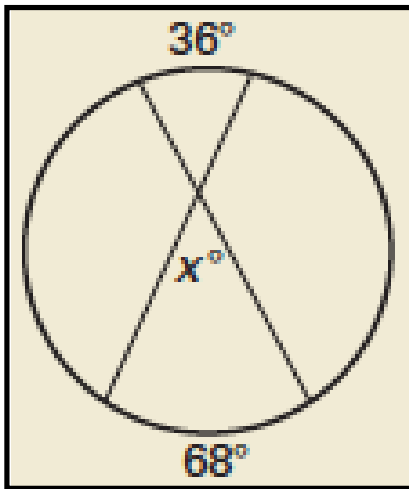


## Bellwork 03/22/2012

Find the value of  $x$  and  $y$ .

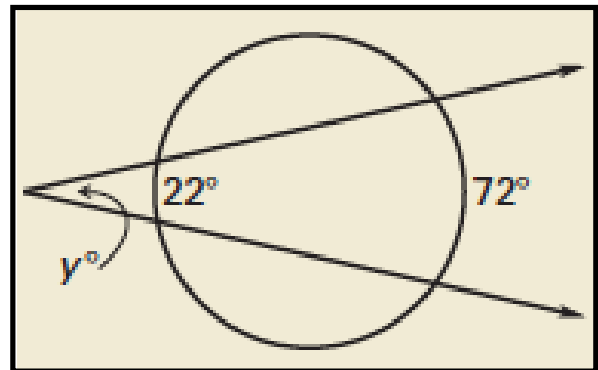
1.



$$x = \frac{1}{2}(36 + 68)$$

$$x = 52$$

2.



$$y = \frac{1}{2}(72 - 22)$$

$$y = \frac{1}{2}(50)$$

$$y = 25$$

## Geometry

### 10.6 Find Segment Lengths in Circles

Standard(s): 2, 4

### Vocabulary:

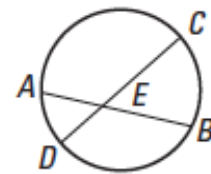
#### THEOREM

*For Your Notebook*

#### THEOREM 10.14 Segments of Chords Theorem

If two chords intersect in the interior of a circle, then the product of the lengths of the segments of one chord is equal to the product of the lengths of the segments of the other chord.

*Proof:* Ex. 21, p. 694



$$EA \cdot EB = EC \cdot ED$$

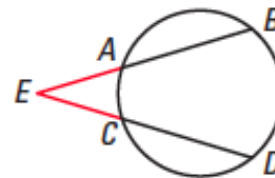
#### THEOREM

*For Your Notebook*

#### THEOREM 10.15 Segments of Secants Theorem

If two secant segments share the same endpoint outside a circle, then the product of the lengths of one secant segment and its external segment equals the product of the lengths of the other secant segment and its external segment.

*Proof:* Ex. 25, p. 694



$$EA \cdot EB = EC \cdot ED$$

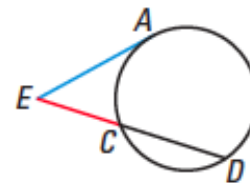
#### THEOREM

*For Your Notebook*

#### THEOREM 10.16 Segments of Secants and Tangents Theorem

If a secant segment and a tangent segment share an endpoint outside a circle, then the product of the lengths of the secant segment and its external segment equals the square of the length of the tangent segment.

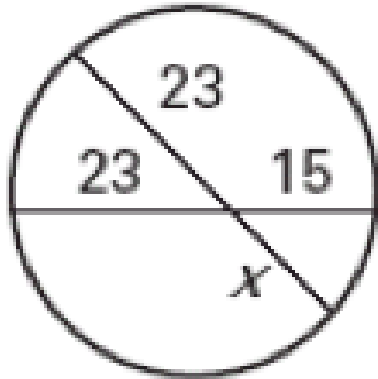
*Proof:* Ex. 26, p. 694



$$EA^2 = EC \cdot ED$$

## Segments of Chords

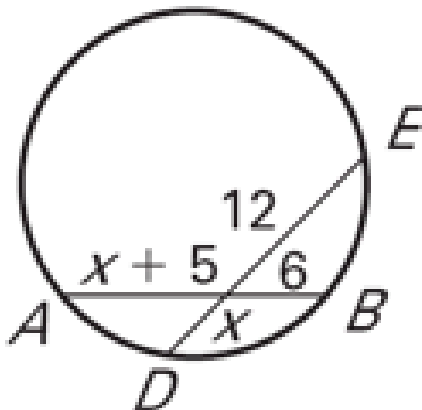
Find the value of  $x$ .



$$23 \cdot x = 23 \cdot 15$$

$$x = 15$$

Find  $AB$  and  $DE$ .



$$6(x+5) = 12x$$

$$6x + 30 = 12x$$

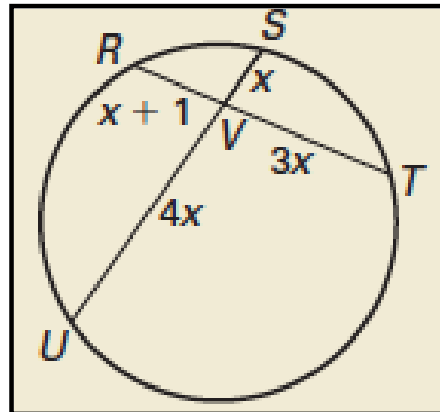
$$6x = 30$$

$$x = 5$$

$$AB = 5 + 5 + 6 = 16$$

$$DE = 5 + 12 = 17$$

Find  $RT$  and  $SU$ .



