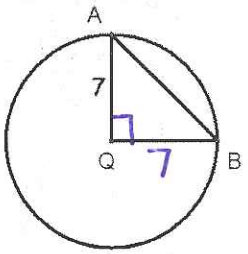
Geometry/Trig
Unit 8 Review Packet

Name: Key
Date: _____ Block _____

Directions: Solve for the missing side, angle or arc. Problems with a (d) will have a decimal answer. Round these answers to the nearest hundredth. All other answers must be left in simplified radical form.

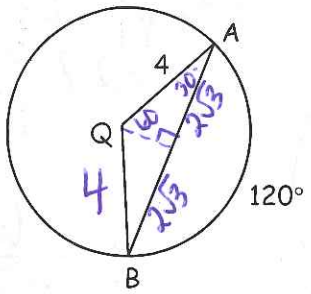
1. Q is the center of the circle. $\overline{AQ} \perp \overline{QB}$.



$7^2+7^2=AB^2$
$AB^2=98$

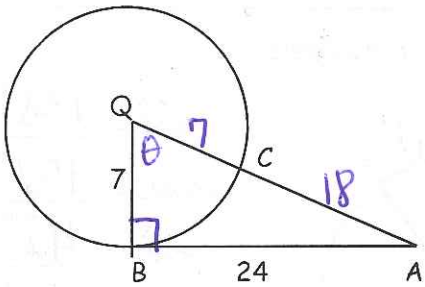
AB = $7\sqrt{2}$

2. Q is the center of the circle.



AB = $4\sqrt{3}$
m∠QAB = 30°

3. Q is the center of the circle and $\overline{AB}$ is tangent to the circle.

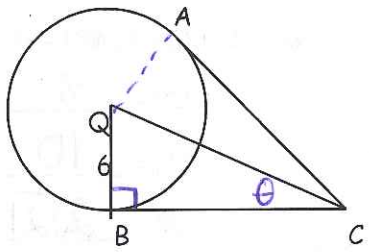


QA = 25
QC = 7
CA = 18
(d) m$\overset{\frown}{BC}$ = 73.74°

$7^2+24^2=QA^2$
$QA^2=625$

$\tan\theta = 24/7$
$\theta=\tan^{-1}(24/7)$

4. Q is the center of the circle. $\overline{BC}$ and $\overline{AC}$ are tangent to the circle. QC = 20.

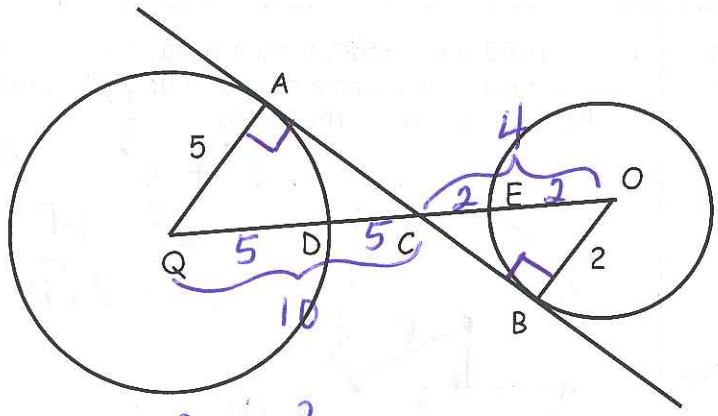


BC = $2\sqrt{91}$
AC = $2\sqrt{91}$
(d) m∠QCB = 17.46°
(d) m$\overset{\frown}{AB}$ = 145.08°

$6^2+BC^2=20^2$
$BC^2=364$
$BC=2\sqrt{91}$

$\sin\theta = 6/20$
$\theta=\sin^{-1}(6/20)$

5. Given: Circles Q and O. A and B are both points of tangency. QC = 10 and OC = 4.



$5^2+AC^2=10^2$
$AC^2=75$
$AC=5\sqrt{3}$

$2^2+BC^2=4^2$
$BC^2=12$
$BC=2\sqrt{3}$

$AB=5\sqrt{3}+2\sqrt{3}$
$AB=7\sqrt{3}$

QD = 5
DC = 5
AC = $5\sqrt{3}$
OE = 2
CE = 2
BC = $2\sqrt{3}$
AB = $7\sqrt{3}$

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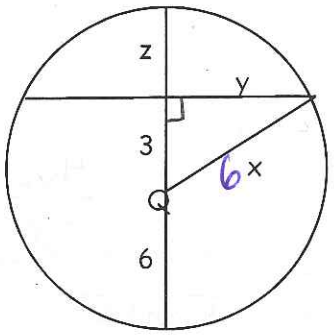
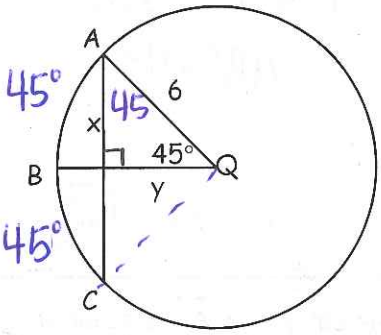
8. Q is the center of the circle.



