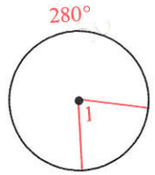
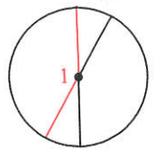
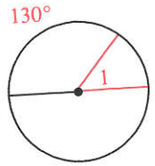
Written Exercises

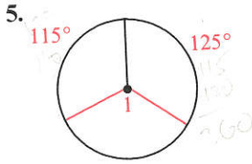
Find the measure of central $\angle 1$.

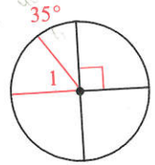
A **1.** 

2. 

3. 

4. 

5. 

6. 

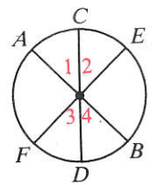
7. At 11 o'clock the hands of a clock form an angle of ___?___°.

8. The hands of a clock form a 120° angle at ___?___ o'clock and at ___?___ o'clock.

9. a. Draw a circle. Place points A, B, and C on it in such positions that $m\overset{\frown}{AB} + m\overset{\frown}{BC}$ does not equal $m\overset{\frown}{AC}$.

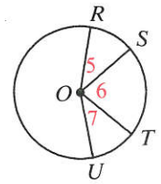
b. Does your example in part (a) contradict Postulate 16?

In Exercises 10 and 11, $\overline{AB}$, $\overline{CD}$, and $\overline{EF}$ are diameters.



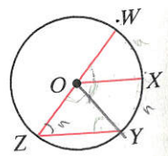
10. Given: $\overset{\frown}{AC} \cong \overset{\frown}{CE}$
Prove: $\angle 3 \cong \angle 4$

11. Given: $\angle 1 \cong \angle 2$
Prove: $\overset{\frown}{BD} \cong \overset{\frown}{DF}$



12. Given: $\odot O$ with $m\angle 5 = m\angle 7$
Prove: $\overset{\frown}{RT} \cong \overset{\frown}{SU}$

B **13.** Given: $\overline{WZ}$ is a diameter of $\odot O$;
$\overline{OX} \parallel \overline{ZY}$
Prove: $\overset{\frown}{WX} \cong \overset{\frown}{XY}$
(*Hint:* Draw $\overline{OY}$.)



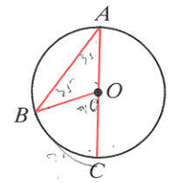
14. Given: $\overline{WZ}$ is a diameter of $\odot O$;
$m\overset{\frown}{WX} = m\overset{\frown}{XY} = n$
Prove: $m\angle Z = n$

15. $\overline{AC}$ is a diameter of $\odot O$.

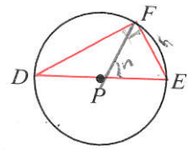
a. If $m\angle A = 35$, then $m\angle B =$ ___?___, $m\angle BOC =$ ___?___, and $m\overset{\frown}{BC} =$ ___?___.

b. If $m\angle A = n$, then $m\overset{\frown}{BC} =$ ___?___.

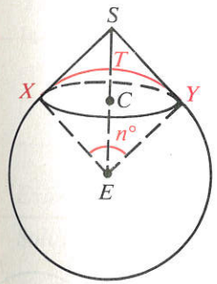
c. If $m\overset{\frown}{BC} = 6k$, then $m\angle A =$ ___?___.

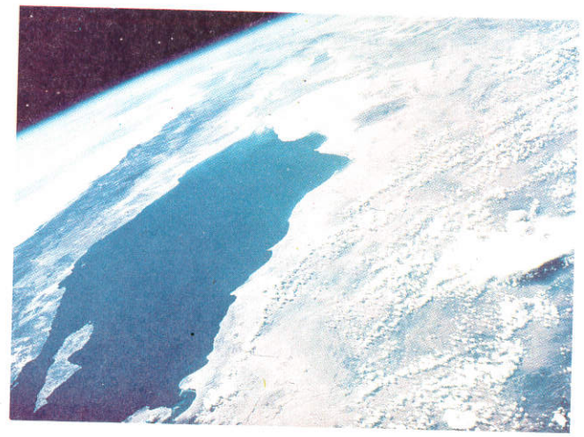


16. $\overline{DE}$ is a diameter of $\odot P$ and $m\overset{\frown}{EF} = n$.
$m\angle DEF =$ ___?___.
(*Hint:* Draw $\overline{PF}$.)



The diagram, not drawn to scale, shows satellite S above the Earth, represented as sphere E. All lines tangent to the Earth from S touch the Earth at points on a circle with center C. Any two points on the Earth's surface on or above that circle can communicate with each other via S. X and Y are as far apart as two communication points can be. The Earth distance between X and Y equals the length of $\overset{\frown}{XTY}$, which equals $\frac{n}{360}$ · circumference of the Earth. That circumference is approximately 40,200 km and the radius of the Earth is approximately 6400 km.





C **17.** The photograph above shows the view from Gemini V looking north over the Gulf of California toward Los Angeles. The orbit of Gemini V ranged from 160 km to 300 km above the Earth. Take S to be 300 km above the Earth. That is, $ST = 300$ km. Find the Earth distance, rounded to the nearest 100 km, between X and Y. (*Hint:* Since you can find the value of $\cos \frac{n°}{2}$ you can determine $n°$.)

18. Repeat Exercise 17, but with S twice as far from the Earth. Note that the distance between X and Y is not twice as great as before.