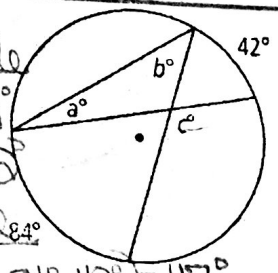
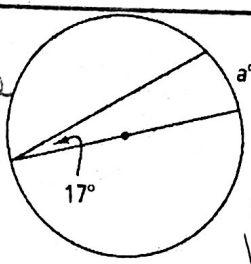
HNCM3
Unit 6: Reasoning w/ Geometry Part 2
WS 2: Central & Inscribed Angles

Name: Key

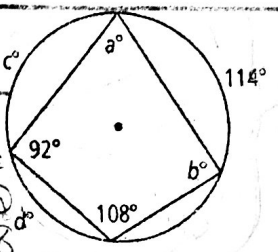
Directions: Find the value of each variable. For each circle, the dot represents the center.

1.


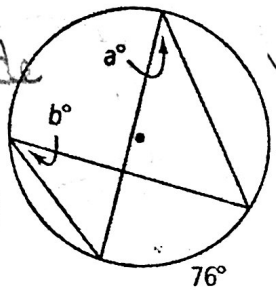
Vertex on circle
$a° = \frac{1}{2}(42°) = 21°$
$b° = \frac{1}{2}(84°) = 42°$
Vertex inside
$c° = \frac{1}{2}(360° - 84° - 42°) = 117°$
sum of arcs

2.


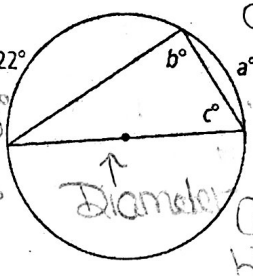
Vertex on circle
$17° = \frac{1}{2}a°$
$34° = a°$

3.


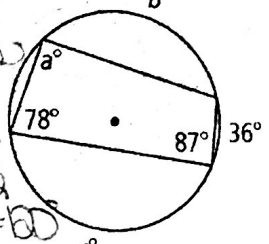
Vertex on Circle & Inscribed Quadrilateral
$a° = 180° - 108° = 72°$
$b° = 180° - 92° = 88°$
$c° = 2(108) - 114° = 102°$
$d° = 2(88°) - 102° = 74°$

4.


Vertex on circle
$a° = \frac{1}{2}(76°) = 38°$
$b° = \frac{1}{2}(76°) = 38°$

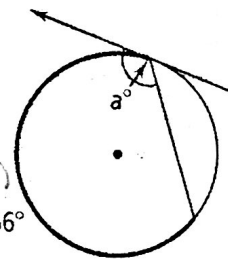
5.


Vertex on circle
$a° = 180° - 122° = 58°$
$b° = \frac{1}{2}(180°) = 90°$
$c° = \frac{1}{2}(122°) = 61°$

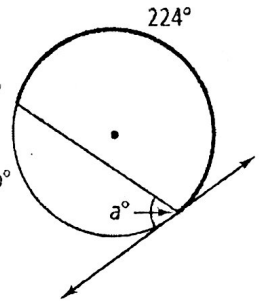
6.


Vertex on Circle & Inscribed Quadrilateral
$a° = 180° - 87° = 93°$
$b° = 2(78°) - 36° = 120°$
$c° = 2(93°) - 36° = 150°$

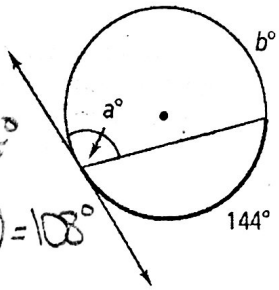
Directions: Find the value of each variable. Lines that appear to be tangent are tangent.

7.


Vertex on Circle
$a° = \frac{1}{2}(256°) = 128°$

8.


Vertex on circle
$b° = 360° - 224° = 136°$
$a° = \frac{1}{2}(136°) = 68°$

9.