$3^2 + y^2 = 6^2$
$y^2 = 27$

x = 6
y = $3\sqrt{3}$
z = 3

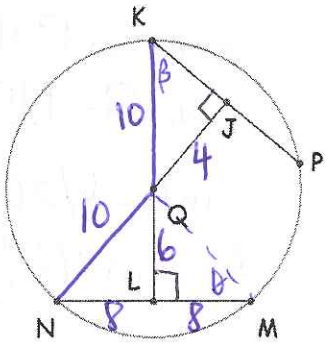
9. Q is the center of the circle.



$6 = n\sqrt{2}$
$n = \frac{6\sqrt{2}}{2} = 3\sqrt{2}$

x = $3\sqrt{2}$
y = $3\sqrt{2}$
$\overset{\frown}{mBC}$ = 45°
$\overset{\frown}{mAC}$ = 90°

10. Q is the center of the circle. If LQ = 6, MN = 16 and QJ = 4. Find:

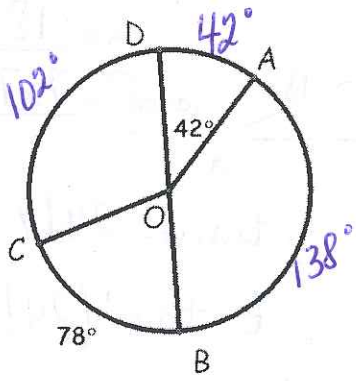


LN = 8
QN = 10
JP = $2\sqrt{21}$
KP = $4\sqrt{21}$
(d) m∠QML = 36.87°
(d) m∠QKJ = 23.58°

$4^2 + KJ^2 = 10^2$
$KJ^2 = 84$
$KJ = 2\sqrt{21}$

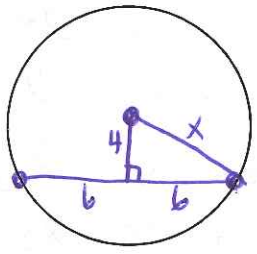
$\theta = \tan^{-1}(6/8)$
$\beta = \sin^{-1}(4/10)$

11. O is the center of the circle.



$\overset{\frown}{mAB}$ = 138°
m∠DOC = 102°
$\overset{\frown}{mAD}$ = 42°
$\overset{\frown}{mDC}$ = 102°
$\overset{\frown}{mDAB}$ = 180°
m∠COB = 78°
$\overset{\frown}{mDBA}$ = 318°
$\overset{\frown}{mABC}$ = 216°

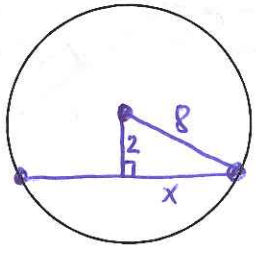
12. A chord has a length of 12 cm. It is located 4 cm from the center of the circle. How long is the radius of the circle? The diameter?



$4^2 + 6^2 = x^2$
$x^2 = 52$

Radius = $2\sqrt{13}$ cm
Diameter = $4\sqrt{13}$ cm

13. A chord is located 2 inches from the center of the circle. The circle has a radius of 8 inches. Find the length of the chord.



$2^2 + x^2 = 8^2$
$x^2 = 60$
$x = 2\sqrt{15}$

Chord = $4\sqrt{15}$ inches.

