

Unit 4b: Circles

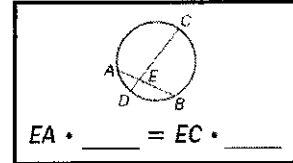
DATE	TOPIC
Wednesday March 9	Segments in a Circle: two chords, two secants, one secant and one tangent Pages 1-5
Thursday March 10	Segments in a Circle: Two tangents Pages 6-10
Friday March 11	Segments in Circle Wrap-up, students in circle with markers
Monday March 14	Chord Properties Pages 11-17
Tuesday March 15	Segments and Chord Properties Practice Group work
Wednesday March 16	QUIZ
Thursday March 17	Circumference and Arc Length Pages 18-21
Friday March 18	Area of Sector Page 22-27
Monday March 21	Volume: Prisms and Cylinders Page 28-32
Tuesday March 22	Volume: Pyramids and Cones Page 33-36
Wednesday March 23	Volume: Spheres Page 37-40
Thursday March 24	Volume Practice/Review Group work
Friday March 25	QUIZ
Monday March 28	Review/Practice Test Page 41-43
Tuesday March 29	Review Page 44-46
Wednesday March 30	TEST

Segment Lengths in Circles



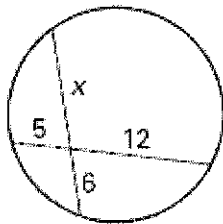
Segments of Chords Theorem

- If two chords intersect in the interior of a circle, then ...



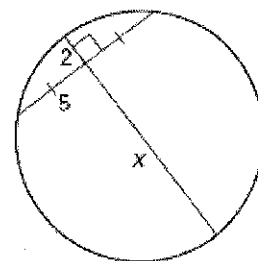
Example 1:

- Find the value of x .



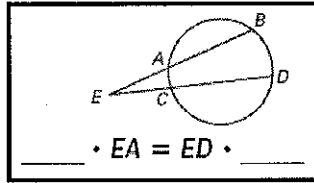
Example 2:

- Find the value of x .



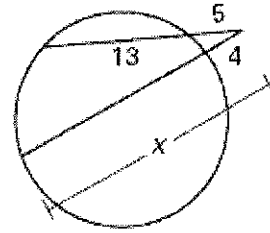
Segments of Secants Theorem

- If two secant segments share the same endpoint outside a circle, then ...



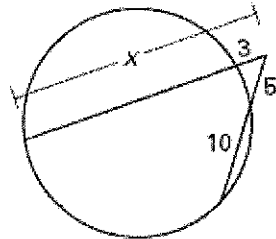
Example 3:

- Find the value of x.



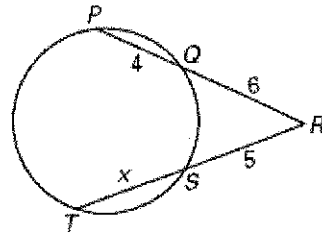
Example 4:

- Find the value of x.



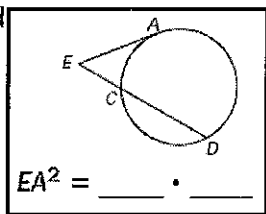
Example 5:

- Find the value of x.



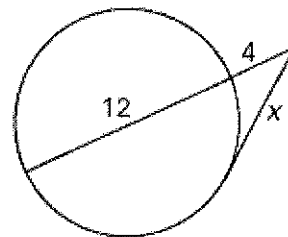
Segments of Secants and Tangents Theorem

- If a secant segment and a tangent segment share and endpoint outside a circle, then ...



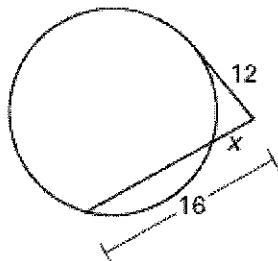
Example 6:

- Find the value of x.



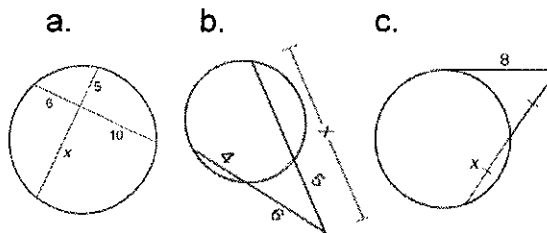
Example 7:

- Find the value of x.



Example 8:

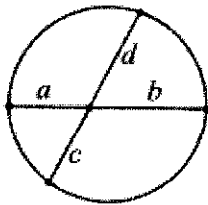
- Find the value of x.



Segments in a Circle

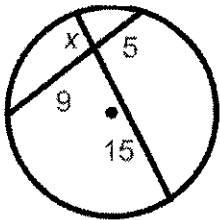
INSIDE
the circle

Two chords

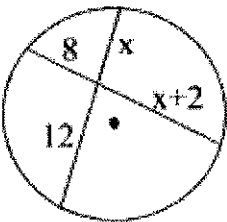


$$a \cdot b = c \cdot d$$

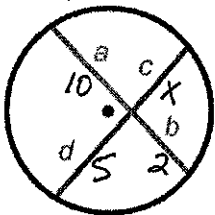
Example 1:



Example 2:



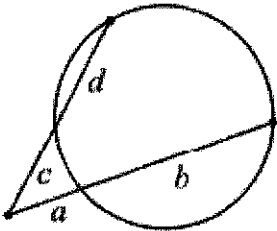
Example 3:



Segments in a Circle

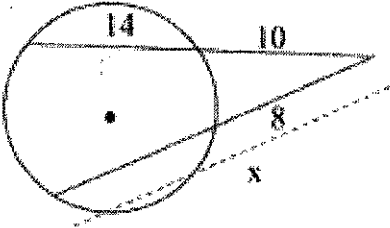
**OUTSIDE
the circle**

Two Secant Segments

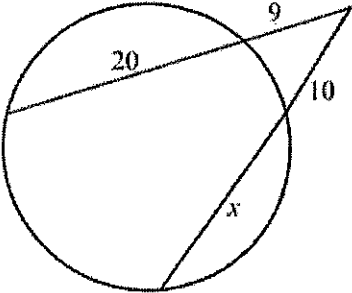


$$a \cdot (a+b) = c \cdot (c+d)$$

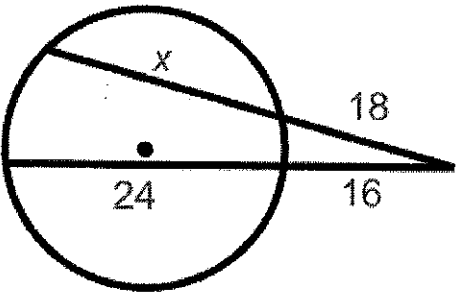
Example 1:



Example 2:

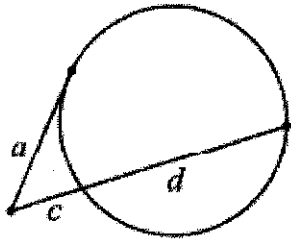


Example 3:



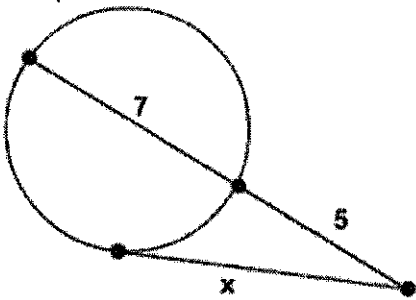
Segments in a Circle

A Tangent and a Secant Segment

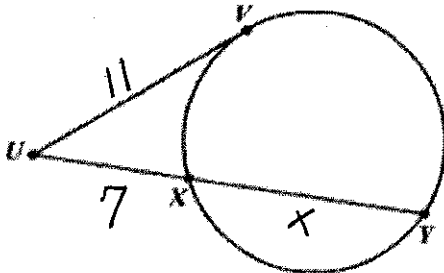


$$a^2 = c \cdot (c + d)$$

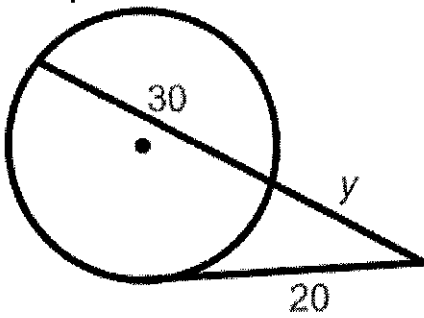
Example 1:



Example 2:

