Name KEY! Class _____ Date _____

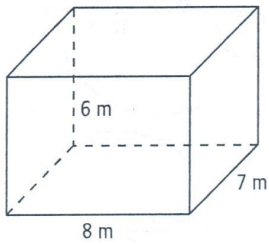
Chapter 13 Review

Lessons 13-3 through 13-5

Do you know HOW?

Find the volume of each figure to the nearest tenth.

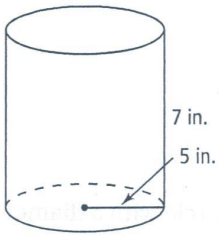
1.



$V = 6 \cdot 7 \cdot 8$

$V = 336 m^3$

2.

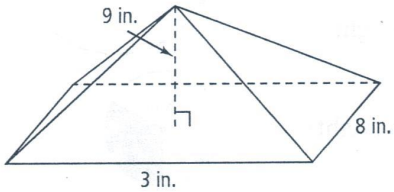


$V = \pi r^2 h$

$V = \pi (5)^2 (7)$

$V = 549.8 in^3$

3.

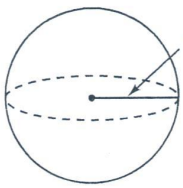


$V = \frac{1}{3}(3 \cdot 8) \cdot 9$

$V = 72 in^3$

Find the ~~surface area and~~ volume of each sphere.

4.

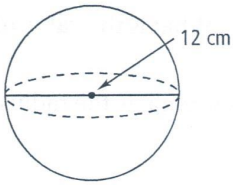


$V = \frac{4\pi}{3} r^3$

$V = \frac{4\pi}{3}(5)^3$

$V = 523.6 mm^3$

5.



$V = \frac{4\pi}{3}(6)^3$

$V = 904.8 cm^3$

Do you UNDERSTAND?

6. **Vocabulary** A solid object has dimensions given in meters. What units might be used to describe the surface area of the object? What units might be used to describe the volume of the object?

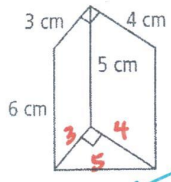
Name _____ Class _____ Date _____

Chapter 13 Review

Lessons 13-3 through 13-5

Do you know HOW?

What is the volume of each figure? If necessary, round to the nearest tenth.

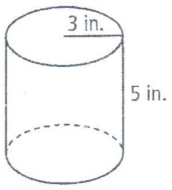
1. 

Area of Triangle

$V = B \cdot h$

$= \frac{1}{2}(3 \cdot 4) \cdot 6$

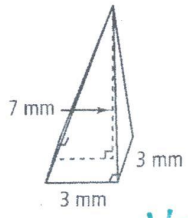
$V = 36\ cm^3$

2. 

$V = \pi r^2 h$

$V = \pi (3)^2 (5)$

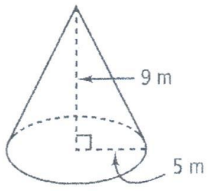
$V = 141.4\ in^3$

3. 

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

$V = \frac{1}{3}(3 \cdot 3)(7)$

$V = 21\ mm^3$

4. 

$V = \frac{1}{3} \pi r^2 \cdot h$

$V = \frac{\pi}{3}(5)^2(9)$

$V = 235.6\ m^3$

5. ~~The surface area of a sphere is 100π. What is its volume in terms of π?~~

Do you UNDERSTAND?

$V = \pi r^2 h$

6. **Reasoning** A cylinder has a height of 4 mm and a volume of 64 mm^3. What is the radius of the base? If necessary, round to the nearest tenth.

$$\frac{64}{4\pi} = \frac{\pi r^2 (4)}{4\pi}$$

$$\sqrt{5.09\ldots} = \sqrt{r^2}$$

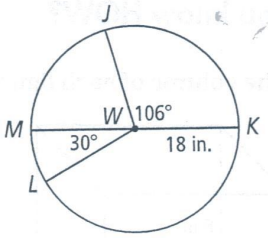
$r = 2.3\ mm$

Name _____ Class _____ Date _____

Chapter 12 Review

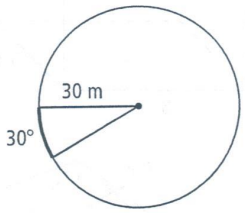
Lessons 12-1 through 12-3

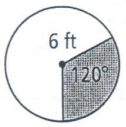
Do you know HOW?