Geometry/Trig
Unit 8 Review Packet

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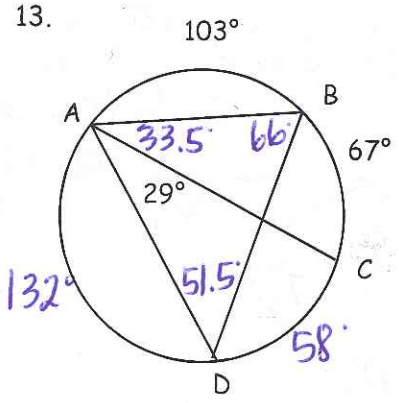
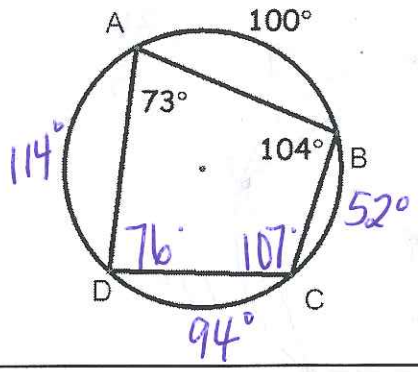
13.



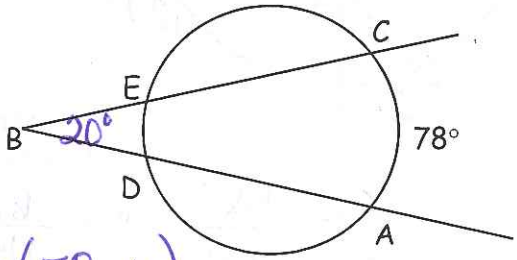
$m\overset{\frown}{CD}$ = 58°
$m\overset{\frown}{AD}$ = 132°
(d) m∠BAC = 33.5°
(d) m∠ADB = 51.5°
m∠ABD = 66°

14.



$m\overset{\frown}{AC}$ = 152°
$m\overset{\frown}{BC}$ = 52°
$m\overset{\frown}{CD}$ = 94°
$m\overset{\frown}{DA}$ = 114°
m∠CDA = 76°
m∠BCD = 107°

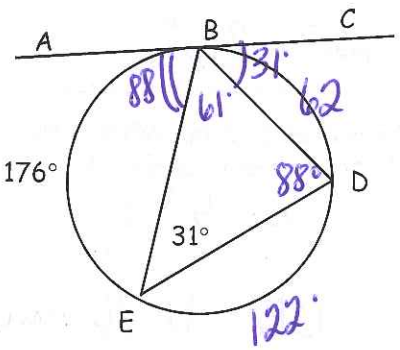
15. m∠CBA = 20°



$20 = \frac{1}{2}(78 - x)$
$40 = 78 - x$
$x = 38$

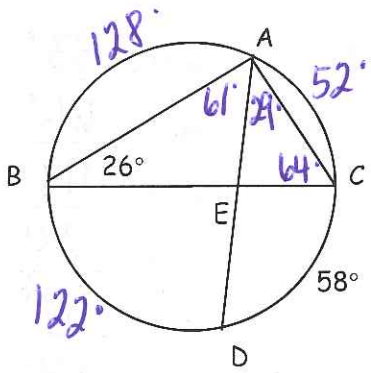
$m\overset{\frown}{ED}$ = 38°
$m\overset{\frown}{CDA}$ = 282°

16. $\overline{AC}$ is tangent to the circle.



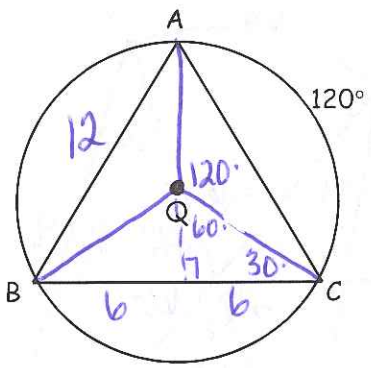
$m\overset{\frown}{BD}$ = 62°
$m\overset{\frown}{ED}$ = 122°
m∠ABE = 88°
m∠BDE = 88°
m∠CBD = 31°
m∠EBD = 61°

17. $\overline{BC}$ is a diameter.



$m\overset{\frown}{AC}$ = 52°
$m\overset{\frown}{BA}$ = 128°
$m\overset{\frown}{BD}$ = 122°
m∠BAC = 90°
m∠CAD = 29°
m∠BAD = 61°
m∠ACB = 64°
m∠CEA = 87°
m∠BEA = 93°