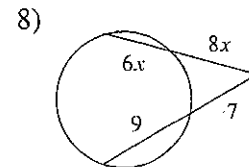
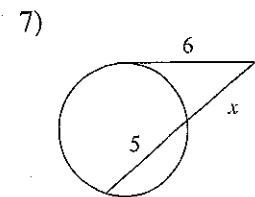
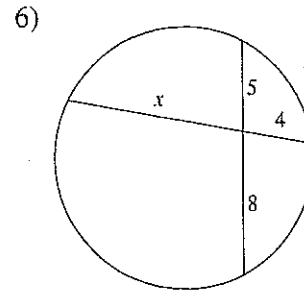
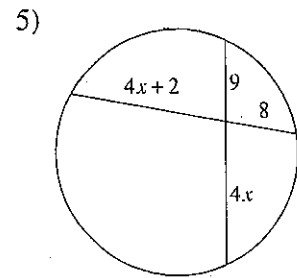
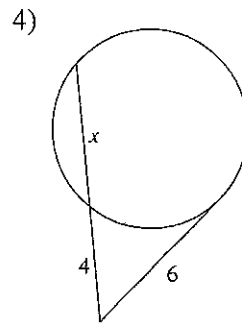
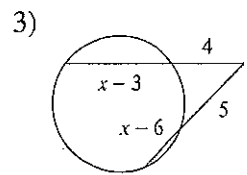
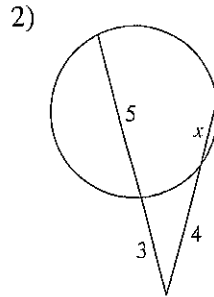
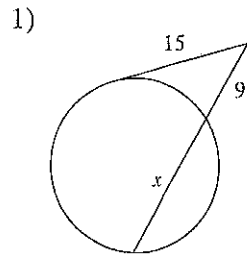


Example 3:



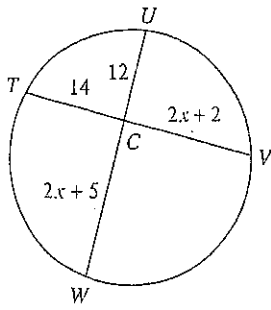
Segment Lengths in Circles

Solve for x . Assume that lines which appear tangent are tangent.

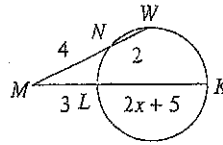


Find the measure of the line segment indicated. Assume that lines which appear tangent are tangent.

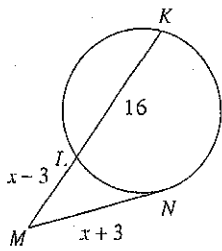
9) Find UW



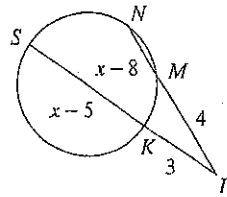
10) Find KM



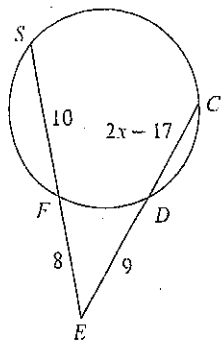
11) Find NM



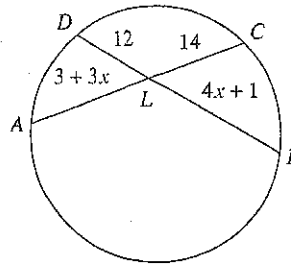
12) Find NL



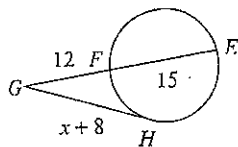
13) Find CE



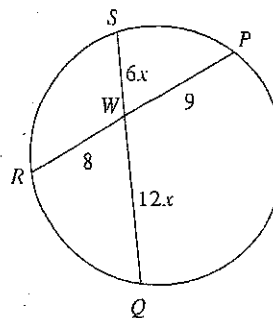
14) Find CA



15) Find HG



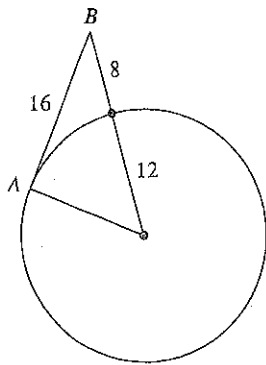
16) Find WS



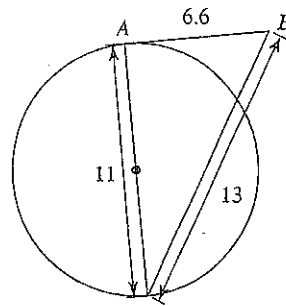
Tangents to Circles

Determine if line AB is tangent to the circle.

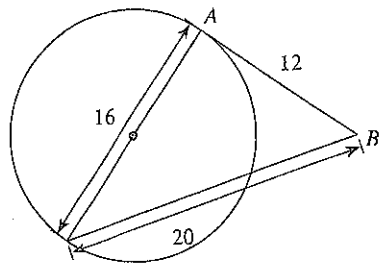
1)



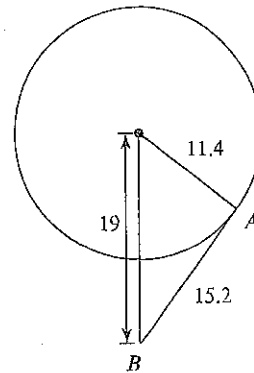
2)



3)

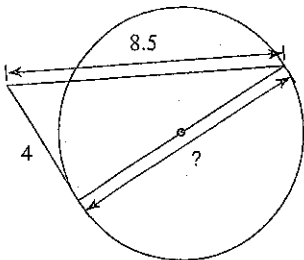


4)

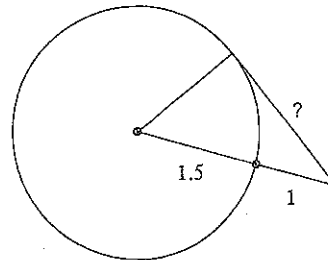


Find the segment length indicated. Assume that lines which appear to be tangent are tangent.

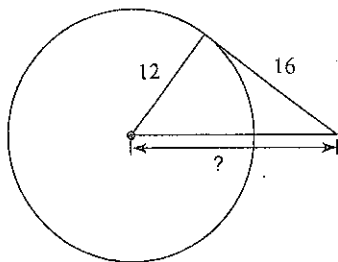
5)



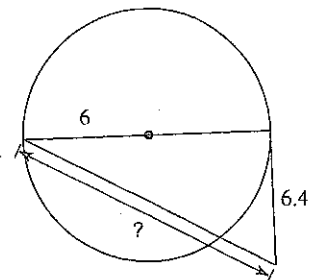
6)



7)

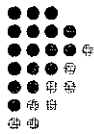


8)



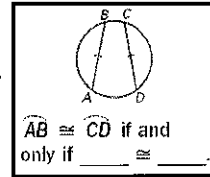
Unit 3:
Circles & Spheres

Math 2 – 6.3
Properties of Chords



Theorem

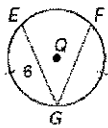
- In the same circle, or in congruent circles, two minor arcs are congruent if and only if



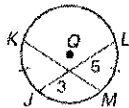
Example 1:

- Find the chord length.

a. FG



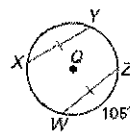
b. KM



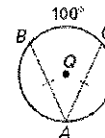
Example 2:

- Find the arc length.

a. $m\widehat{XY}$

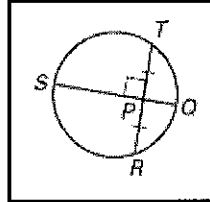


b. $m\widehat{AB}$



Theorem

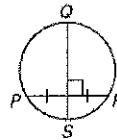
- If one chord is a perpendicular bisector of another chord, then ...



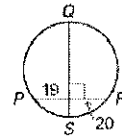
Example 3:

- Tell whether QS is a diameter of the circle. If not, explain why.

a.

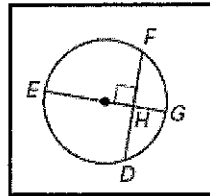


b.



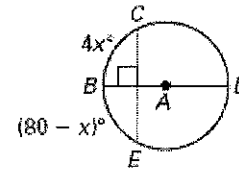
Theorem

- If a diameter of a circle is perpendicular to a chord, then ...



Example 4:

- Find the measures of \widehat{CB} and \widehat{BE} .

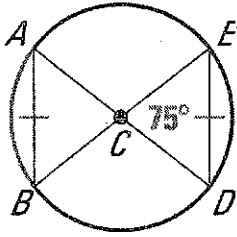


Name: _____ Date: _____ Hour: _____

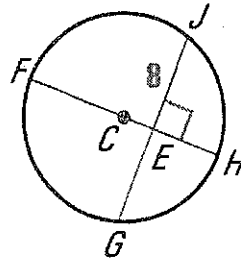
Geometry Applying Properties of Chords Worksheet

Finding Arc Measures For #1-2, find the measure of the specified arc or chord in $\odot C$.

