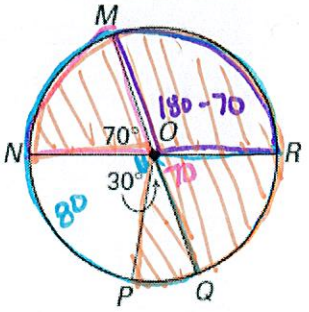
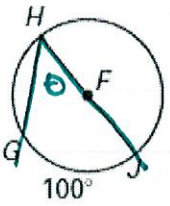
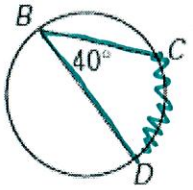
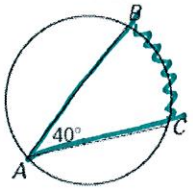
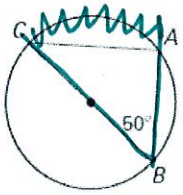
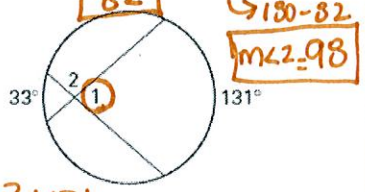
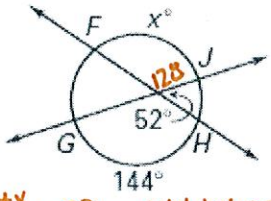
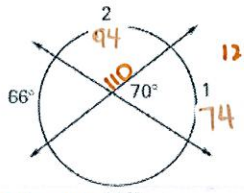
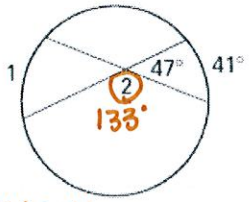
Name: _____ Date: _____

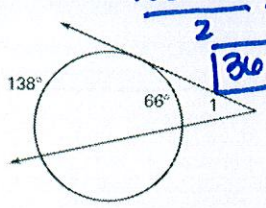
Topic	Things to Remember	Examples
Find the measure of arcs from central angles.	Angle = Arc	 1. Find $m\overset{\frown}{MN}$ 70 2. Find $m\overset{\frown}{QNR}$ 290 3. Find $m\overset{\frown}{MR}$ 110 4. Find $m\overset{\frown}{PRN}$ 250
Find the measure of arcs and angles with inscribed angles	Angle = $\frac{\text{Arc}}{2}$	5. Find $m\angle GHJ$ = 50°  6. Find $m\overset{\frown}{CD}$ = 80°  7. Find $m\overset{\frown}{BC}$ = 80°  8. Find $m\angle C$ = 100 
Find the measure of arcs and angles if the angle is inside the circle CHORDS	Angle = $\frac{\text{Arc} + \text{Arc}}{2}$	9. Find $m\angle 1$ and $m\angle 2$  B2 ↳180-82 $m\angle 2 = 98$ $\frac{33+131}{2} = 41$ 10. Find the value of x.  $\frac{144+x}{2} = 128$ $144+x = 290$ $x = 112$ 11. Find 1 & 2  $\frac{126+m\angle 2}{2}$ $126+m\angle 2 = 220$ $m\angle 2 = 94$ $\frac{66+m\angle 1}{2} = 70$ $66+m\angle 1 = 140$ $m\angle 1 = 74$ 12. Find 1 & 2  $\frac{41+m\angle 1}{2} = 47$ $41+m\angle 1 = 94$ $m\angle 1 = 53$

Find the measure of arcs and angles if the angle is outside the circle.

Angle = $\frac{\text{Arc} - \text{Arc}}{2}$

Secant secant
Secant tangent

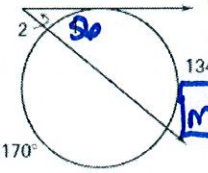
13. Find 1.



$\frac{138-66}{2} = m\angle 1$

$36 = m\angle 1$

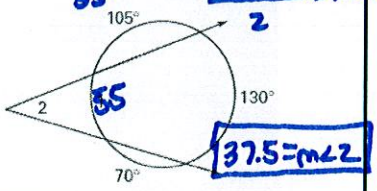
14. Find 1 & 2.



