Name __Key__   Date _____

11.1 Circumference & Arc Length CYU

CONCEPTS	BASIC	INTERMEDIATE	ADVANCED
Circumference	1	2, 8, 9	3
Real World Application			4, 12
Arc Length	5, 6, 7		4
Perimeter of composite figures		8, 9	
Converting angle measures	10, 11		
Revolutions			12

Find the indicated measure. Draw and label your image.

1. radius of a circle with a circumference of 42π meters

   $r = 21m$

2. circumference of a circle with a diameter of 15 inches

   $= 15\pi \text{ in}$ $\approx 47.124 \text{ in}$

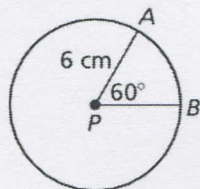3. diameter of a circle with circumference 39 centimeters

   $d = \frac{39}{\pi} \text{ cm}$ $\approx 12.414 \text{ cm}$

4. Maple trees suitable for tapping for syrup should be at least 1.5 feet in diameter. You wrap a rope around a tree trunk, then measure the length of the rope needed to wrap one time around the trunk. This length is 4 feet 2 inches. Explain how you can use this length to determine whether the tree is suitable for tapping.

   answers will vary

Find the arc length of $\overset{\frown}{AB}$.
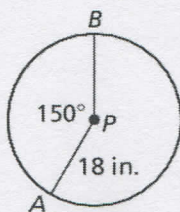
5.

   $= 2\pi \text{ cm}$
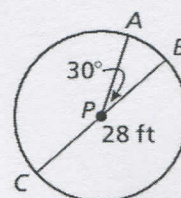
   $\approx 6.283 \text{ cm}$

6.

   $= 15\pi \text{ in}$

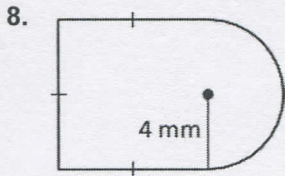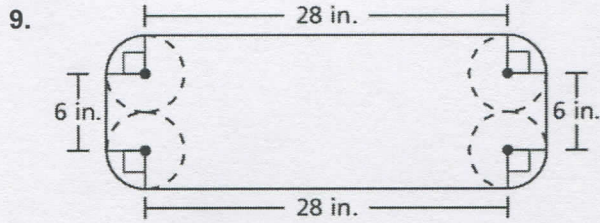 $\approx 47.124 \text{ in}$

7.

   $= \frac{7\pi}{3} \text{ ft}$

   $\approx 7.33 \text{ ft}$

Find the perimeter of the region. Show set up to earn full credit. Use appropriate units and leave answers exact.

8.

$\square + D$

$3(4.2) + \frac{1}{2}(2\pi(4))$

$P = 24 + 4\pi$ mm

≈ 36.566 mm

9.

28 in.

6 in.   6 in.

28 in.

$\square + \bigcirc$

$2(28) + 2(6) + 2\pi(3)$

$= 68 + 6\pi$ in

≈ 86.850 in

Convert the angle measure. Use appropriate units and leave answers exact.
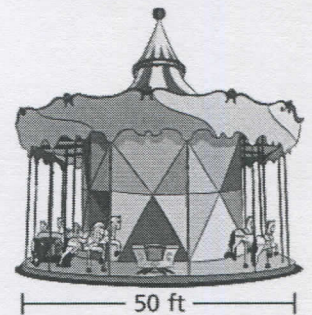
10. Convert 60° to radians.

$\frac{\pi}{3}$ radians

11. Convert $\frac{5\pi}{4}$ radians to degrees.

$225°$

12. A carousel has a diameter of 50 feet. To the nearest foot, how far does a child seated near the outer edge travel when the carousel makes 8 revolutions?

1,257 ft

50 ft

CYU Reflection: *How far can you go: basic, intermediate, or advanced?*
Rate your mastery level!
How confident are you with the skills this CYU covered? Circle the score you would give yourself.

1 2	3 4 5	6 7	8
Basic	Intermediate	Advanced	Solved ALL!