1. \widehat{AB}

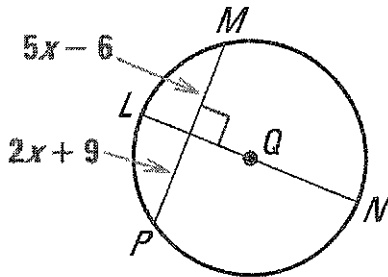


2. \overline{EG}

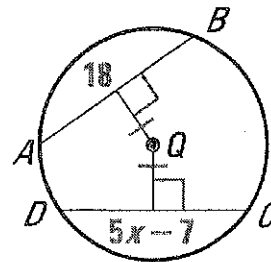


Algebra For #3-5, find the value of x in $\odot Q$. Explain your reasoning.

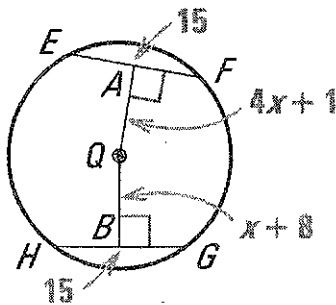
3.



4.

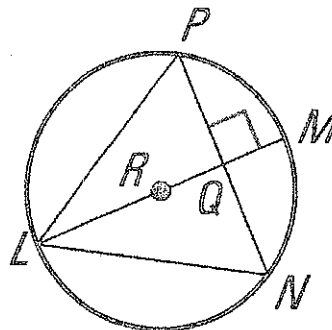


5.

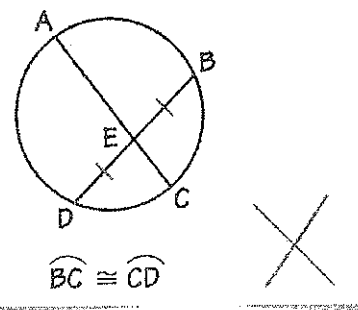


6. In the diagram of $\odot R$, which congruence relation is not necessarily true?

- (A) $\overline{PQ} \cong \overline{QN}$
- (B) $\overline{NL} \cong \overline{LP}$
- (C) $\widehat{MN} \cong \widehat{MP}$
- (D) $\overline{PN} \cong \overline{PL}$

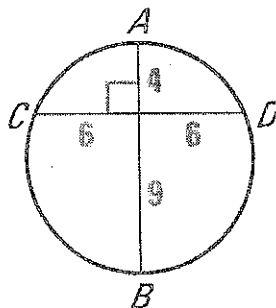


7. Explain why the congruence statement is wrong.

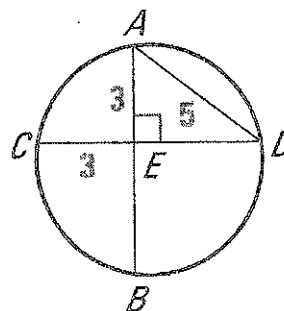


Using Diameters For #8-9, determine whether \overline{AB} is a diameter of the circle. Explain your reasoning.

8.



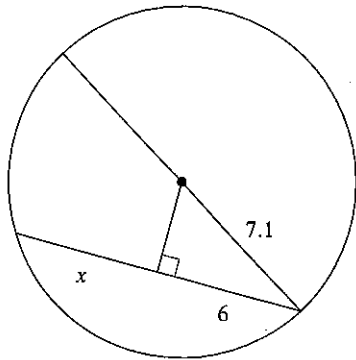
9.



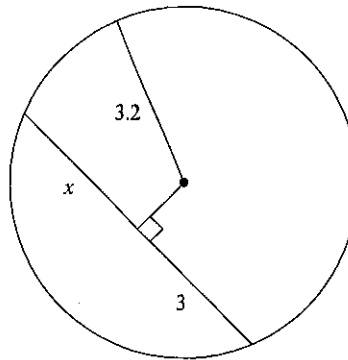
Arcs and Chords

Find the length of the segment indicated. Round your answer to the nearest tenth if necessary.

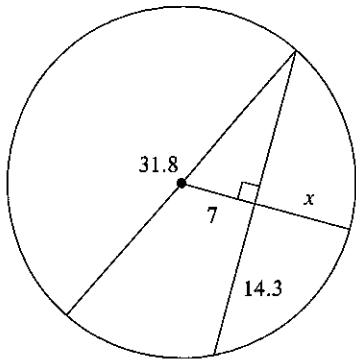
1)



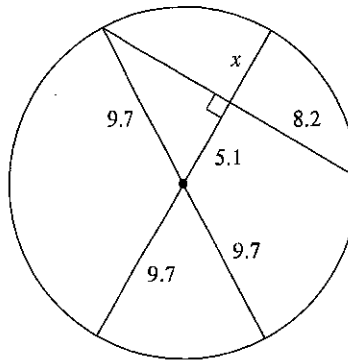
2)



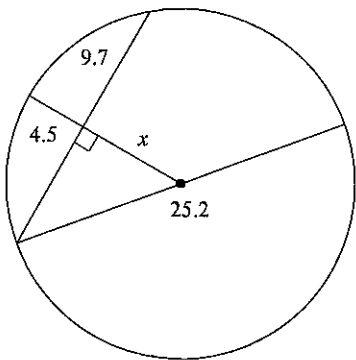
3)



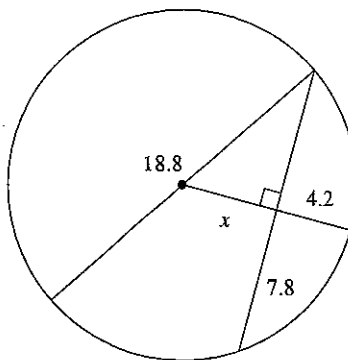
4)



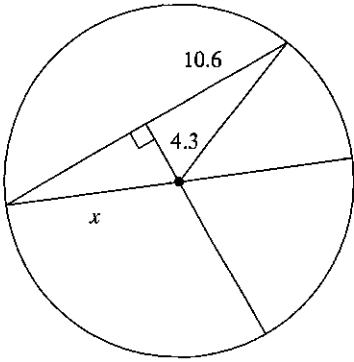
5)



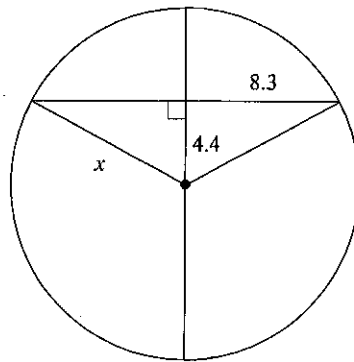
6)



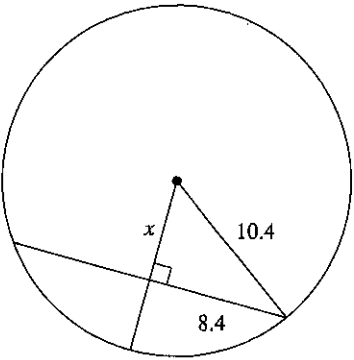
7)



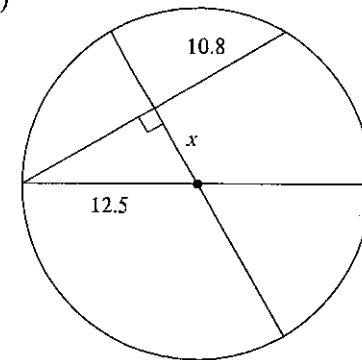
8)



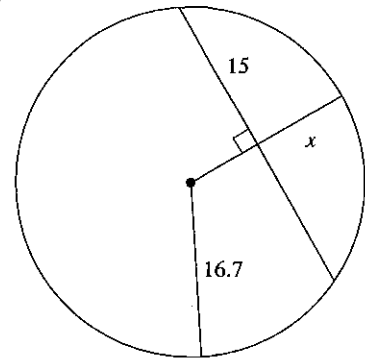
9)



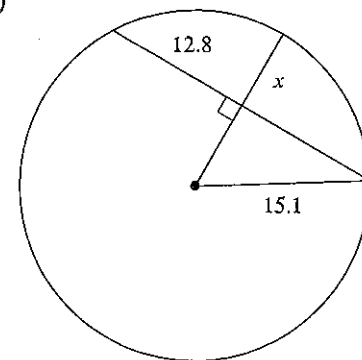
10)



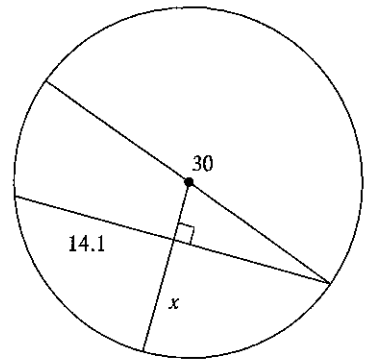
11)



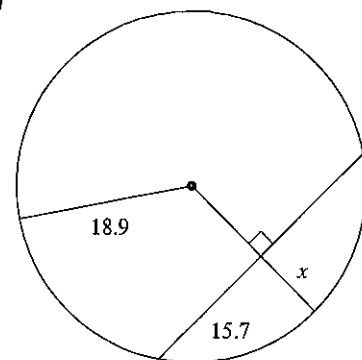
12)



13)



14)



6.7 Circumference and Arc Length

VOCABULARY

Circumference

Arc length

Example 1 Use the formula for circumference

Find the indicated measure.