Use ⊙ *W* for Exercises 1–3.

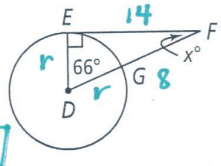
1. Name two minor arcs. $\overset{\frown}{ML}$, $\overset{\frown}{JM}$, $\overset{\frown}{JK}$, $\overset{\frown}{KL}$, $\overset{\frown}{JL}$
2. Name one semicircle. $\overset{\frown}{MJK}$, $\overset{\frown}{MLK}$
3. What is $m\overset{\frown}{JM}$? $180-106=m\overset{\frown}{JM}$ $m\overset{\frown}{JM}=74°$
4. What is the area of a circle with a diameter of 20 in.? Leave your answer in terms of π.
   $A=\pi r^2=\pi(10)^2=100\pi$ or $314.16\ in^2$
5. Find the length of the darkened arc in the figure at the right. Leave your answer in terms of π.
   $L=\frac{30}{360}(2\pi\cdot 30)=5\pi$ or $15.71\ m^2$
6. What is the area of the shaded region of the circle at the right? Leave your answer in terms of π.
   $A=\frac{120}{360}(\pi\cdot 6^2)=12\pi$ or $37.70\ ft^2$



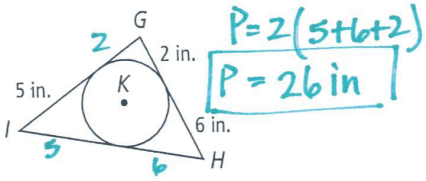


Use ⊙ *D* for Exercises 7 and 8.

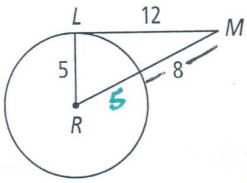
7. $\overline{EF}$ is tangent to ⊙ *D*. What is the value of x?
   $x=180-(90+66)$ $x=24°$
8. If $EF = 14$ and $GF = 8$, what is the radius?
   $r^2+14^2=(r+8)^2$
   $r^2+196=r^2+16r+64$
   $132=16r$
   $r=8.25$



9. $\triangle GHI$ circumscribes ⊙ *K*. What is the perimeter of $\triangle GHI$?
   $P=2(5+6+2)$
   $P=26$ in

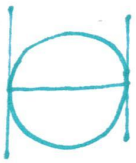


10. Is $\overline{LM}$ tangent to ⊙ *R*? Explain.



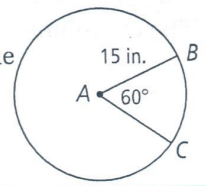
$5^2+12^2\stackrel{?}{=}(5+8)^2$
$169=169$ ✓
∴ yes, its tangent

Do You UNDERSTAND?



11. **Reasoning** Is it possible to draw a triangle with the diameter of the circle as a base and two tangents of the circle as the legs? Explain.

No, both tangents are ⊥ to the diameter so they are // to each other.



12. **Error Analysis** Your classmate says the length of $\overset{\frown}{BC}$ is $\frac{2\pi}{6}$. Explain your classmate's error and find the correct length.
    $L=\frac{60}{360}(2\pi\cdot 15)=5\pi$ or 15.71 in

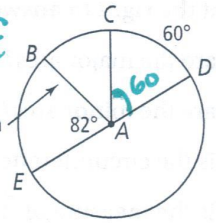
Name _____ Class _____ Date _____

Chapter 12 Review

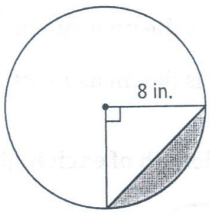
Lessons 12-1 through 12-3

Do you know HOW?

Use ⊙A at the right to answer Exercises 1–4.



