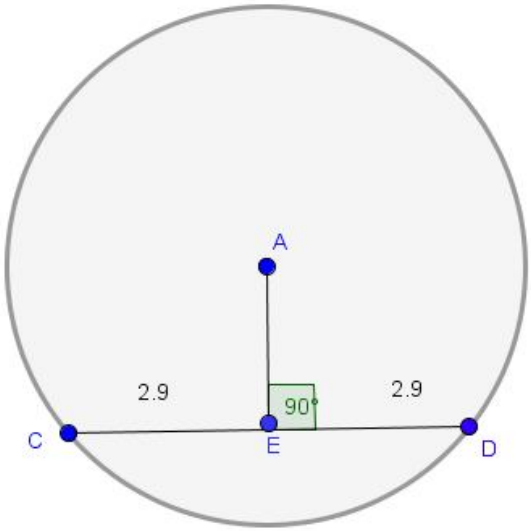
Student Activity Theorem 21

Use in connection with interactive file "Theorem 21" on the Student's CD.

To explore the perpendicular from the centre of a circle to a chord.



1. Which line is a chord of the circle?

   _____

   _____

2. What is the measure of the angle between the chord and the line segment $|AE|$?

   _____

   _____

3. As you move the point C, what happens to this angle?

   _____

   _____

   _____

4. Move the points on the interactive file and decide if you agree that the line segment $|AE|$ is always perpendicular to the line segment $|CD|$.

   _____

   _____

5. What is the length of the line segments $|CE|$ and $|ED|$? Are they equal?

   _____

   _____

6. Move the point C around the circle. Do you notice any relationship between the lengths of the line segments CE and ED? What is this relationship?

_____

_____

_____

_____

7. Move the point C above point A. Are the lengths of the line segments $|CE|$ and $|ED|$ still the same?

_____

_____

_____

8. Move the point D above point A. Are the lengths of the line segments $|CE|$ and $|ED|$ still the same?

_____

_____

_____

9. What happens when one moves point A?

_____

_____

_____

10. What is significant about the point A?

_____

_____

_____

11. With point A moved from its original position, what happens to the angle AED?

_____

_____

_____

12. With point A moved from its original position, what happens to the lengths of CE and ED?

_____

_____

_____

13. If angle AED was not equal to 90^o, would CE and ED still be the same? Explain your answer.

_____

_____

_____

_____

14. What is meant by the bisector of a chord?

_____

_____

_____

15. Do you agree that AE is perpendicular to CD and does it bisect CD, regardless of the position of CD?

_____

_____

_____

16. Is it true that the perpendicular from the centre to any chord bisects that chord? *(Hint you were able to move C to enable CD to become any chord of a circle.)*

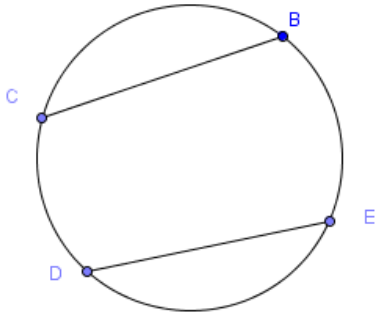
_____

_____

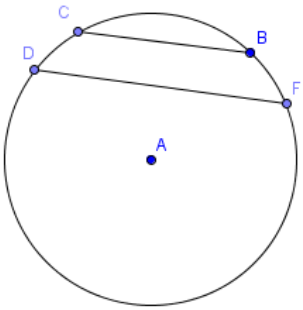
_____

Challenges

17. Find the centre of this circle.



18. CB and DF are two parallel chords and the perpendicular distance between the parallel lines is 1 cm. Find the length of the chord CB, if the radius of the circle is 5 cm and chord DF measures 8 cm.



19. If AB and BC are the chords of a circle, draw the circle that touches the points A, B and C.