- a. Circumference of a circle with radius 11 meters
- b. Radius of a circle with circumference 18 yards

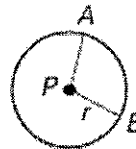
May 1-9:45 AM

ARC LENGTH COROLLARY

In a circle, the ratio of the length of a given arc to the circumference is equal to the ratio of the measure of the arc to 360° .

$$\frac{\text{Arc length of } \widehat{AB}}{2\pi r} = \frac{m\widehat{AB}}{360^\circ}, \text{ or}$$

$$\text{Arc length of } \widehat{AB} = \frac{m\widehat{AB}}{360^\circ} \cdot 2\pi r$$

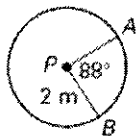


May 1-9:45 AM

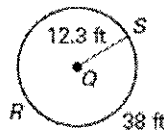
Example 2 Find and use arc lengths

Find the indicated measure.

a. Arc length of \widehat{AB}



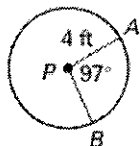
b. $m\widehat{RS}$



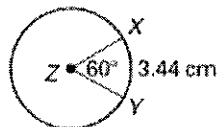
May 1-9:46 AM

1. Find the circumference of a circle with diameter 23 inches.

2. Arc length of \widehat{AB}



3. Circumference of $\odot Z$



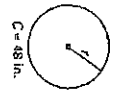
May 1-9:46 AM

Name _____ Date _____

LESSON 6.7 Practice Circumference

Use the diagram to find the indicated measure. Round to the nearest hundredths.

- Find the circumference.
- Find the circumference.
- Find the radius.

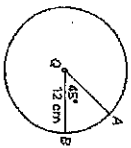
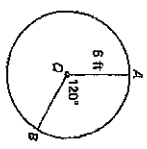
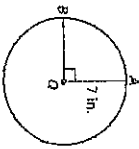


Find the indicated measure. Find the EXACT answer.

- The exact radius of a circle with circumference 36 meters
- The exact diameter of a circle with circumference 29 feet
- The exact circumference of a circle with diameter 26 inches
- The exact circumference of a circle with radius 15 centimeters

Arc Length

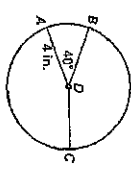
Find the length of \widehat{AB} . Round to the nearest hundredths.



Name _____ Date _____

LESSON 6.7 Practice continued

In $\odot D$ shown below, $\angle ADC \cong \angle BDC$. Find the indicated measure. Round to the nearest hundredths.



11. $m\widehat{CB}$

12. $m\widehat{CB}$

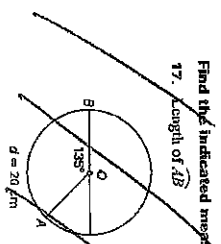
13. Length of \widehat{ACB}

14. Length of \widehat{CB}

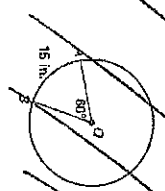
15. $m\widehat{ABC}$

16. Length of \widehat{AC}

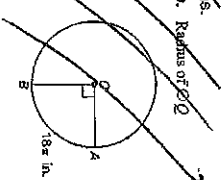
Find the indicated measure. Round to the nearest hundredths.



17. Length of \widehat{AB}



18. Circumference of $\odot O$



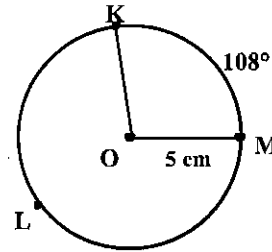
19. Radius of $\odot O$

Name:

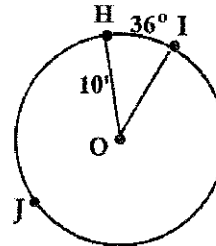
Throughout this worksheet, leave your answer in terms of π .
 For #1-6, use the given information to find the circumference of the circle.

1. radius is 13 ft
2. radius is 7 in
3. diameter is 12 m
4. radius is 11 ft
5. diameter is 8 m
6. radius is 9 in

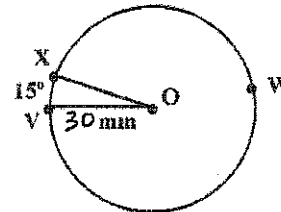
7. Find the length of KM . Leave your answer in terms of π .



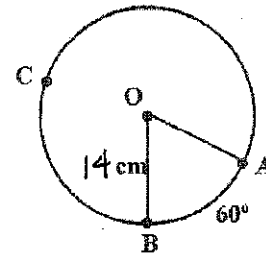
8. Find the length of HI . Leave your answer in terms of π .



9. Find the length of VX . Leave your answer in terms of π .



10. Find the length of AB . Leave your answer in terms of π .



(over)

6.8 Areas of Circles and Sectors

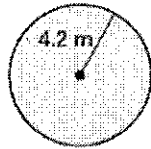
VOCABULARY

Sector of a circle

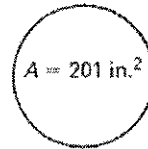
Example 1 Use the formula for area of a circle

Find the indicated measure.

a. Area



b. Diameter

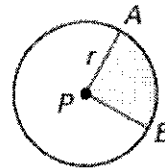


May 1-9:41 AM

THEOREM 6.21: AREA OF A SECTOR

The ratio of the area of a sector of a circle to the area of the whole circle (πr^2) is equal to the ratio of the measure of the intercepted arc to 360° .

$$\frac{\text{Area of sector } APB}{\boxed{}} = \frac{\boxed{}}{360^\circ}, \text{ or}$$

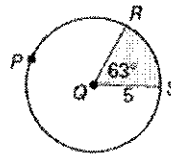


$$\text{Area of sector } APB = \frac{\boxed{}}{360^\circ} \cdot \underline{\hspace{2cm}}$$

May 1-9:42 AM

Example 2 Find areas of sectors

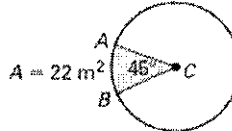
Find the areas of the sectors formed by $\angle RQS$.



Solution

Example 3 Use the Area of a Sector Theorem

Use the diagram to find the area of $\odot C$.



Solution

May 1-9:42 AM

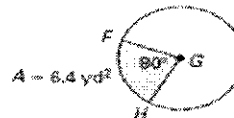
1. Find the radius of the circle.



2. Find the areas of the sectors formed by $\angle RQS$.



3. Find the area of $\odot G$.

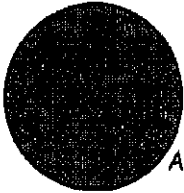


May 1-9:43 AM

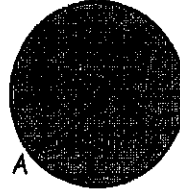
Name: _____ Date: _____

Find the area of the shaded region (round to the nearest hundredths):

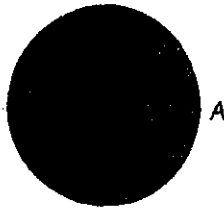
1. $r = 8$ inches



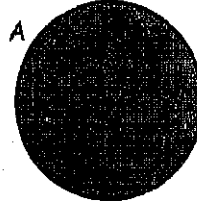
2. $r = 4.5$ inches



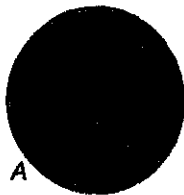
3. $r = 6$ feet



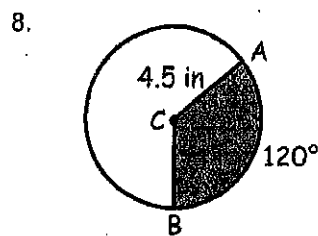
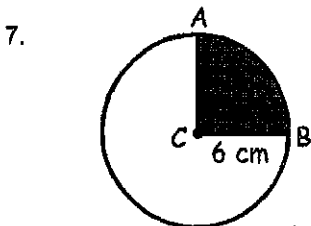
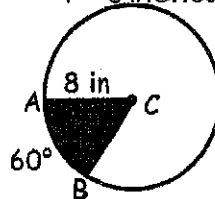
4. $r = \frac{1}{2}$ yard



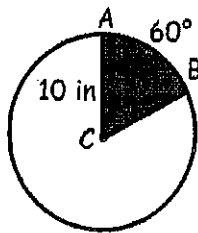
5. $d = 21$ inches



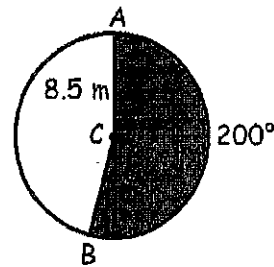
6. $r = 8$ inches



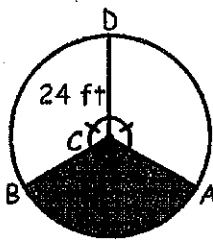
9.