1. What is the name of a major arc? CDE, CDB, BCE, DEC
2. What is $m\overset{\frown}{BC}$? $m\overset{\frown}{BC} = 38°$
3. What is the circumference of ⊙A? $C = \pi(2r) = 2\pi(3) = 6\pi$
4. What is the length of $\overset{\frown}{CED}$? $360 - 60 = 300°$
5. What is the area of a circle with a circumference of 18π in.? Leave your answer in terms of π. $C = 2\pi r$ $18\pi = 2\pi r$ $9 = r$ $A = \pi(9)^2$ $A = 81\pi$
6. In the circle at the right, find the area of the shaded region to the nearest hundredth.



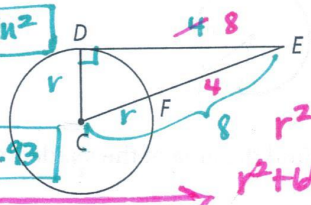
Triangle: $\frac{1}{2}(8)(8) = 32$

Sector: $\frac{90}{360}(\pi \cdot 8^2) = 16\pi$

Shade $= 16\pi - 32$

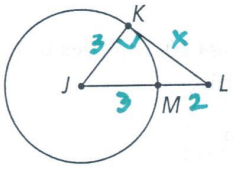
$= 18.27 \text{ in}^2$

Refer to ⊙C for Exercises 7-9. Segment $\overline{DE}$ is tangent to ⊙C.



7. If $DE = 4$ and $CE = 8$, what is the radius? $r^2 + 4^2 = 8^2$ $r = \sqrt{48} = 6.93$
8. If $DE = 8$ and $EF = 4$, what is the radius? $r^2 + 8^2 = (r+4)^2$ $r^2 + 64 = r^2 + 8r + 16$ $48 = 8r$ $r = 6$
9. If $m\angle C = 42$, what is $m\angle E$? $90 - 42 = m\angle E$ $m\angle E = 48°$

Refer to ⊙J for Exercises 10–11. Segment $\overline{KL}$ is tangent to ⊙J.

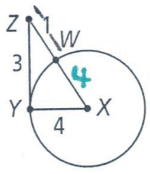


10. If the radius is 3 and $LM = 2$, what is KL? $3^2 + x^2 = 5^2$ $x = 4$
11. If $\overline{KL} \cong \overline{JK}$, what is $m\angle J$? 45-45-90 ∴ $m\angle J = 45°$

Do You UNDERSTAND?

12. **Compare and Contrast** How is finding the area of a sector of a circle like finding the length of an arc of a circle? (% of circle) * Area → (% of circle) * Circumference

13. **Error Analysis** A classmate insists that $\overline{YZ}$ is not a tangent to ⊙X. Explain how to show that your classmate is wrong.



YZ cannot be tangent because $3^2 + 4^2 \neq (1+4)^2$

$3^2 + 4^2 = (1+4)^2$

$25 = 25$ ✓

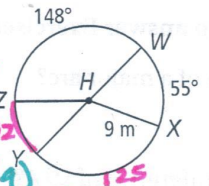
this should be 4.

Name _____ Class _____ Date _____

Chapter 12 Review

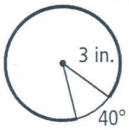
Do you know HOW?

Use $\odot H$ at the right to answer Exercises 1–6.

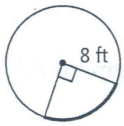


1. What are the major arcs? $\overset{\frown}{ZWX}$, $\overset{\frown}{ZWY}$, $\overset{\frown}{WXZ}$ $\overset{\frown}{XYW}$, $\overset{\frown}{YWX}$
2. What are the minor arcs? $\overset{\frown}{ZY}$, $\overset{\frown}{ZW}$, $\overset{\frown}{WX}$, $\overset{\frown}{XY}$ $\overset{\frown}{XZ}$,
3. What is the circumference of $\odot H$? $C = 2\pi r = 2\pi(9) = 18\pi$ m
4. What is the measure of $\overset{\frown}{YX}$? $180 - 55 = 125^\circ = \overset{\frown}{XY}$
5. What is the measure of $\overset{\frown}{YZX}$? $180 + 55 = 235^\circ = \overset{\frown}{YZX}$
6. What is the measure of $\overset{\frown}{ZX}$? $32 + 125 = 157^\circ = \overset{\frown}{ZX}$

Find the length of each highlighted arc. Leave your answer in terms of π.