$\frac{134-56}{2} = m\angle 2$

$m\angle 2 = 39$

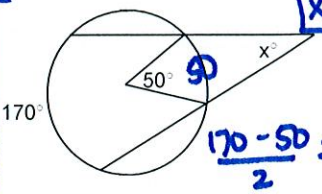
15. Find 1 & 2.



$\frac{130-55}{2} = m\angle 2$

$37.5 = m\angle 2$

16. Find the value of x.



$X = 60$

$\frac{170-50}{2} = x$

Find the area of circles

$A = \pi r^2$

17. The area of a circle is 31.4 cm². What is the radius?

$31.4 = \pi r^2$ $10 = r^2$ $3.16 = r$

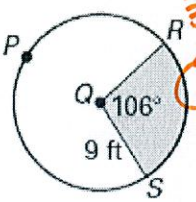
18. Find the area of a circle with a diameter of 22 inches. $r = 11$

$A = \pi(11)^2 = 121\pi \text{ in}^2 \approx 380.13 \text{ in}^2$

Find the area of sectors

$AS = \frac{\pi r^2 \theta}{360^\circ}$

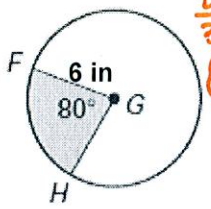
19. Find the area of the shaded region



$\frac{106}{360} \cdot \pi(9)^2$

$23.85\pi \text{ ft}^2$

20. Find the area of the shaded region.



$\frac{80}{360} \cdot \pi(6)^2$

$8\pi \text{ in}^2$

Find the circumference of circles

$C = 2\pi r$

21. Find the circumference of a circle with a radius of 8 m. $2\pi(8) = 16\pi \text{ m}$

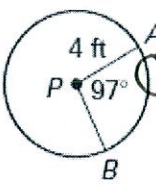
22. The circumference of a circle is 25.12 ft. What is the radius? $25.12 = 2\pi r$

$r = 3.99 \approx 4$

Find arc lengths

$AL = \frac{2\pi r \theta}{360^\circ}$

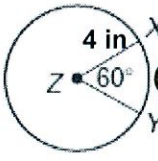
23. Find the arc length of $\overset{\frown}{AB}$



$\frac{97}{360} \cdot 2\pi(4)$

$2.16\pi \text{ ft}$

24. Find the arc length of $\overset{\frown}{XY}$.



$\frac{60}{360} \cdot 2\pi(4)$

$1.3\pi \text{ in}$

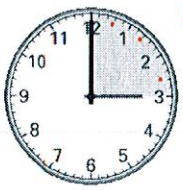
Word Problems

25. A birthday cake has a radius of 4 in. What is the length of icing needed to go around the end of the whole cake? How much icing would be used for one slice?

$C = 2\pi r$
$= 2\pi(4)$
$= 8\pi$

$\frac{30}{360} \cdot 2(\pi \times 4)$
$= .67\pi$
$\approx \frac{2}{3}\pi$

26. A wall clock has an area of 452.39 in². Find the diameter of the clock. Then, find the area of the sector formed when the time is 3:00.

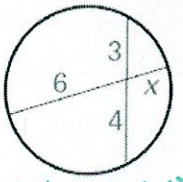
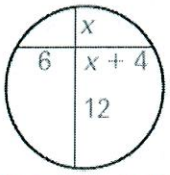
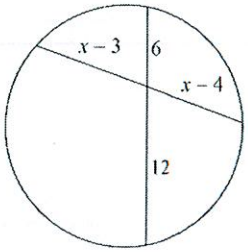
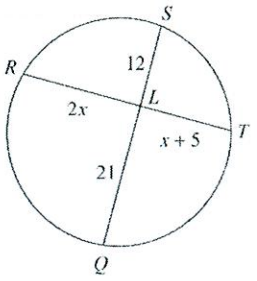
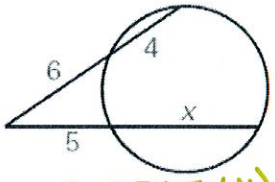
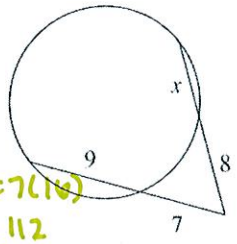
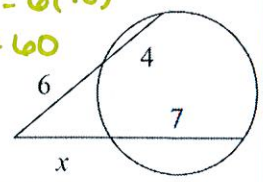
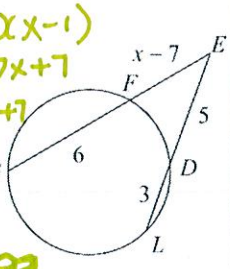