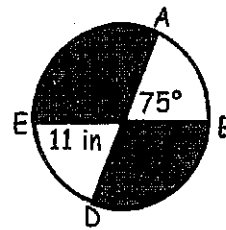
10.



11.



12.



Match the measure with its value.

13. $m\widehat{AB}$

14. Area of $\odot C$

15. Area of shaded region I

16. Area of shaded region II

17. Area of unshaded region

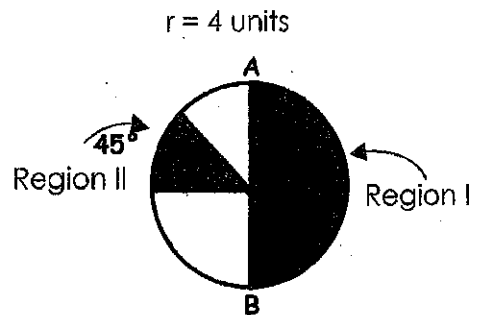
A. $2\pi \text{ units}^2$

B. $16\pi \text{ units}^2$

C. $6\pi \text{ units}^2$

D. 180°

E. $8\pi \text{ units}^2$



18. Find the area of a sector whose central angle is 36° if the radius of the circle is 8 cm.

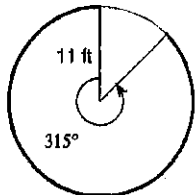
19. Find the area of a sector whose central angle is 36° if the radius of the circle is 16 cm.

20. Based on your answers to 18 and 19, does doubling the radius of the circle double the area? If not, what effect does doubling the radius have on the area of the sector?

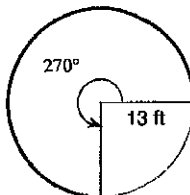
Arc Length and Sector Area

Find the length of each arc. Round your answers to the nearest tenth.

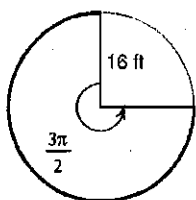
1)



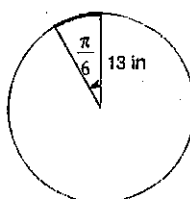
2)



3)



4)



5) $r = 18 \text{ cm}, \theta = 60^\circ$

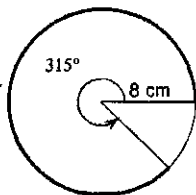
6) $r = 16 \text{ m}, \theta = 75^\circ$

7) $r = 9 \text{ ft}, \theta = \frac{7\pi}{4}$

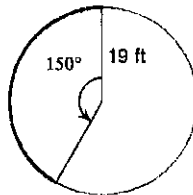
8) $r = 14 \text{ ft}, \theta = \frac{19\pi}{12}$

Find the length of each arc. Do not round.

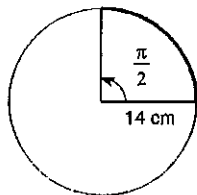
9)



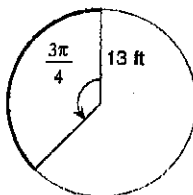
10)



11)

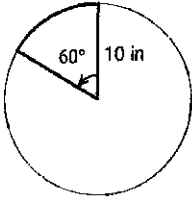


12)

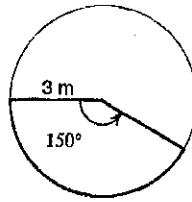


Find the area of each sector. Round your answers to the nearest tenth.

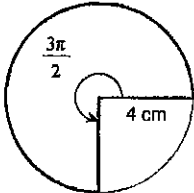
13)



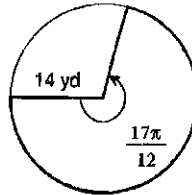
14)



15)

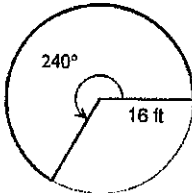


16)

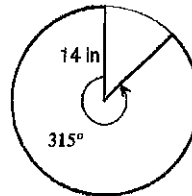


Find the area of each sector. Do not round.

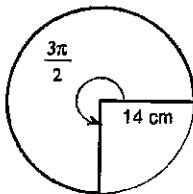
17)



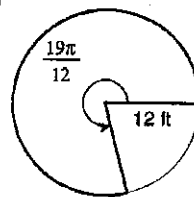
18)



19)



20)



21) $r = 10$ mi, $\theta = \frac{\pi}{2}$

22) $r = 12$ yd, $\theta = \frac{5\pi}{3}$

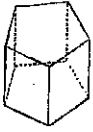
23) $r = 7$ km, $\theta = 60^\circ$

24) $r = 7$ mi, $\theta = 225^\circ$

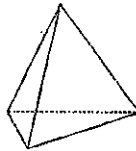
Identifying Solid Figures

Name each figure.

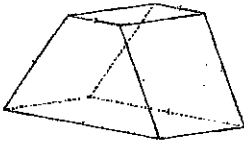
1)



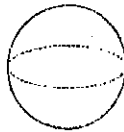
2)



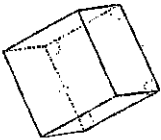
3)



4)



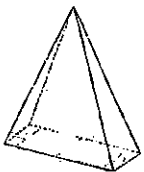
5)



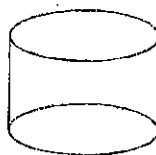
6)



7)



8)



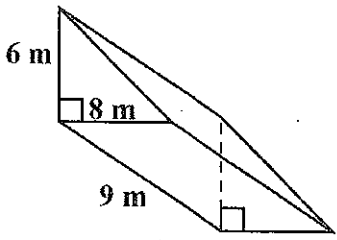
Name: _____ Date: _____

Volume

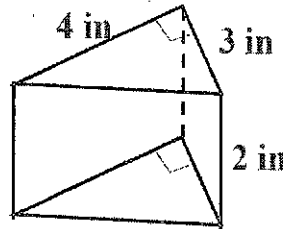
Volume of Prisms & Cylinders

$$V = B \cdot h$$

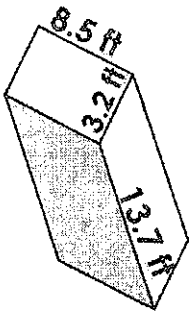
1. $V =$ _____



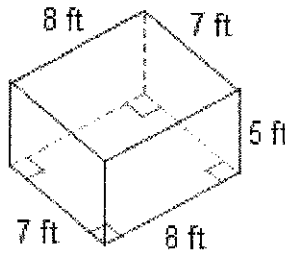
2. $V =$ _____



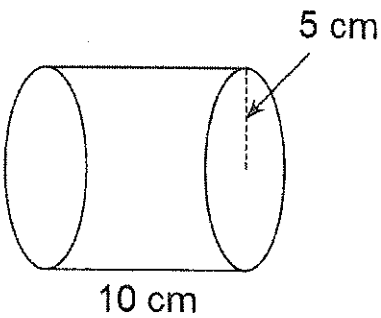
3. $V =$ _____



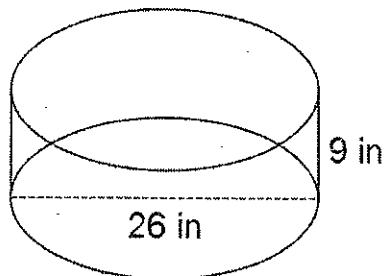
4. $V =$ _____



5. $V =$ _____

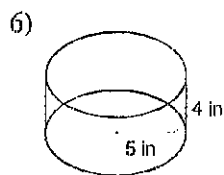
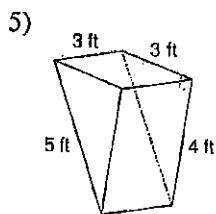
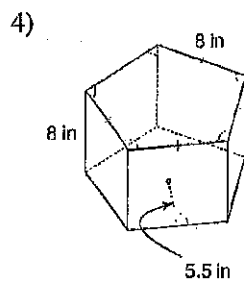
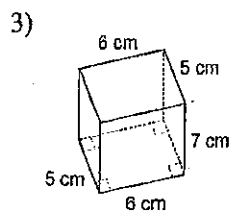
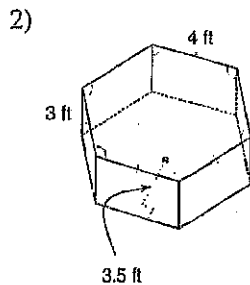
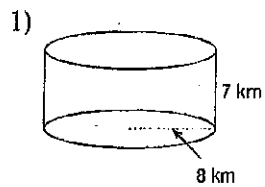


6. $V =$ _____

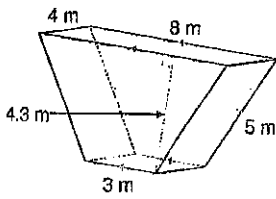


Volume of Prisms and Cylinders

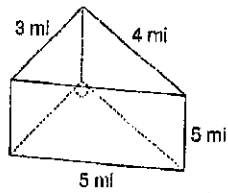
Find the volume of each figure. Round your answers to the nearest tenth, if necessary.



