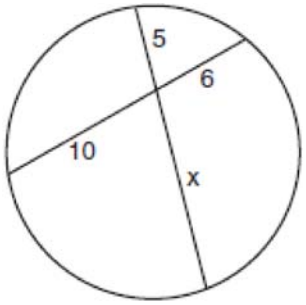
G.G.53: Segments Intercepted by Circle 4: Investigate, justify, and apply theorems regarding segments intersected by a circle: along two intersecting chords of a given circle

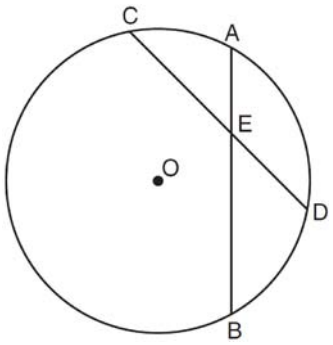
1 The accompanying diagram shows two intersecting paths within a circular garden.



What is the length of the portion of the path marked x?

1) $8\frac{1}{3}$
2) 11
3) 3
4) 12

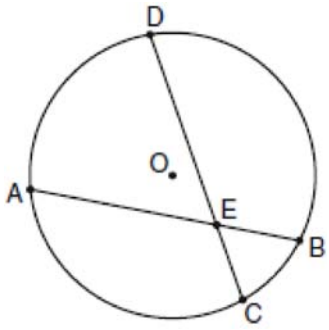
2 In the diagram below of circle O, chords $\overline{AB}$ and $\overline{CD}$ intersect at E.



If $CE = 10$, $ED = 6$, and $AE = 4$, what is the length of $\overline{EB}$?

1) 15
2) 12
3) 6.7
4) 2.4

3 In the diagram of circle O below, chord $\overline{AB}$ intersects chord $\overline{CD}$ at E, $DE = 2x + 8$, $EC = 3$, $AE = 4x - 3$, and $EB = 4$.



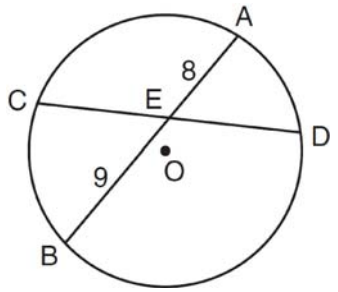
What is the value of x?

1) 1
2) 3.6
3) 5
4) 10.25

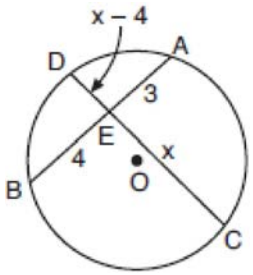
4 Chords $\overline{AB}$ and $\overline{CD}$ intersect at point E in a circle with center at O. If $AE = 8$, $AB = 20$, and $DE = 16$, what is the length of $\overline{CE}$?

1) 6
2) 9
3) 10
4) 12

5 In the diagram below of circle O, chord $\overline{AB}$ bisects chord $\overline{CD}$ at E. If $AE = 8$ and $BE = 9$, find the length of $\overline{CE}$ in simplest radical form.



6 In the accompanying diagram of circle O, chords $\overline{AB}$ and $\overline{CD}$ intersect at E. If $AE = 3$, $EB = 4$, $CE = x$, and $ED = x - 4$, what is the value of x?



7 A toy truck is located within a circular play area. Alex and Dominic are sitting on opposite endpoints of a chord that contains the truck. Alex is 4 feet from the truck, and Dominic is 3 feet from the truck. Meira and Tamara are sitting on opposite endpoints of another chord containing the truck. Meira is 8 feet from the truck. How many feet, to the *nearest tenth of a foot,* is Tamara from the truck? Draw a diagram to support your answer.

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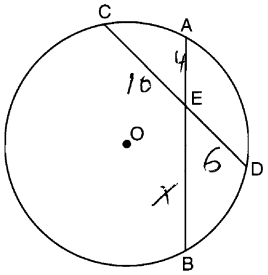
Answer Section

1 ANS: 4
If two chords intersect, the product of the segments of one chord equals the product of the segments of the other chord. $5x = 10 \times 6$
$x = 12$.

REF: 010908b

2 ANS: 1



$4x = 6 \cdot 10$
$x = 15$

REF: 081017ge

3 ANS: 2
$4(4x - 3) = 3(2x + 8)$
$16x - 12 = 6x + 24$
$10x = 36$
$x = 3.6$

REF: 080923ge

4 ANS: 1
$8 \times 12 = 16x$
$6 = x$

REF: 081328ge

5 ANS:
$x^2 = 9 \cdot 8$
$x = \sqrt{72}$
$x = \sqrt{36}\sqrt{2}$
$x = 6\sqrt{2}$

REF: 011132ge

6 ANS:

6. If two chords intersect, the product of the segments of one chord equals the product of the segments of the other chord. $x(x-4) = 4 \times 3$

$x^2 - 4x - 12 = 0$

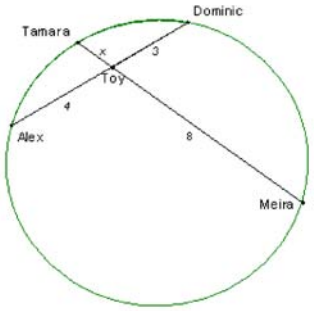
$(x-6)(x+2) = 0$

$x = 6 \text{ or } x = -2$

. If you substitute -2 for x, distance is negative, which cannot be the case. Therefore $x = 6$.

REF: 060723b

7 ANS:



1.5. If two chords intersect, the product of the segments of one chord equals the product of the segments of the other chord. $8x = 3 \times 4$

$x = 1.5$

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REF: 080225b