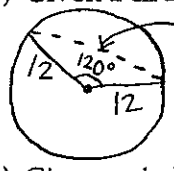
Name: KEY!

Unit N Review: Circles

Hour: _____

1) Given a circle with radius 12 mm, find the chord length of a 120° arc.



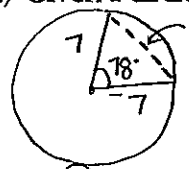
SAS → Law of Cosines

$a^2 = 12^2 + 12^2 - 2 \cdot 12 \cdot 12 \cdot \cos 120°$

$\sqrt{a^2} = \sqrt{432}$ → $a = 20.8$

1) ≈ 20.8 mm

2) Given a circle with radius 7 mm, find the chord length of a 78° arc.



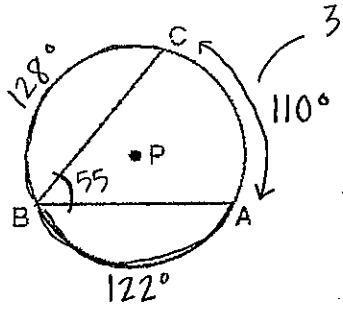
SAS → Law of Cosines

$a^2 = 7^2 + 7^2 - 2 \cdot 7 \cdot 7 \cdot \cos 78°$

$a^2 = 77.6$ → $a = 8.8$

2) ≈ 8.8 mm

3) In ⊙P below, $m\overset{\frown}{AB} = 122°$ and $m\overset{\frown}{BC} = 128°$. Find $m\angle ABC$.

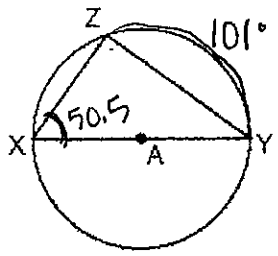


360 − 128 − 122 = 110°

110 ÷ 2 = 55

3) 55°

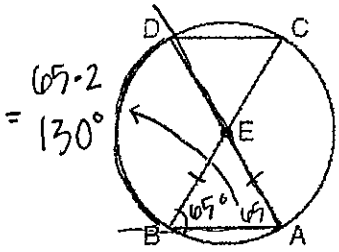
4) In ⊙A below, $m\overset{\frown}{YZ} = 101°$. Find $m\angle YXZ$.



101 ÷ 2 = 50.5

4) 50.5°

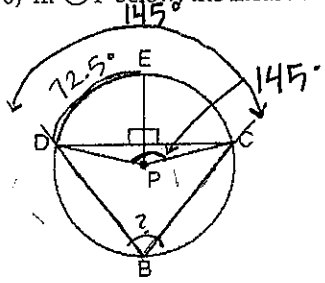
5) In ⊙E below, the measure of $\angle ABE = 65°$. Find $m\overset{\frown}{BD}$.



65 · 2 = 130°

5) 130°

6) In ⊙P below, the measure of ∠DPC = 145°.



$\frac{145}{2} = 72.5°$

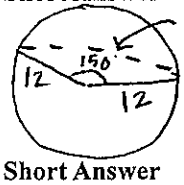
a. Find m∠DBC.

b. Find m $\overset{\frown}{DE}$.

6) a. 72.5°

b. 72.5°

7) **Short Answer** Given a circle with radius 12, find the chord length of a 150° arc.



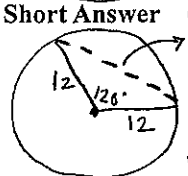
SAS → Law of Cosines

$a^2 = 12^2 + 12^2 - 2 \cdot 12 \cdot 12 \cdot \cos 150$

$\sqrt{a^2} = \sqrt{537.4}$ → $a = 23.2$

7) 23.2

8) **Short Answer** Given a circle with radius 12, find the chord length of a 120° arc.



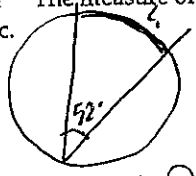
SAS → Law of Cosines

$a^2 = 12^2 + 12^2 - 2 \cdot 12 \cdot 12 \cdot \cos 120$

$\sqrt{a^2} = \sqrt{432}$ → $a = 20.8$

8) 20.8

9) **Short Answer** The measure of an angle inscribed in a circle is 52°. Find the measure of its intercepted arc.

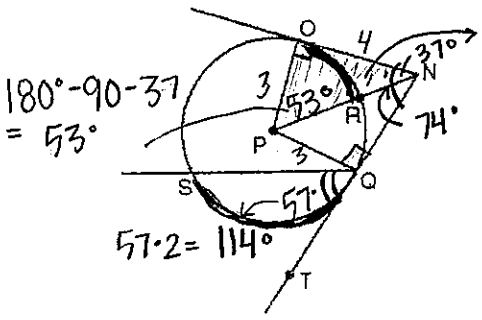


$52 \cdot 2 = 104$

9) 104°

10) $\overleftrightarrow{NO}$ and $\overleftrightarrow{NQ}$ are tangents to ⊙P at O and Q, respectively.

↳ make right ∠'s!



180° − 90 − 37 = 53°

a) $A = \frac{1}{2} \cdot b \cdot h$

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

b)

57 · 2 = 114°

a. If ON = 4 and QP = 3, what is the area of △OPN?

b. If m∠ONQ = 74°, what is m$\overset{\frown}{OR}$?

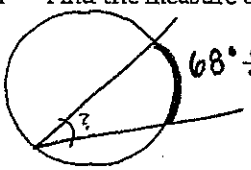
c. If m∠TQS = 57°, find m$\overset{\frown}{QS}$.

