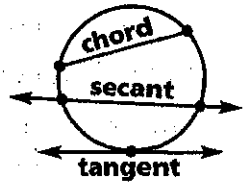
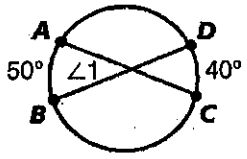
Name _____

Angles Formed by Chords, Secants, and Tangents

Remember

1. A **chord** is a segment whose endpoints are points on a circle.
   A **secant** is a line that intersects a circle at two points.
   A **tangent** is a line that intersects a circle at exactly one point.

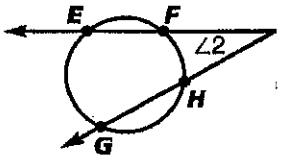


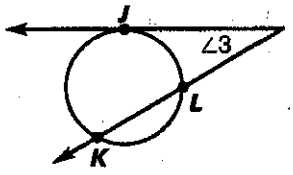


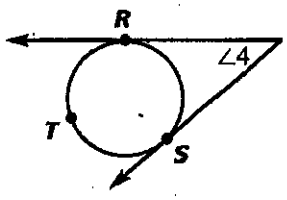
2. If two chords intersect *inside* a circle, the measure of each angle is equal to half the measure of the *sum* of the intercepted arcs.

$$m\angle 1 = \frac{1}{2}(m\overset{\frown}{AB} + m\overset{\frown}{CD}) = \frac{1}{2}(50° + 40°) = \frac{1}{2}(90°) = 45°$$

3. If two secants, a secant and a tangent, or two tangents intersect *outside* a circle, the measure of the angle formed is equal to half the measure of the *difference* of the intercepted arcs.







$m\angle 2 = \frac{1}{2}(m\overset{\frown}{EG} - m\overset{\frown}{FH})$ $m\angle 3 = \frac{1}{2}(m\overset{\frown}{JK} - m\overset{\frown}{JL})$ $m\angle 4 = \frac{1}{2}(m\overset{\frown}{RTS} - m\overset{\frown}{RS})$

Use the diagrams above and the information given to find the missing measures. Then use the decoder to answer this riddle: *Why did the polite man spend the day at the beach?*

1. $m\overset{\frown}{AB} = 62°$, $m\overset{\frown}{CD} = 88°$, $m\angle 1 =$ ____
2. $m\overset{\frown}{AB} = 25°$, $m\angle 1 = 40°$, $m\overset{\frown}{CD} =$ ____
3. $m\overset{\frown}{AB} = 50°$, $m\overset{\frown}{CD} = 30°$, $m\angle 1 =$ ____
4. $m\overset{\frown}{EG} = 75°$, $m\overset{\frown}{FH} = 25°$, $m\angle 2 =$ ____
5. $m\overset{\frown}{FH} = 40°$, $m\overset{\frown}{EG} = 100°$, $m\angle 2 =$ ____
6. $m\angle 2 = 20°$, $m\overset{\frown}{FH} = 75°$, $m\overset{\frown}{EG} =$ ____
7. $m\overset{\frown}{JK} = 145°$, $m\overset{\frown}{JL} = 45°$, $m\angle 3 =$ ____
8. $m\angle 3 = 45°$, $m\overset{\frown}{JK} = 180°$, $m\overset{\frown}{JL} =$ ____
9. $m\overset{\frown}{KL} = 100°$, $m\overset{\frown}{JK} = 210°$, $m\angle 3 =$ ____
10. $m\overset{\frown}{RTS} = 275°$, $m\angle 4 =$ ____
11. $m\overset{\frown}{RS} = 115°$, $m\angle 4 =$ ____
12. $m\overset{\frown}{TR} = 120°$, $m\overset{\frown}{TS} = 130°$, $m\angle 4 =$ ____

25°	30°	40°	50°	55°	65°	70°	75°	80°	90°	95°	115°
A	B	C	D	E	G	H	N	S	T	U	W

___ ___ ___ ___ ___ ___ ___ ___ ___ TO BE A ___ ___ ___ ___ ___ ___ ___ ___ !

5 2 3 4 10 9 2 12 2 6 4 1 8 2 7 8 4 1 11 2 1 8

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