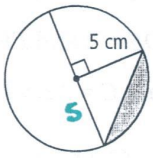
7. 

$\frac{320}{360}(2\pi \cdot 3)$ $= \frac{16\pi}{3}$ or 16.76 in

8. 

$\frac{90}{360}(2\pi \cdot 8) = 4\pi$ or 12.57 ft

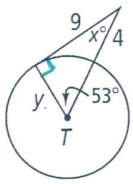
9. Find the area of the shaded region at the right to the nearest hundredth.



sector: $\frac{90}{360}(\pi \cdot 5^2) = \frac{25}{4}\pi$ triangle: $\frac{1}{2}(5)(5) = \frac{25}{2}$

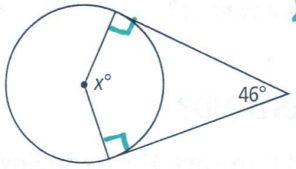
shade $= \frac{25\pi}{4} - \frac{25}{2}$ $= 7.13\ cm^2$

For Exercises 10-13, lines that appear tangent are tangent. Find the value of each variable.

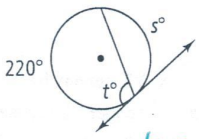
10. 

$x^\circ = 90 - 53$ $x = 37^\circ$

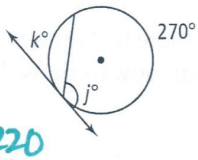
$y^2 + 9^2 = (y+4)^2$ $y^2 + 81 = y^2 + 8y + 16$ $65 = 8y$ $y = 8.125$

11. 

$x = 360 - (180 + 46)$ $x = 134^\circ$

12. 

$t = \frac{1}{2}(220)$ $t = 110^\circ$ $s = 360 - 220$ $s = 140^\circ$

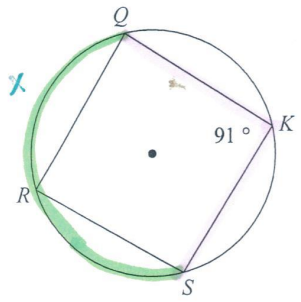
13. 

$j = \frac{1}{2}(270)$ $j = 135^\circ$ $k = 360 - 270$ $k = 90^\circ$

Circles Review

Find the measure of the arc or angle indicated.

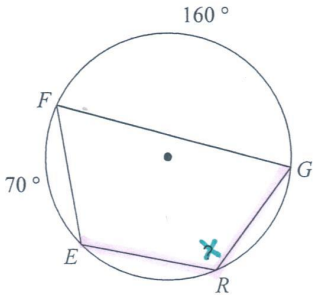
1) Find $m\overset{\frown}{SRQ}$



$91 = \frac{1}{2}(x)$

$X = 182°$

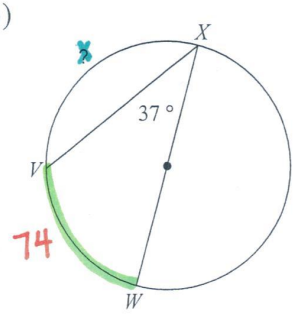
2)



$X = (70 + 160) \cdot \frac{1}{2}$

$X = 115°$

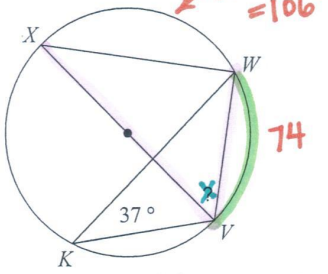
3)



$X = 180 - 74$

$X = 106°$

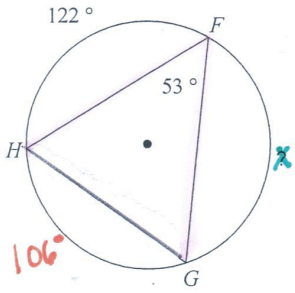
4)