Vertex on Circle
$b° = 360° - 144° = 216°$
$a° = \frac{1}{2}(216°) = 108°$

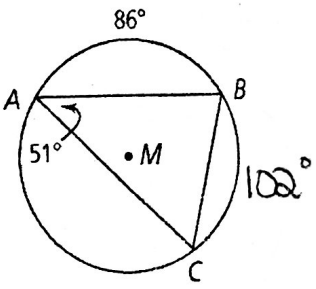
Directions: Find each indicated measure for ⊙M. Vertex on Circle

10. $m\angle B$ $m\angle B = \frac{1}{2}(172°) = 86°$

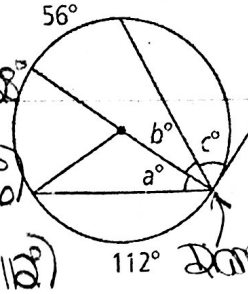
11. $m\angle C$ $m\angle C = \frac{1}{2}(86°) = 43°$

12. $m\overset{\frown}{BC}$ $51° = \frac{1}{2}m\overset{\frown}{BC}$, $102° = m\overset{\frown}{BC}$

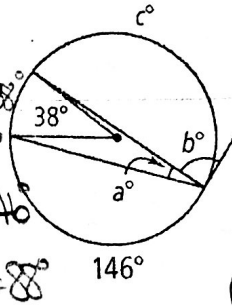
13. $m\overset{\frown}{AC}$ $m\overset{\frown}{AC} = 360° - 86° - 102° = 172°$



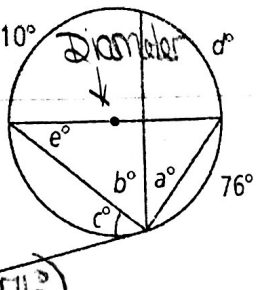
Directions: Find the value of each variable. For each circle, the dot represents the center.

14.


Vertex on circle
$b° = \frac{1}{2}(56°) = 28°$
$c° = \frac{1}{2}(180° - 56°) = 62°$
$a° = \frac{1}{2}(180° - 112°) = 34°$

15.


Vertex at Center & Vertex on Circle
$a° = 2(38°) = 19°$
$c° = 360° - 38° - 146° = 176°$
$b° = \frac{1}{2}(176°) = 88°$

16.


Vertex on Circle
$e° = \frac{1}{2}(76°) = 38°$
$b° = \frac{1}{2}(110°) = 55°$
$d° = 180° - 110° = 70°$
$a° = \frac{1}{2}(70°) = 35°$
$c° = \frac{1}{2}(360° - 110° - 70° - 76°) = 52°$

Name Key Date Section

4-9A The Bigger Circle Puzzle

You are given the following information:

$\overleftrightarrow{GF}$ is tangent to Circle O at D.

$m\overset{\frown}{DE} = 122$ $m\overset{\frown}{AC} = 20$ $m\overset{\frown}{DC} = 90$

Label the circle on the accompanying worksheet with the given information, then find the measure of each angle and arc below. Write the measure of each angle and arc as you find it on the circle, and use tick marks to designate congruent angles. Check your work as you proceed. Do not make any assumptions. Record your answers below.

1. $m\angle EDF = \frac{1}{2}(122°) = 61°$
2. $m\angle DOE = 122°$
3. $m\angle OED = \frac{1}{2}(70° - 20°) = 25°$
4. $m\angle ODE = \frac{1}{2}(58°) = 29°$
5. $m\angle BDG = \frac{1}{2}(180°) = 90°$
6. $m\angle BCD = \frac{1}{2}(180°) = 90°$
7. $m\angle ADC = \frac{1}{2}(20°) = 10°$
8. $m\angle CDG = \frac{1}{2}(90°) = 45°$
9. $m\overset{\frown}{AB} = 180° - (20° + 90°) = 70°$
10. $m\overset{\frown}{BE} = 180° - 122° = 58°$
11. $m\angle ADB = \frac{1}{2}(70°) = 35°$
12. $m\angle DAE = \frac{1}{2}(122°) = 61°$
13. $m\angle AED = \frac{1}{2}(90° + 20°) = 55°$
14. $m\angle BOE = 58°$
15. $m\angle BDF = \frac{1}{2}(180°) = 90°$
16. $m\angle CDB = \frac{1}{2}(90° + 70°) = 80°$
17. $m\angle AIB = \frac{1}{2}(70° + 90° + 20°) = 90°$
18. $m\angle CHD = \frac{1}{2}(90° + 70°) = 80°$
19. $m\angle DHB = \frac{1}{2}(58° + 20°) = 39°$
20. $m\angle AIC = \frac{1}{2}(70° + 58°) = 64°$
21. $m\angle BIJ = \frac{1}{2}(20° + 70° + 58°) = 84°$
22. $m\angle AJB = \frac{1}{2}(70° + 96°) = 83°$
23. $m\angle EJD = \frac{1}{2}(122° + 70°) = 96°$
24. $m\angle AJD = \frac{1}{2}(122° + 20°) = 71°$
25. $m\angle JEO = 26°$

Already found $m\angle EJD = 96°$ and $m\angle EOE = 58°$

All 3 $\angle$'s of a $\triangle$ add up to $180°$

$180° - (96° + 58°) = 26°$