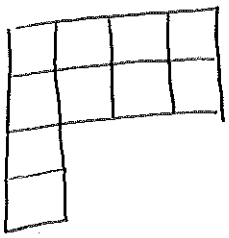
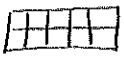
Key

Math 118 - Dr. Miller - Quiz #2: Perimeter and Circumference - **Due Monday, 2/3/14**

1. Draw a decomino ("dec" means 10) that has a perimeter somewhere between the smallest and largest possible, explaining how you know your perimeter is neither smallest nor largest.



$P = 16$

It's neither compact enough to create the smallest perimeter (like  does: 14, or ) nor elongated enough to make the biggest perimeter (like  of 22).

2. A circle's circumference is 980.7 ft. Find its radius to the nearest tenth; show work.

$C = 2\pi r$

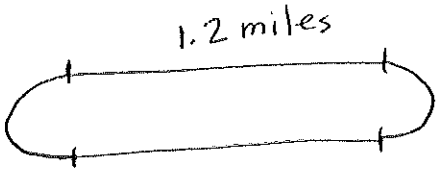
$\frac{980.7}{2\pi} = \frac{2\pi r}{2\pi}$

$(980.7 \div 2, \div \pi)$

$r = 156.1$ ft.

3. The track used by the race car drivers at Peak Park has two straightaways that are 1.2 miles long each while the semicircular curves on either end have a diameter of 0.2 miles. What is the length of one lap of the track, to the nearest tenth of a mile? Show work.

This is from HW #5



P = 2 straights + 2 semicircles = 1 circle

$= 2 \times 1.2 + .6$

$= 2.4 + .6$

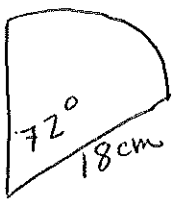
$= 3.0$ miles

$C = \pi d$

$= \pi(0.2)$

$= .6$

4. Find the total perimeter of a circular sector that opens 72° and has a radius of 18 cm. Round to the nearest tenth; show work.



P = 2 straights + curve
$= 2 \times 18 + 22.6$
$= 58.6$ cm

Curve: $\frac{72^\circ}{360^\circ} = \frac{1}{5}$ of a circle

full $C = 2\pi(18) = 113.1$

$\frac{1}{5} C = 22.6$

5. If the radius of a circle decreases by subtracting 100, what is the amount and nature of the change in circumference? Answer in a sentence, and justify your claim by showing two comparisons.

Various comparisons are possible. Here are mine:

$r = 200$: $C = 2\pi(200) = 1256.64$
$r = 100$: $C = 2\pi(100) = 628.32$
Compare: new C − old C = $628.32 - 1256.64$
$= -628.32$ (smaller)

new $C \div$ old $C = .5$ times (smaller)

$r = 300$: $C = 2\pi(300) = 1884.96$
$r = 200$: $C = 2\pi(200) = 1256.64$
Compare: new C − old $C = -628.32$ (smaller)
new $C \div$ old $C = .67$ times.

The circumference gets smaller by subtracting 628.32 each time.