$452.39 = \pi r^2$
$144 = r^2$
$12 = r$ $d = 24$

$\frac{90}{360} \cdot \pi(12)^2$
$36\pi \text{ in}^2$
$\approx 113.10 \text{ in}^2$

H GSE Geometry | Unit 5 – Circle Segments & Volume | Review

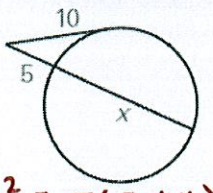
Name: _____ Date: _____

Topic	Things to remember	Examples	
Find the measure of parts of a chord in a circle	part • part = part • part	**27. Find the value of x**  $3(4) = 6(x)$ $12 = 6x$ $2 = x$	**28. Find the value of x**  $x(12) = 6(x+4)$ $12x = 6x + 24$ $6x = 24$ $x = 3$
29. $6(12) = (x-3)(x-4)$ $72 = x^2 - 4x - 3x + 12$ $72 = x^2 - 7x + 12$ $0 = x^2 - 7x - 60$ $0 = (x-12)(x+5)$ $x = 12$ $x = -5$	30. $12(21) = 2x(x+5)$ $252 = 2x^2 + 10x$ $0 = 2x^2 + 10x - 252$ $0 = 2(x^2 + 5x - 126)$ $= 2(x-9)(x+14)$ $x = 9$ $x = -14$	**29. Find the value of x.**  	**30. Find the length of RT.** Find RT 
Find the measure of segments when two secants intersect a circle.	outside • whole = outside • whole	**31. Find the value of x**  $6(10) = 5(5+x)$ $60 = 25 + 5x$ $35 = 5x$ $7 = x$	**32. Find the value of x.**  $8(9+x) = 7(16)$ $64 + 8x = 112$ $8x = 48$ $x = 6$
		33. Find the value of x. $x(x+7) = 6(10)$ $x^2 + 7x = 60$  $x^2 + 7x - 60 = 0$ $(x+12)(x-5) = 0$ $x = -12$ $x = 5$	**34. Find the length of FE.** Find FE $5(8) = (x-7)(x-1)$ $40 = x^2 - x - 7x + 7$ $40 = x^2 - 8x + 7$  $0 = x^2 - 8x - 33$ $0 = (x-11)(x+3)$ $x = 11$ $x = -3$

Find the measure of segments when a secant and a tangent intersect a circle.

$\tan^2$ = outside • whole

35. Find the value of x.



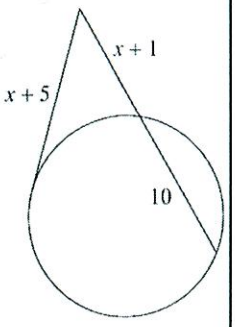
$10^2 = 5(5+x)$

$100 = 25 + 5x$

$75 = 5x$

$15 = x$

36. Find the value of x.



36.

$(x+5)^2 = (x+1)(x+11)$

$(x+5)(x+5)$

$x^2+10x+25 = x^2+12x+11$

$14 = 2x$

$7 = x$

38.

