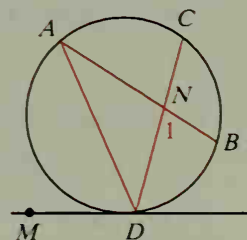


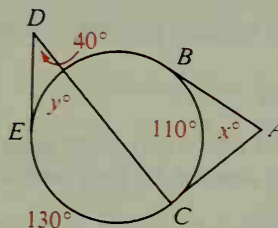
Self-Test 2

\overleftrightarrow{MD} is tangent to the circle.

1. If $m\widehat{BD} = 80$, then $m\angle A = \underline{\hspace{1cm}}$.
2. If $m\angle ADM = 75$, then $m\widehat{AD} = \underline{\hspace{1cm}}$.
3. If $m\widehat{BD} = 80$ and $m\angle 1 = 81$, then $m\widehat{AC} = \underline{\hspace{1cm}}$.
4. If $AN = 12$, $BN = 6$, and $CN = 8$, then $DN = \underline{\hspace{1cm}}$.

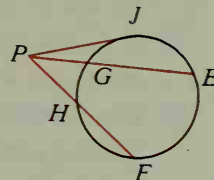


5. \overline{AB} , \overline{AC} , and \overline{DE} are tangents.
Find the values of x and y .



\overline{PE} and \overline{PF} are secants and \overline{PJ} is a tangent.

6. If $m\widehat{EF} = 100$ and $m\widehat{GH} = 30$, then $m\angle FPE = \underline{\hspace{1cm}}$.
7. If $PG = 4$, $PE = 15$, and $PH = 6$, then $PF = \underline{\hspace{1cm}}$.
8. If $PH = 8$ and $HF = 10$, then $PJ = \underline{\hspace{1cm}}$.



Application

Distance to the Horizon

If you look out over the surface of the Earth from a position at P , directly above point B on the surface, you see the horizon wherever your line of sight is tangent to the surface of the Earth. If the surface around B is smooth (say you are on the ocean on a calm day), the horizon will be a circle, and the higher your lookout is, the farther away this horizon circle will be.

You can use Theorem 9-13 to derive a formula that tells how far you can see from any given height. The diagram at the right shows a section through the Earth containing P , H , and O , the center of the Earth. \overline{PH} is tangent to circle O at H . \overline{PA} is a secant passing through the center O . Theorem 9-13 says that:

$$(PH)^2 = PA \cdot PB$$

