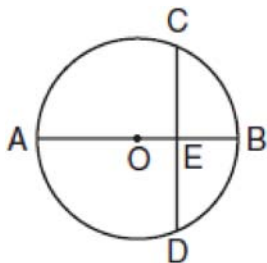


**G.G.49: Chords 2: Investigate theorems regarding chords of a circle: perpendicular bisectors of chords; the relative lengths of chords compared to their distance from the center**

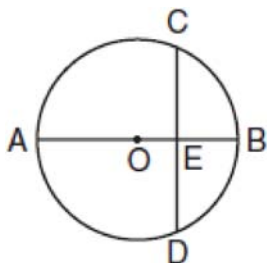
- 1 In a circle, diameter  $\overline{AB}$  is perpendicular to chord  $\overline{CD}$  at  $L$ . Which statement will always be true about this circle?
- 1)  $CL = LD$
  - 2)  $AL > LB$
  - 3)  $(CL) \times (LD) = AB$
  - 4)  $BL > LA$

- 2 In the accompanying diagram of circle  $O$ , diameter  $\overline{AB}$  is perpendicular to chord  $\overline{CD}$  and intersects  $\overline{CD}$  at  $E$ ,  $AE = 9$ , and  $EB = 4$ .

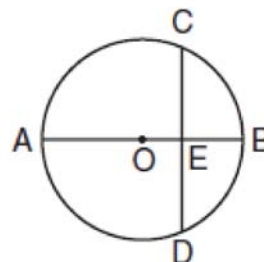


What is  $ED$ ?

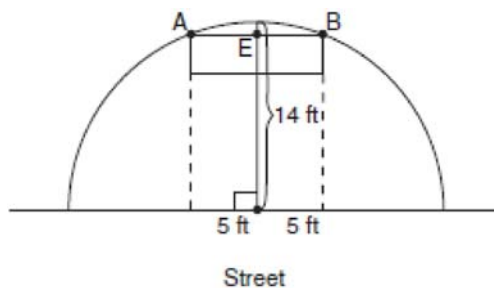
- 1) 8
  - 2) 7
  - 3) 6
  - 4) 4
- 3 In the accompanying diagram of circle  $O$ , diameter  $\overline{AB} \perp \overline{CD}$ , and  $CD = 14$ . Find  $CE$ .



- 4 In the accompanying diagram of circle  $O$ , diameter  $\overline{AB}$  is perpendicular to chord  $\overline{CD}$  at  $E$ ,  $CD = 8$ , and  $EB = 2$ . What is the length of the diameter of circle  $O$ ?



- 5 The accompanying diagram shows a semicircular arch over a street that has a radius of 14 feet. A banner is attached to the arch at points  $A$  and  $B$ , such that  $AE = EB = 5$  feet. How many feet above the ground are these points of attachment for the banner?



**G.G.49: Chords 2: Investigate theorems regarding chords of a circle: perpendicular bisectors of chords; the relative lengths of chords compared to their distance from the center**  
**Answer Section**

1 ANS: 1 REF: 089617siii

2 ANS: 3 REF: 080114siii

3 ANS:  
7

REF: 068104siii

4 ANS:

$$10. 2x = 4^2$$

$$x = 8$$

$$d = 8 + 2 = 10$$

REF: 019907siii

5 ANS:

$\sqrt{171}$ . The distance from  $A$  to the point on the street directly below  $E$  is also a radius of 14 feet.

$$5^2 + b^2 = 14^2$$

$$b^2 = 171$$

$$b = \sqrt{171}$$

REF: 080124b