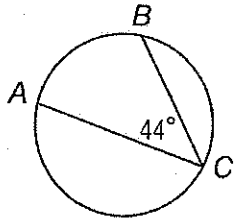
March 27, 2014

10.5 Warm-Up

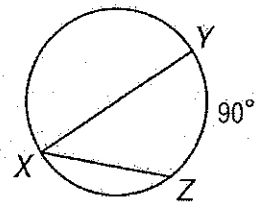
Find each measure.

1. $m\widehat{AB}$ =



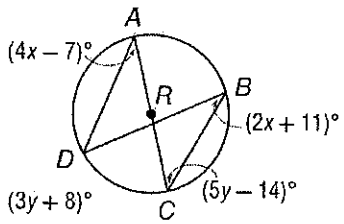
$44 \cdot 2 = \boxed{88°}$

2. $m\angle X$



$\frac{90}{2} = 45°$

ALGEBRA Find each measure.



3. $m\angle A$

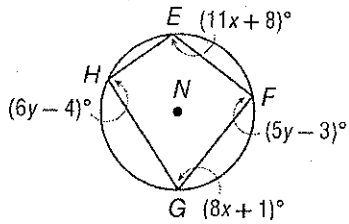
$4x - 7 = 2x + 11$
$-2x + 7 \qquad +7$

$2x = 18 \qquad 4x - 7$
$\boxed{x = 9} \qquad 4(9) - 7$

$\boxed{m\angle A\ 29}$

4. $m\angle D$

$3y + 8 = 5y - 14 \qquad 3y + 8$
$2y = 22 \qquad 3(11) + 8$
$\boxed{y = 11} \qquad 33 + 8$
$\boxed{m\angle D = 41}$



5. $m\angle G$

$11x + 8 + 8x + 1 = 180$
$19x + 9 = 180$
$-9 \quad -9$
$19x = 171$
$x = 9$
$8(9) + 1 = \boxed{73}$

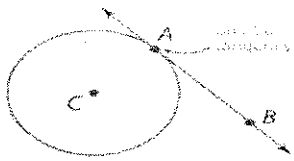
6. $m\angle H$

$6y - 4 + 5y - 3 = 180$
$11y - 7 = 180$
$11y = 187$
$y = 17$
$6(17) - 4 = \boxed{98}$

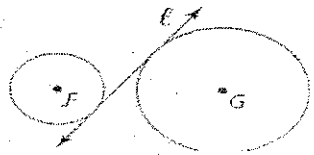
10.5 Tangents

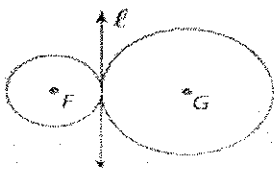
Target: Use properties of tangents to solve problems

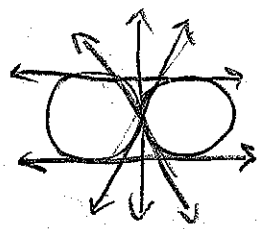
1 Tangents A **tangent** is a line in the same plane as a circle that intersects the circle in exactly one point, called the **point of tangency**. $\overleftrightarrow{AB}$ is tangent to ⊙C at point A. $\overline{AB}$ and $\overrightarrow{AB}$ are also called tangents.



A **common tangent** is a line, ray, or segment that is tangent to two circles in the same plane. In each figure below, line ℓ is a common tangent of circles F and G.



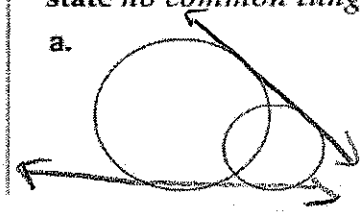




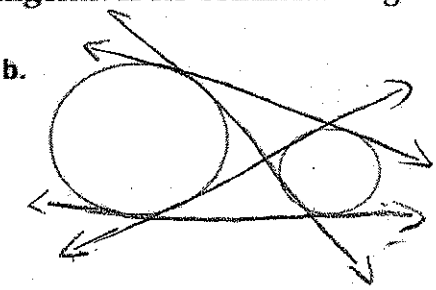
Example 1 Identify Common Tangents

Copy each figure and draw the common tangents. If no common tangent exists, state *no common tangent*.

a.