$(3x+3)^2 = 8(18)$

$(3x+3)(3x+3)$

$9x^2+18x+9 = 144$

$9x^2+18x-135 = 0$

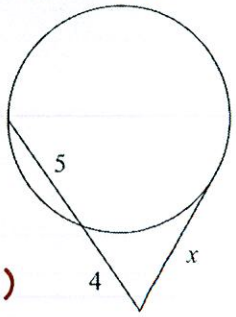
$9(x^2+2x-15) = 0$

$9(x+5)(x-3) = 0$

$x = -5$ $x = 3$

$BC = 12$

37. Find the value of x.



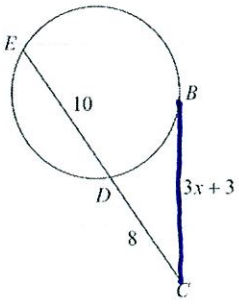
$x^2 = 4(9)$

$x^2 = 36$

$x = 6$

38. Find the length of BC.

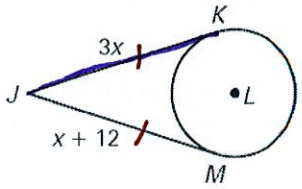
Find BC



Use the properties of congruent tangents

Tangents coming from the same external point are congruent

39. Find JK.

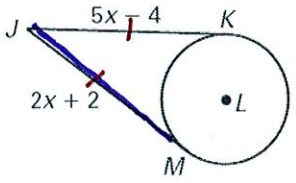


$3x = x + 12$

$2x = 12$

$x = 6$ $JK = 18$

40. Find JM.



$5x - 4 = 2x + 2$

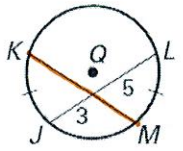
$3x = 6$

$x = 2$ $JM = 6$

Use the properties of congruent chords to find the measures of chords and arcs.

If two chords are congruent then their arcs are congruent

41. Find the value of KM.

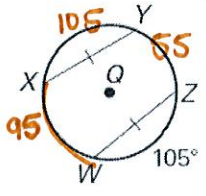


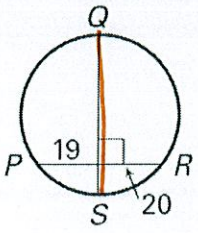
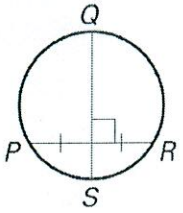
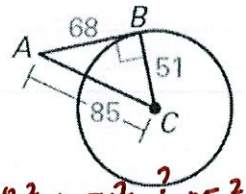
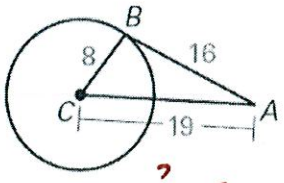
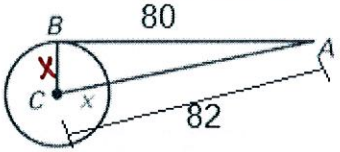
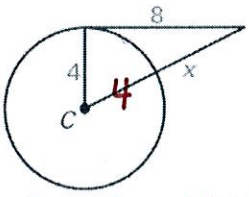
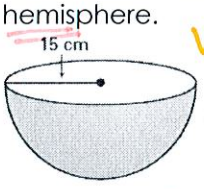
$KM = 3 + 5$