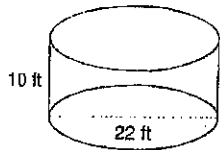
7)



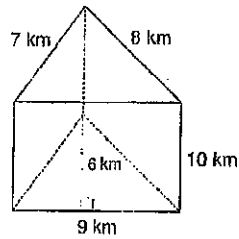
8)



9)



10)



11) A cylinder with a radius of 4 yd and a height of 5 yd.

12) A square prism measuring 6 km along each edge of the base and 5 km tall.

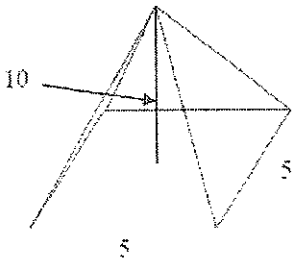
13) A hexagonal prism 5 yd tall with a regular base measuring 5 yd on each edge and an apothem of length 4.3 yd.

14) A trapezoidal prism of height 6 km. The parallel sides of the base have lengths 5 km and 3 km. The other sides of the base are each 2 km. The trapezoid's altitude measures 1.7 km.

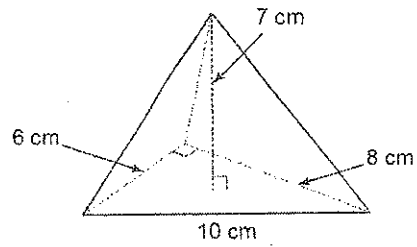
Volume of Pyramids and Cones

$$V = \frac{1}{3} B \cdot h$$

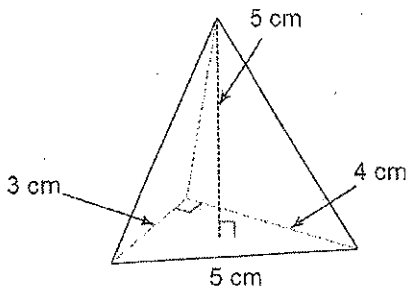
7. $V =$ _____



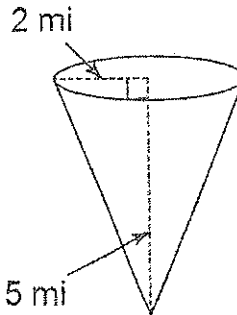
8. $V =$ _____



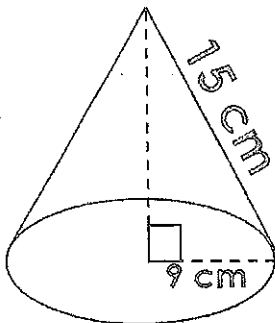
9. $V =$ _____



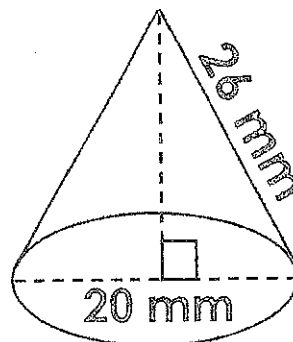
10. $V =$ _____



11. $V =$ _____

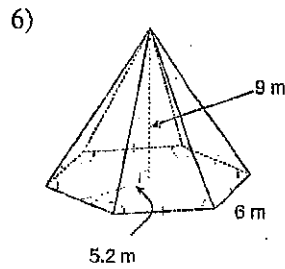
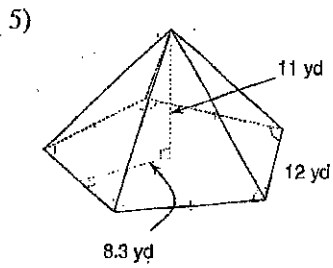
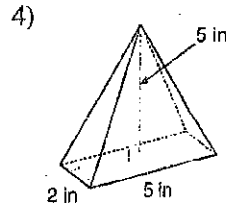
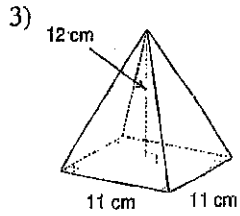
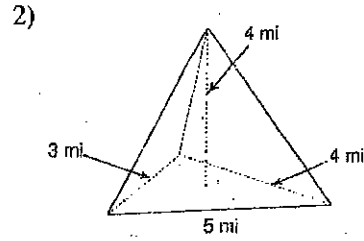
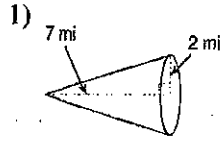


12. $V =$ _____

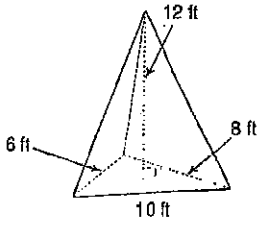


Volume of Pyramids and Cones

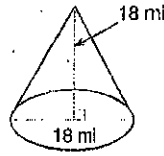
Find the volume of each figure. Round your answers to the nearest tenth, if necessary.



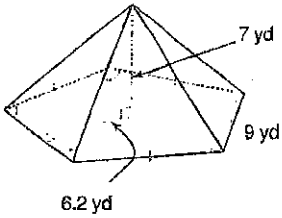
7)



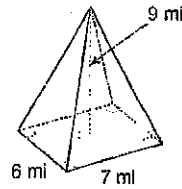
8)



9)



10)



11) A square pyramid measuring 10 yd along each edge of the base with a height of 6 yd.

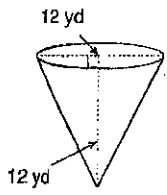
12) A pyramid 5 m tall with a right triangle for a base with side lengths 6 m, 8 m, and 10 m.

13) A cone with radius 4 m and a height of 12 m.

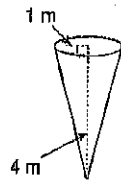
14) A hexagonal pyramid 11 ft tall with a regular base measuring 6 ft on each side and an apothem of length 5.2 ft.

7 35

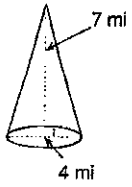
13)



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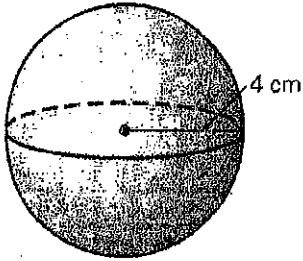


9 36

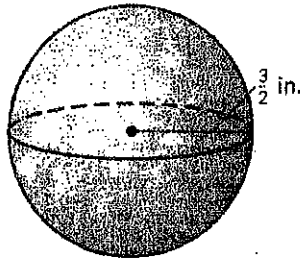
Surface Area and Volume of Spheres

Find the Volume and Surface Area of each sphere.
Round your answer to the nearest two decimal places

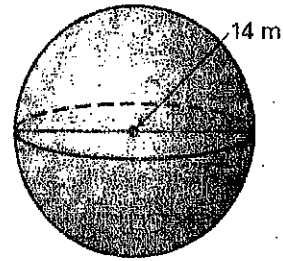
1.



2.



3.



4. What is the approximate radius of a sphere with surface area of 40π square feet?

In problem 5 - 7 use the given information: A sphere has circumference of 7π centimeters.

5. Find the radius of the sphere
6. Find the diameter of the sphere
7. Find the Surface Area of the sphere

Find the radius of a Sphere with the given volume V . Round your answers to two decimal places.

8. $V = 64 \text{ in}^3$

9. $V = 150\pi \text{ in}^3$

10. $V = 152 \text{ m}^3$

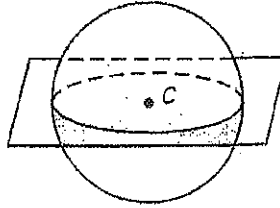
11. When you double the radius of a sphere, what happens to the surface area?
Prove it.

12. If you triple the radius of a sphere, what happens to the Volume of the sphere?
Prove it.

LESSON
6.9**Practice** *continued*

In Exercises 12–15, use the diagram. The center of the sphere is C and its circumference is 17π feet.

12. What is half of the sphere called?



13. Find the radius of the sphere.

14. Find the diameter of the sphere.

15. Find the surface area of half of the sphere.

Find the radius of a sphere with the given surface area S .

16. $S = 324\pi \text{ cm}^2$

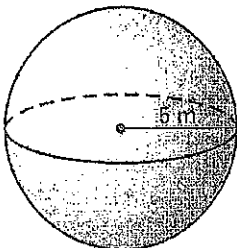
17. $S = 4\pi \text{ ft}^2$

18. $S = 163.84\pi \text{ m}^2$

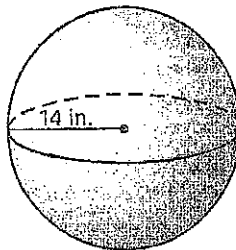
19. The circumference of a sphere is 338π meters. What is the surface area of the sphere? Round your answer to two decimal places.

Find the volume of the sphere. Round your answer to two decimal places.