18. Q is the center of the circle and AB = 12.



$b = n\sqrt{3}$
$n = \frac{6\sqrt{3}}{3}$
$n = 2\sqrt{3}$

m∠AQB = 120° m∠ABC = 60°

Find the length of the radius. $4\sqrt{3}$

Find the length of the diameter. $8\sqrt{3}$

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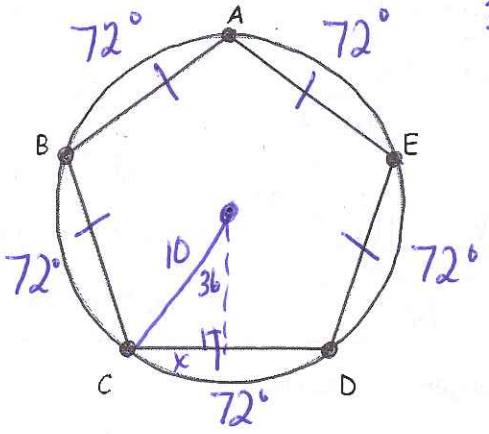
19. The below regular pentagon is inscribed inside the circle.



$\frac{360}{5}$

$m\overset{\frown}{BC}$ = 72° $m\overset{\frown}{AEC}$ = 216°

Challenge: Suppose the radius is 10cm. What is the length of $\overline{CD}$? Round to the nearest hundredth.

$\sin 36 = x/10$ $x = 5.88$

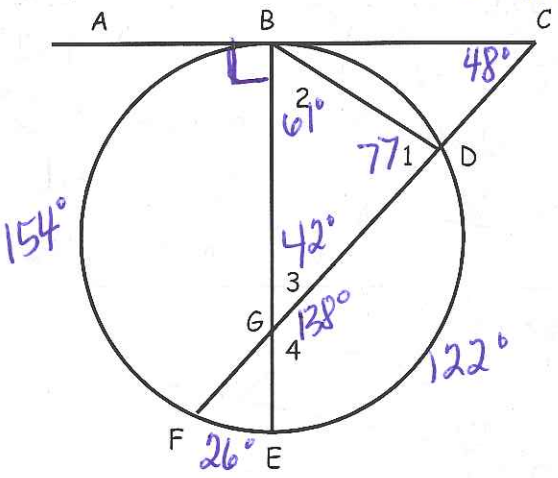
$x = 10 \cdot \sin 36$ $CD = 11.76$ cm

20. Given $\overline{AC}$ is tangent to the circle and $\overline{BE}$ is a diameter. If $m\angle ACD = 48$ and $m\overset{\frown}{BF} = 154$, find:

$48 = \frac{1}{2}(154 - x)$

$96 = 154 - x$

$x = 58$



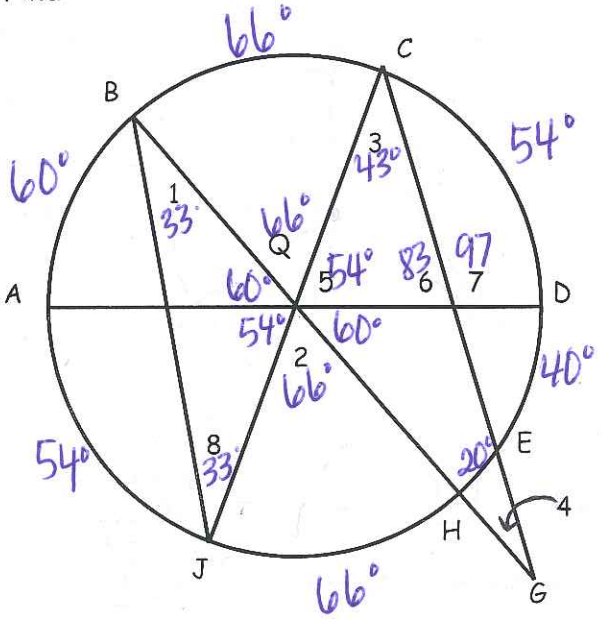
$m\overset{\frown}{BD}$ = 58° $m\angle 1$ = 77°

$m\overset{\frown}{ED}$ = 122° $m\angle 2$ = 61°

$m\overset{\frown}{FE}$ = 26° $m\angle 3$ = 42°

$m\angle 4$ = 138°

21. Q is the center of the circle and $\overline{AD}$ is a diameter. Given $m\overset{\frown}{JH} = 66$, $m\overset{\frown}{HE} = 20$, and $m\angle AQB = 60$. Find:



$m\angle 4 = \frac{1}{2}(66 - 20)$

$m\angle 4 = 23$

$m\angle 1$ = 33° $m\angle 5$ = 54°

$m\angle 2$ = 66° $m\angle 6$ = 83°

$m\angle 3$ = 43° $m\angle 7$ = 97°

$m\angle 4$ = 23° $m\angle 8$ = 33°