7.8 Notes Circumference and Arc Length

Name: Key

Approximate vs Exact Values: approx for pi is 3.14 (rounding) has decimals
exact for pi is π (no rounding) includes π in answer

Formula for Circumference: Circumference = perimeter of circle

$C = \pi d$ or $C = 2\pi r$

1) What is the exact circumference of a circle with a diameter of 8 cm?

$C = \pi d$ $\boxed{C = 8\pi \text{ cm}}$

2) What is the approximate circumference of a circle with a diameter of 4 cm?

$C = \pi d$ $C = 4\pi \rightarrow \approx \boxed{12.57 \text{ cm}}$

3) What is the approximate circumference of a circle with a radius of 9 meters?

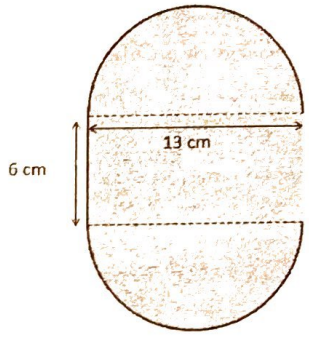
$C = 2\pi r$ $C = 2\pi 9 = 18\pi \approx$

4) What is the radius of a circle with a circumference of 12 cm?

$C = 2\pi r$ $\frac{12}{(2\pi)} = \frac{2\pi r}{2\pi}$ $r = \frac{6}{\pi} \approx 1.91 \text{ cm}$

$12 = 2\pi r$

5) What is the approximate perimeter of this figure?



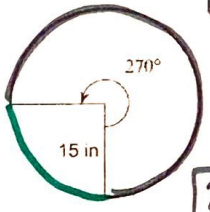
$C = \pi d$ $C = 13\pi$ Exact: $13\pi + 12$

$C = \pi 13$ Approx: 52.84

Arc Length Proportion: arc length $= \frac{2\pi r\theta}{360}$ r = radius, θ = angle/arc meas

Find the length of each arc. Round your answers to the nearest tenth.

1)



$AL = \frac{2\pi r\theta}{360}$

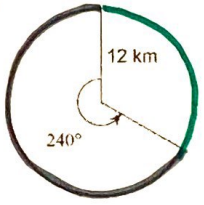
$\frac{2(\pi)(15)(270)}{360} = \frac{8100\pi}{360}$

$22.5\pi \approx 70.69$

$\frac{(2)(\pi)(15)(90)}{360}$

$\frac{2700\pi}{360} = \boxed{7.5\pi \approx 23.56}$

2)



$\frac{2(\pi)(12)(240)}{360} = \frac{5760\pi}{360}$

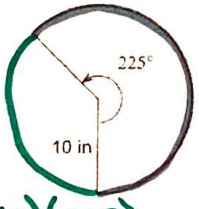
$\boxed{16\pi \approx 50.27}$

$\frac{2(\pi)(12)(120)}{360} = \frac{2880\pi}{360}$

$\boxed{8\pi \approx 25.13}$

Find the length of each arc. Leave your answer in pi form (exact form).

3)



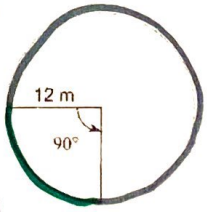
$\frac{2(\pi)(10)(225)}{360}$

$\frac{4500\pi}{360} = \boxed{12.5\pi \approx 39.27}$

$\frac{2(\pi)(10)(135)}{360}$

$\frac{2700\pi}{360} = \boxed{7.5\pi \approx 23.56}$

4)



$\frac{2(\pi)(12)(270)}{360} = \frac{6480\pi}{360}$

$\boxed{18\pi \approx 56.54}$

$\frac{2(\pi)(12)(90)}{360} = \frac{2160\pi}{360} =$

$\boxed{6\pi \approx 18.85}$