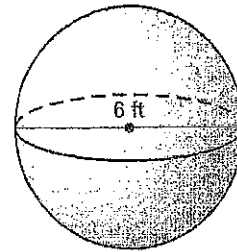
20.



21.



22.

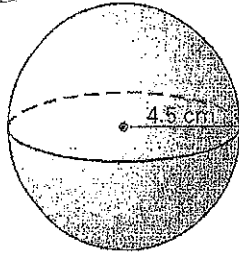


LESSON
6.9

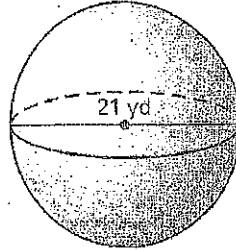
Practice *continued*

Find the volume of the sphere. Round your answer to two decimal places.

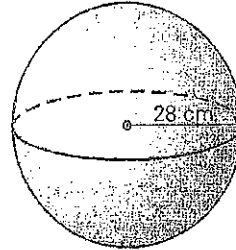
23.



24.



25.



Find the radius of a sphere with the given volume V .

26. $V = 2304\pi \text{ yd}^3$

27. $V = 36\pi \text{ in.}^3$

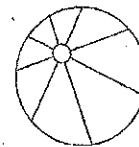
28. $V = 33.51 \text{ mm}^3$

29. A sphere is inscribed in a cube of volume 8 cubic meters. What are the surface area and volume of the sphere? Round your answers to two decimal places.

In Exercises 30–32, use the following information.

Beach Ball A beach ball has a surface area of about 78.54 square feet.

30. Find the radius of the beach ball.

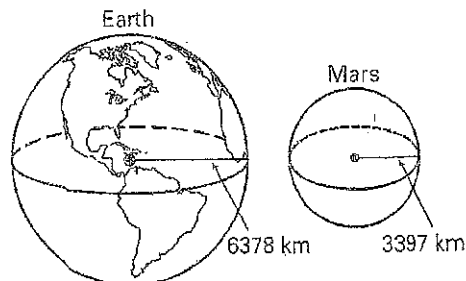


$S = 78.54 \text{ ft}^2$

31. Find the circumference of a great circle of the beach ball. Round your answer to two decimal places.

32. Find the volume of the beach ball. Round your answer to two decimal places.

33. **Planets** The mean radius of Earth is approximately 6378 kilometers. The mean radius of Mars is approximately 3397 kilometers, or about $\frac{1}{2}$ the mean radius of Earth. How does the surface area of Mars compare to the surface area of Earth?



Name _____

Date _____

Volumes of Cones, Cylinders, and Spheres - Independent Practice Worksheet

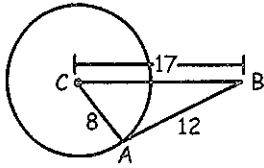
1. A cylindrical well has a radius of 10 feet and a height of 15 feet. What volume of water will it take to fill in the well?
2. The water pipe has a radius of 5 cm and a height of 7 cm. What volume of water does it take to fill the pipe?
3. Many villages have water tanks that they use for farming. Jeff's village has a cylinder shaped water tank that has a 4 m radius and a 9 m height. Find the volume of the cylinder?
4. For Anya's birthday her father gave out colorful birthday hats that were cone shaped. Anya was very happy that day. The cap the opening of the bottom of the hat was 3 cm and the height of the cone was 7 cm. Anya fills her cap with candy. What is the approximate volume of candy?
5. The base of a cone shaped glass is 12 inches and it is 18 inches tall. You fill the glass with soda pop to the top of the glass. What is the volume of soda pop?
6. A guest house is in the shape of a cone. The house is 7.5 feet high, 22 feet long. Find the volume of air that occupies the house, assuming it is empty.
7. A baseball has a 45 cm diameter. What is the volume of the contents of the ball?
8. A small sphere shaped jar has a 8 cm radius. What is the volume of the bowl?
9. Find the volume of a sphere whose r is 20 inches?
10. The tennis ball has a radius of 12 cm. Calculate the volume of a tennis ball?



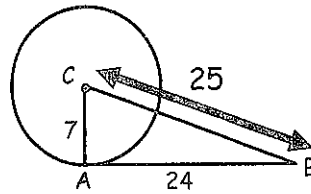
Name: _____ Date: _____

Is \widehat{AB} tangent to $\odot C$? Explain your reasoning. Show work!

1.

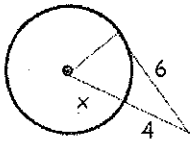


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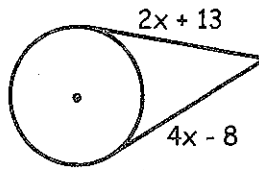


For each $\odot C$ find the value of x . Assume that segments that appear to be tangent are tangent.

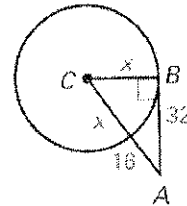
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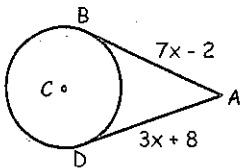
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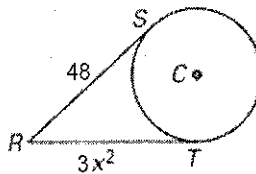
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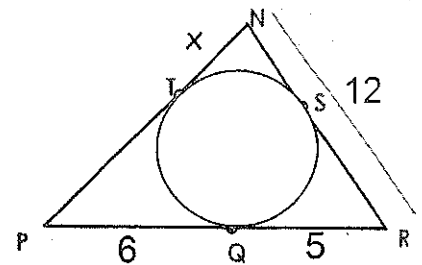
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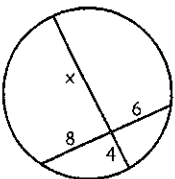
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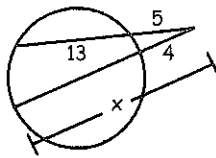
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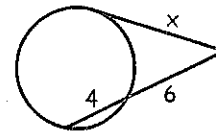
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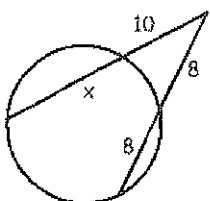
10.



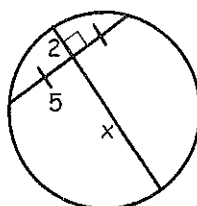
11.



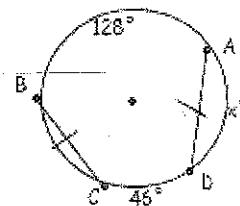
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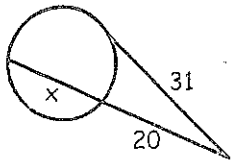
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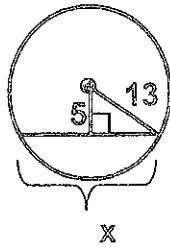
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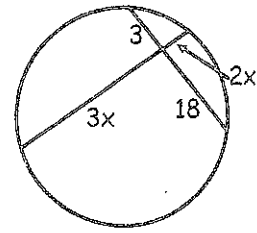
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16

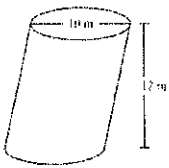


17.

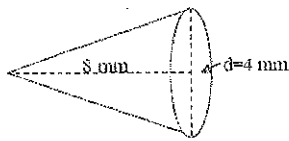


Find the volume of the following figures.

18



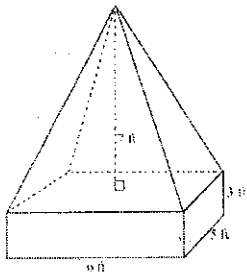
19



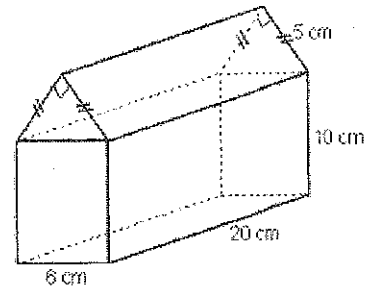
20.



21. Find the volume



22. find the volume.

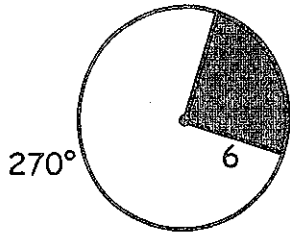


23. A prism has a square base with a width 3 cm. Its volume is 90 cm^3 . A square pyramid has the same width for its base and the same height as the prism. What is the volume of the pyramid?

24. Collin is going to change the oil in his Jeep. He has two funnels. A has a diameter of 6 inches and is 5 inches deep. B has a diameter of 5 inches but is 7 inches deep. He wants to use the funnel with the greatest volume to minimize the chance of spilling the oil. What are the volumes of the funnels? Which one should he use A or B?