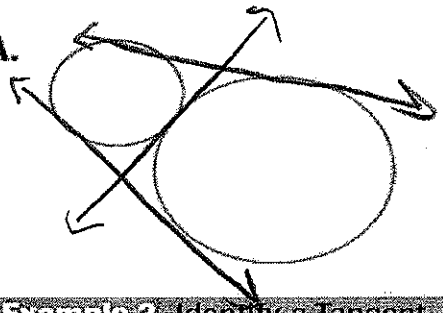


b.

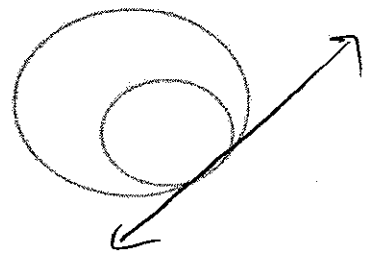


GuidedPractice

1A.

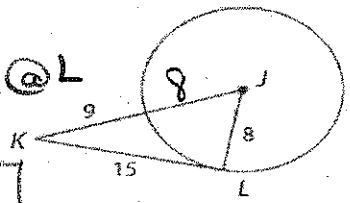


1B.



Example 2 Identify a Tangent

$\overline{JL}$ is a radius of ⊙J. Determine whether $\overline{KL}$ is tangent to ⊙J. Justify your answer.



We need to prove that its a right angle @ L

$a^2+b^2=c^2$

$8^2+15^2=17^2$

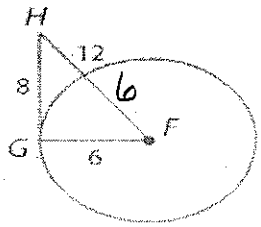
$64+225=289$

$\boxed{289=289}$

$\boxed{\text{yes its tangent}}$

GuidedPractice

2. Determine whether $\overline{GH}$ is tangent to ⊙F. Justify your answer.



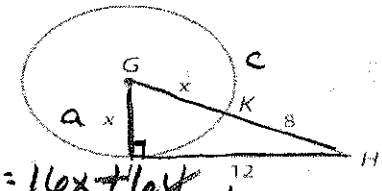
$8^2+6^2=18^2$

$64+36=324$

$\boxed{100 \neq 324 \text{ not a tangent}}$

Example 3 Use a Tangent to Find Missing Values

$\overline{JH}$ is tangent to ⊙G at J. Find the value of x.



$x^2+12^2=(x+8)^2$

$x^2+144=(x+8)(x+8)$

$x^2+144=x^2+8x+8x+64$

$x^2+144=x^2+16x+64$

$-x^2 \quad -x^2$

$144=16x+64$

$-64 \quad -64$

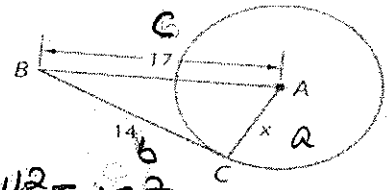
$80=16x$

$\boxed{x=5}$

GuidedPractice

Find the value of x. Assume that segments that appear to be tangent are tangent.

3A.



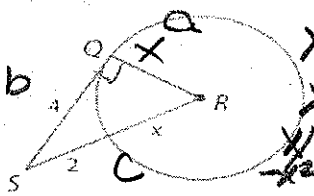
$x^2+14^2=17^2$

$x^2+196=289$

$x^2=93$

$\boxed{x=9.64}$

3B.



$x^2+4^2=(x+2)^2$

$x^2+16=(x+2)(x+2)$

$x^2+16=x^2+4x+4$

$-x^2 \quad -x^2$

$16=4x+4$

$-4 \quad -4$

$12=4x$

$\boxed{x=3}$