$KM = 8$

42. Find the $m\overset{\frown}{YZ}$ if $m\overset{\frown}{XW} = 95^\circ$.

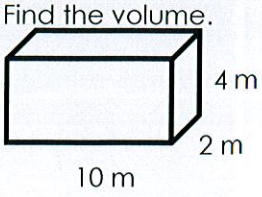
$m\overset{\frown}{YZ} = 55$



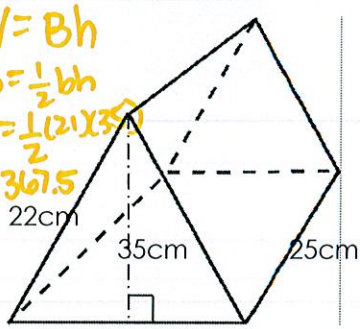
Determine if a chord is a diameter.	To be a diameter the chord must be a perpendicular bisector of another chord.	**43. Is $\overline{QS}$ a diameter? Why or why not?**  NO; PS ≠ SR	**44. Is $\overline{QS}$ a diameter? Why or why not?**  yes; PS = SR
Use properties of tangents to determine if the line is a tangent	You must satisfy the Pythagorean Theorem.	45. Is $\overline{AB}$ a tangent? Why or why not?  $68^2 + 51^2 \stackrel{?}{=} 85^2$ $4624 + 2601 = 7225$ $7225 = 7225$ ✓	46. Is $\overline{AB}$ a tangent? Why or why not?  $8^2 + 16^2 \stackrel{?}{=} 19^2$ $64 + 256 = 361$ $320 \neq 361$ X
Use properties of tangents to find missing measures.	Pythagorean Theorem	47. Find the measure of x. $x^2 + 80^2 = 82^2$ $x^2 + 6400 = 6724$ $x^2 = 324$ $x = 18$ 	48. Find the value of x.  $8^2 + 4^2 = (x+4)^2$ $64 + 16 = x^2 + 8x + 16$ $80 = x^2 + 8x + 16$ $0 = x^2 + 8x - 64$
Find the volume of spheres.	$V = \frac{4}{3}\pi r^3$	49. A beach ball has a diameter of 8 inches. Find its volume. $V = \frac{4}{3}(\pi)(4)^3$ $= 85.\overline{3}\pi$ in^3 $= 268.08$ in^3	50. Find the volume of the hemisphere.  $V = \frac{4}{3}\pi(15)^3$ $= \frac{4500\pi}{2}$ $V = 2250\pi$ cm^3 ≈ 7068.58

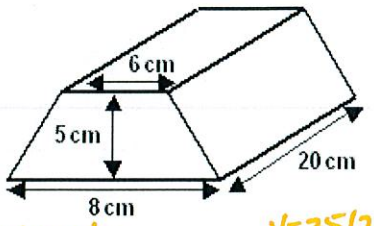
<table>
<tr>
<td rowspan="2">Find the volume of prisms and cylinders.</td>
<td rowspan="2">V=Bh

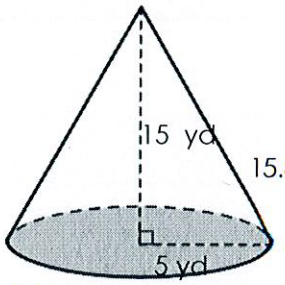
(where B is the area of the base)

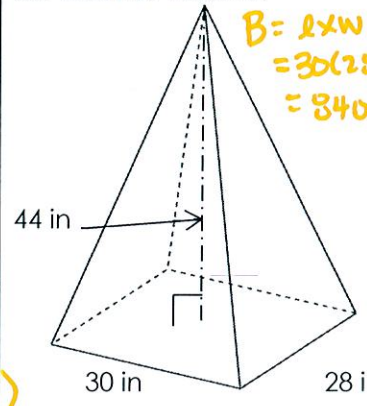
$A_{Rectangle}$= bh
A_{Circle}= πr^2
$A_{Triangle}$= ½ bh
$A_{Trapezoid}$ = ½$(b_1+b_2)h$</td>
<td>51. Find the volume.
 

V=Bh
B=lxw
=10(2)
=20
V=20(4)
V=80m³</td>
<td>52. Find the volume.
 

V=Bh
B=πr²
=π(6)²
=36π
V=36π(20)
=720π in³
≈2261.95 in³</td>
</tr>
<tr>
<td>53. Find the volume.
 

V=Bh
B=½bh
=½(21x35)
=367.5
V=367.5(25)=9187.5cm³</td>
<td>54. Find the volume.
 

V=Bh
B=½h(b₁+b₂)
=½(5)(6+8)
=35
V=35(20)
=700cm³</td>
</tr>
<tr>
<td>Find the volume of pyramids and cones.</td>
<td>V = 1/3 Bh</td>
<td>55. Find the volume.
 

V=⅓Bh
B=πr²
=π(5)²
=25π
V=⅓(25π)(15)
=125π yd³
≈392.7 yd³</td>
<td>56. Find the volume.
 

B=lxw
=30(28)
=840
V=840(44)⅓
=12320 in³</td>
</tr>
</table>