25. A perfume manufacturer is offering a gift set for the holidays that contains a regular size bottle that is a rectangular prism with interior base dimensions of 8cm by 4cm, and a height of 9cm. It also contains a travel size cylindrical bottle with an interior diameter of 3cm and a height of 5cm. What volume of perfume does it need to fill 1,000 gift sets?

26. Find the area and arc length of the shaded region.



27. The area of one piece of pizza is $9\pi \text{ in}^2$. The pizza is cut into eighths. Find the radius of the pizza pie.

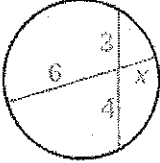
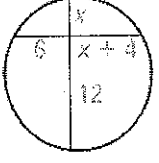
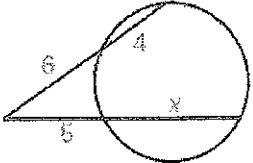
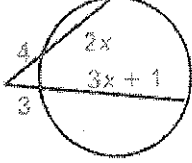
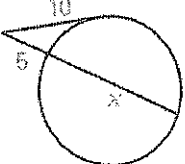
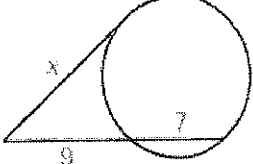
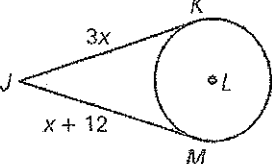
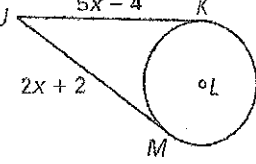
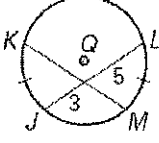
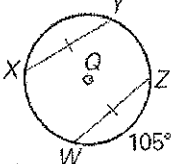
28. Determine the radius of the circle with a circumference of $26\pi \text{ cm}^2$. Use the radius to then find the area.

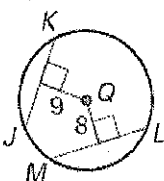
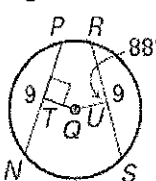
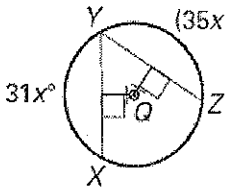
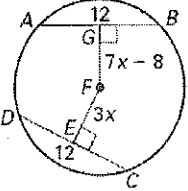
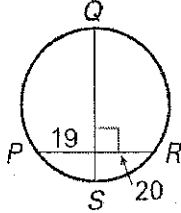
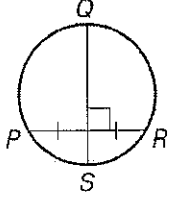
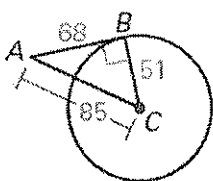
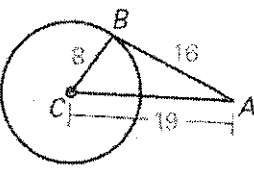
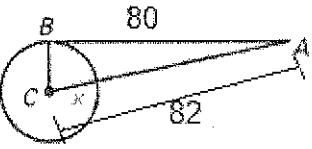
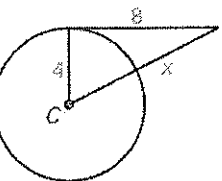
29. A sprinkler system can shoot water at a distance of 15 yards. It is set up to rotate 240 degrees. How much area of the yard is covered by the sprinkler?

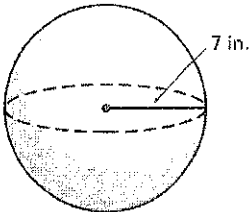
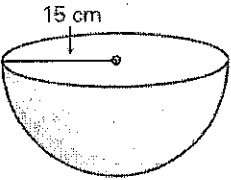
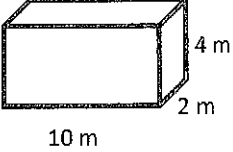
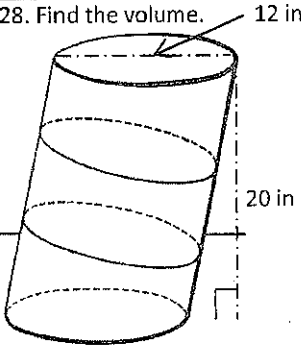
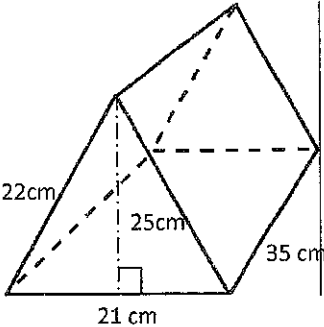
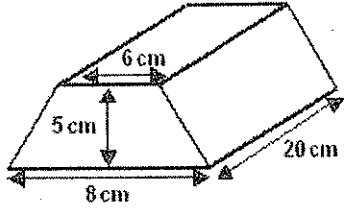
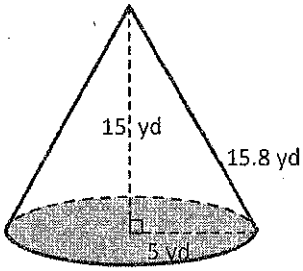
30. The clock in our classroom has a radius of 9 inches. If it's 4:00, find the arc length and area of the sector for this time.

Name: _____ Date: _____

Use the following to review for you test. Work the Practice Problems on a separate sheet of paper.

What you need to know & be able to do	Things to remember	Examples	
Find the measure of parts of a chord in a circle	part • part = part • part	1. Find the value of x 	2. Find the value of x 
Find the measure of segments when two secants intersect a circle.	outside • whole = outside • whole	3. Find the value of x 	4. Find the value of x 
Find the measure of segments when a secant and a tangent intersect a circle.	outside • whole = outside • whole	5. Find the value of x 	6. Find the value of x 
Use the properties of congruent tangents	Tangents coming from the same external point are congruent	7. Find JK. 	8. Find JM. 
Use the properties of congruent chords to find the measures of chords and arcs.	If two chords are congruent then their arcs are congruent	9. Find the value of KM. 	10. Find the $m\widehat{YZ}$ if $m\widehat{XW} = 95^\circ$. 

<p>Determine if two chords are congruent</p>	<p>Two chords are congruent if they are equidistant from the center of the circle</p>	<p>11. Are \overline{JK} and \overline{ML} congruent?</p> 	<p>12. Are \overline{TQ} and \overline{UQ} congruent?</p> 
<p>Use the properties of congruent chords to find the measure of arcs and segments</p>	<p>Two chords are congruent if and only if they are equidistant from the center of the circle.</p>	<p>13. Find the measure of \widehat{YX}.</p> 	<p>14. Find the measure of \widehat{GF}.</p> 
<p>Determine if a chord is a diameter.</p>	<p>To be a diameter the chord must be a perpendicular bisector of another chord.</p>	<p>15. Is \overline{QS} a diameter? Why or why not?</p> 	<p>16. Is \overline{QS} a diameter? Why or why not?</p> 
<p>Use the properties of diameters and perpendicular chords to find the radius of a circle.</p>	<p>Set up the problem so that you can use Pythagorean theorem.</p>	<p>17. A chord in a circle is 18 cm long and is 5 cm from the center of the circle. How long is the radius of the circle?</p>	<p>18. The radius of a circle is 15 inches. A chord is drawn 4 inches from the center of the circle. How long is the chord?</p>
<p>Use properties of tangents to determine if the line is a tangent</p>	<p>You must satisfy the Pythagorean Theorem.</p>	<p>19. Is \overline{AB} a tangent? Why or why not?</p> 	<p>20. Is \overline{AB} a tangent? Why or why not?</p> 
<p>Use properties of tangents to find missing measures.</p>	<p>Pythagorean Theorem</p>	<p>21. Find the measure of x.</p> 	<p>22. Find the value of x.</p> 

<p>Find the surface area of spheres.</p>	$S = 4\pi r^2$	<p>23. Find the surface area of the sphere.</p> 	<p>24. What is the diameter of a sphere with a surface area of $44\pi \text{ cm}^2$?</p>
<p>Find the volume of spheres.</p>	$V = \frac{4}{3}\pi r^3$	<p>25. A beach ball has a diameter of 8 inches. Find its volume.</p>	<p>26. Find the volume of the hemisphere.</p> 
<p>Find the volume of prisms and cylinders.</p>	$V=Bh$ <p>(where B is the area of the base)</p> $A_{\text{Rectangle}} = bh$ $A_{\text{Circle}} = \pi r^2$ $A_{\text{Triangle}} = \frac{1}{2}bh$ $A_{\text{Trapezoid}} = \frac{1}{2}(b_1+b_2)h$	<p>27. Find the volume.</p> 	<p>28. Find the volume.</p> 
		<p>29. Find the volume.</p> 	<p>30. Find the volume.</p> 
<p>Find the volume of pyramids and cones.</p>	$V = \frac{1}{3} Bh$	<p>31. Find the volume.</p> 	<p>32. Find the volume.</p> 