$X = \frac{1}{2}(106)$

$X = 53°$

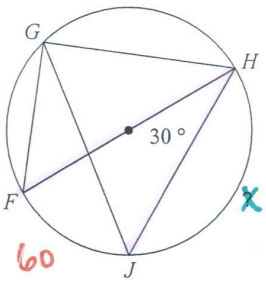
5)



$X = 360 - (122 + 106)$

$X = 132°$

6)

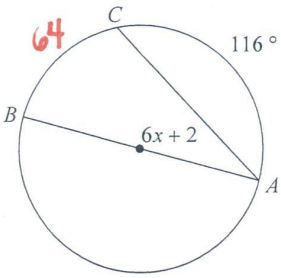


$X = 180 - 60$

$X = 120°$

Solve for *x*.

7)



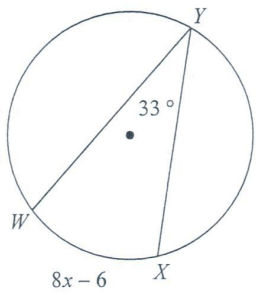
$6x + 2 = \frac{1}{2}(64)$

$6x + 2 = 32$

$6x = 30$

$X = 5°$

8)



$33 = \frac{1}{2}(8x - 6)$

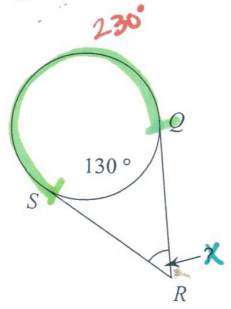
$33 = 4x - 3$

$36 = 4x$

$X = 9°$

Find the measure of the arc or angle indicated. Assume that lines which appear tangent are tangent.

9)

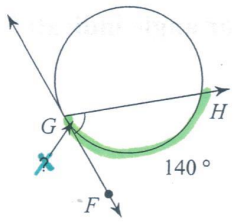


$X = \frac{1}{2}(230 - 130)$

$X = \frac{1}{2}(100)$

$\boxed{X = 50°}$

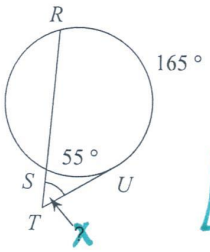
10)



$X = \frac{1}{2}(140)$

$\boxed{X = 70°}$

11)

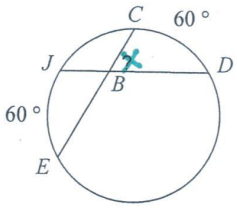


$X = \frac{1}{2}(165 - 55)$

$X = \frac{1}{2}(110)$

$\boxed{X = 55°}$

12)



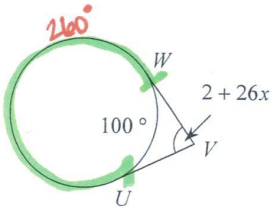
$X = \frac{1}{2}(60 + 60)$

$X = \frac{1}{2}(120)$

$\boxed{X = 60°}$

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

13)



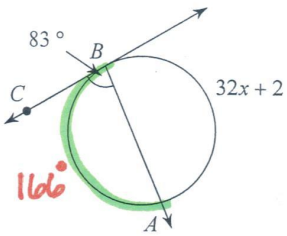
$2 + 26x = \frac{1}{2}(260 - 100)$

$2 + 26x = 80$

$26x = 78$

$\boxed{X = 3°}$

14)

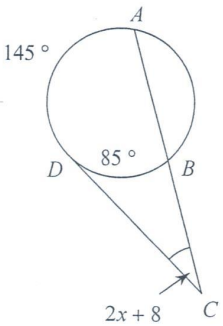


$(32x + 2) + 166 = 360$

$32x = 192$

$\boxed{X = 6}$

15)



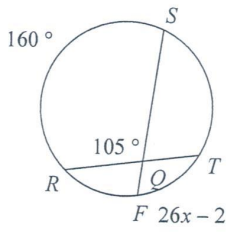
$2x + 8 = \frac{1}{2}(145 - 85)$

$2x + 8 = 30$

$2x = 22$

$\boxed{X = 11°}$

16)



$105 = \frac{1}{2}(160 + 26x - 2)$

$105 = 79 + 13x$

$26 = 13x$

$\boxed{X = 2°}$