$$x(4x) = 3x(x+1)$$

$$4x^2 = 3x^2 + 3x$$

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

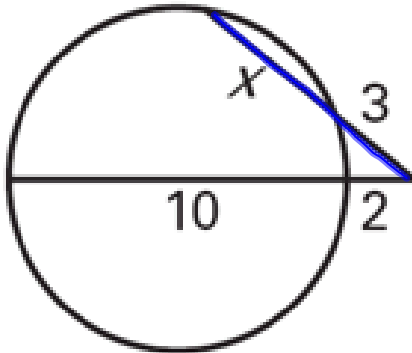
$$x = 3$$

$$SU = 15$$

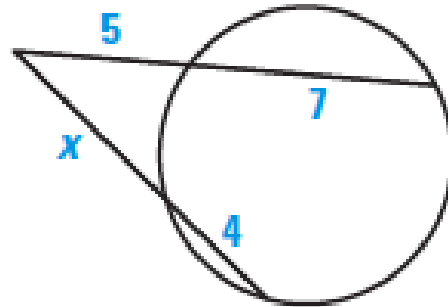
$$RT = 13$$

## Segments of Secants

Find the value of  $x$ .

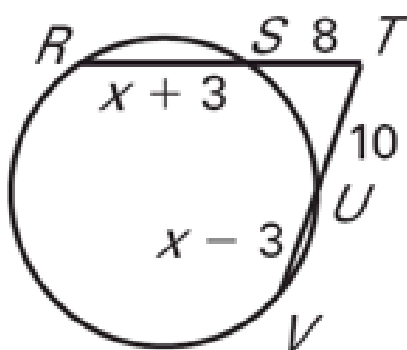


$$\begin{aligned} 3(x+3) &= 2(12) \\ 3x+9 &= 24 \\ 3x &= 15 \\ x &= 5 \end{aligned}$$



$$\begin{aligned} 5(12) &= x(x+4) \\ 60 &= x^2 + 4x \\ -60 &\quad -60 \\ \underline{x^2 + 4x - 60} &= 0 \\ (x+10)(x-6) &= 0 \\ x &= 6 \end{aligned}$$

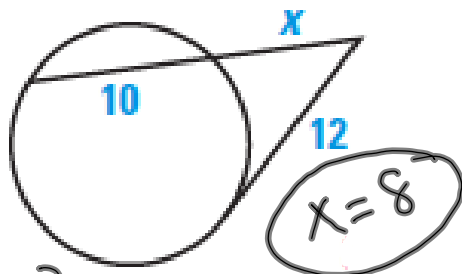
Find  $RT$  and  $TV$ .



$$\begin{aligned} 8(x+11) &= 10(x+7) \\ 8x+88 &= 10x+70 \\ 2x &= 18 \\ x &= 9 \end{aligned}$$

$$\begin{aligned} RT &= 9+3+8=20 \\ TV &= 9-3+10=16 \end{aligned}$$

## Segments of Secants and Tangents

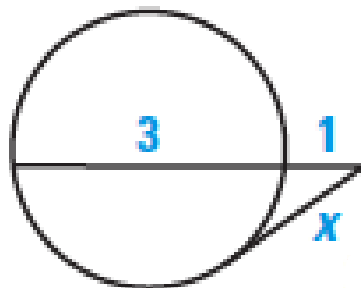
Find the value of  $x$ .

$$12^2 = x(x+10)$$

$$144 = x^2 + 10x$$

$$\begin{array}{r} -144 \\ x^2 + 10x - 144 = 0 \end{array}$$

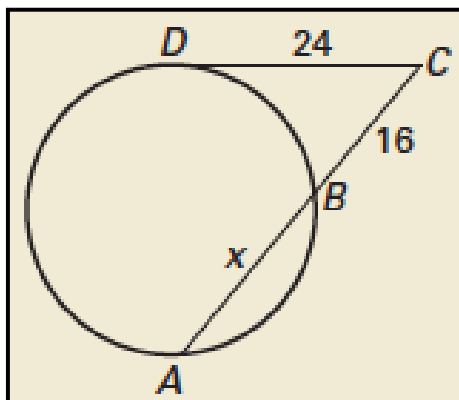
$$(x+18)(x-8) = 0$$



$$x^2 = 1(4)$$

$$\sqrt{x^2} = \sqrt{4}$$

$$x = 2$$

Find the length of  $AB$ .

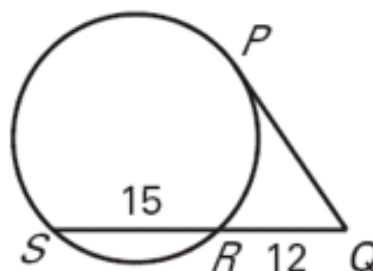
$$576 = 16(x+16)$$

$$576 = 16x + 256$$

$$16x = 320$$

$$x = 20$$

$$AB = 20$$

Find the length of  $PQ$ .

$$PQ^2 = 12(27)$$

$$\sqrt{PQ^2} = \sqrt{324}$$

$$PQ = 18$$

## Homework Assignment

### Worksheet 10.6B

