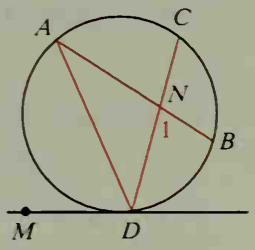
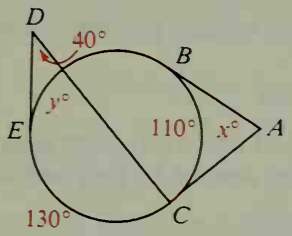
Self-Test 2

$\overleftrightarrow{MD}$ is tangent to the circle.

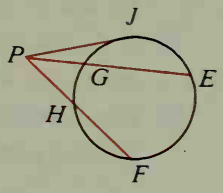


1. If $m\widehat{BD} = 80$, then $m\angle A =$ ___?___.
2. If $m\angle ADM = 75$, then $m\widehat{AD} =$ ___?___.
3. If $m\widehat{BD} = 80$ and $m\angle 1 = 81$, then $m\widehat{AC} =$ ___?___.
4. If $AN = 12$, $BN = 6$, and $CN = 8$, then $DN =$ ___?___.



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

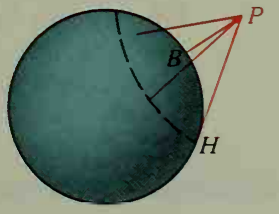
$\overline{PE}$ and $\overline{PF}$ are secants and $\overline{PJ}$ is a tangent.



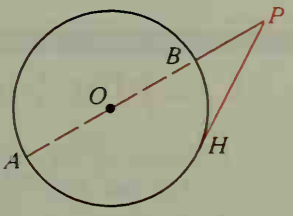
6. If $m\widehat{EF} = 100$ and $m\widehat{GH} = 30$, then $m\angle FPE =$ ___?___.
7. If $PG = 4$, $PE = 15$, and $PH = 6$, then $PF =$ ___?___.
8. If $PH = 8$ and $HF = 10$, then $PJ =$ ___?___.

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:



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