10) a. 6

b. 53°

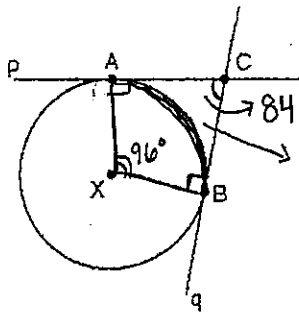
c. 114°

11) **Short Answer** Find the measure of an angle inscribed in a circle if the measure of its intercepted arc is 68°. 11) 34°



12) Lines p and q are tangent to circle X at A and B, respectively. If m∠ACB = 84°, calculate the measure of $\overset{\frown}{AB}$. 12) $\overset{\frown}{AB} = 96°$

make 90° ∠'s



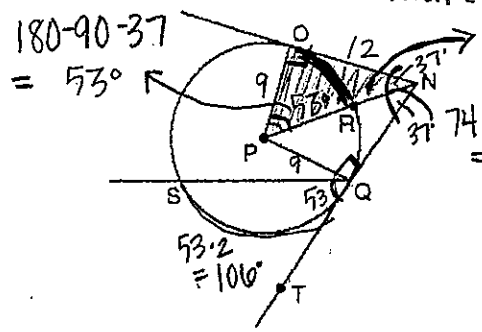
quadrilaterals add up to 360°

360 − 90 − 90 − 84 = 96°

So, ∠AXB = 96°

13) $\overleftrightarrow{NO}$ and $\overleftrightarrow{NQ}$ are tangents to ⊙P at O and Q, respectively.

make 90°



a) $A = \frac{1}{2} \cdot b \cdot h$

$= \frac{1}{2} \cdot 9 \cdot 12$

$= 54$

13) a. 54

b. 53°

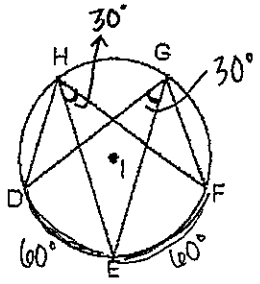
c. 106°

a. If ON = 12 and QP = 9, what is the area of △OPN?

b. If m∠QNO = 74, what is $m\overset{\frown}{OR}$?

c. If m∠TQS = 53, find the $m\overset{\frown}{QS}$.

14) In the circle below, m∠EHF = m∠EGD = 30°. Explain why m∠DHE = m∠EHF. 14)



Since ∠EHF = 30, $m\overset{\frown}{EF} = 60°$ & since ∠DGE = 30°, $m\overset{\frown}{DE} = 60°$. Then, ∠DHE = 30 & so is ∠EHF.

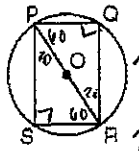
15) **Multiple choice** $\overline{AB}$ and $\overline{AC}$ are tangents to $\odot O$ at points B and C respectively. Which statement is not true? 15) A

A) $m\angle BAC = 90^\circ$
B) $\triangle AOC \cong \triangle AOB$
C) $m\angle BOA = m\angle COA$
D) $m\angle OAB = m\angle OAC$

16) **Multiple choice** $\overline{AB}$ and $\overline{AC}$ are tangents to $\odot O$ at points B and C respectively. Which statement is not true? 16) C

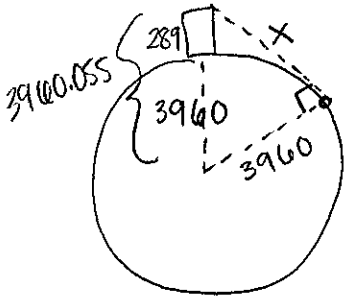
A) $\triangle BAC$ is isosceles
B) ABOC is a kite
C) ABOC is a parallelogram
D) $\triangle BOC$ is isosceles

17) In the figure, PQRS is a rectangle inscribed in $\odot O$, $m\angle QPR = 60^\circ$, and PR = 18. State as many additional facts about the figure as you can.



17) $\angle P = 90$, $\angle Q = 90$, $\angle R = 90$, $\angle S = 90$, $\angle SPR = 30$, $\angle QRP = 30$, $\angle PRS = 60$, $OP = 9$, $OR = 9$
$\overset{\frown}{PS} = 120$
$\overset{\frown}{PR} = 180$
$\overset{\frown}{SR} = 60$
$\overset{\frown}{PQ} = 60$
$\overset{\frown}{QR} = 120$

18) From the top of an apartment building that is 289 ft up in the air, how far can you see if there are no hills or obstructions in your way? (Hint: remember, the radius of the Earth is 3960 miles).

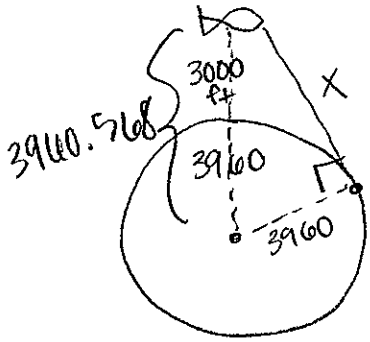


① $\frac{289\text{ ft}}{5280} = .055\text{ mi}$

② $3960^2 + b^2 = 3960.055^2$

$\approx 20.8\text{ mi.}$

19) From an airplane that is 3,000 ft up in the air, how far can you see if there are no hills or obstructions in your way? (Hint: remember, the radius of the Earth is 3960 miles).



① $\frac{3000\text{ ft}}{5280} = .568$

② $3960^2 + b^2 = 3960.5168^2$

$\approx 67.1\text{ mi}$