Adgenda.

- Today: 03/22: Happy Spring, §12.6.
- Wednesday: 03/24: Give out EXAM #2, talk about due date.

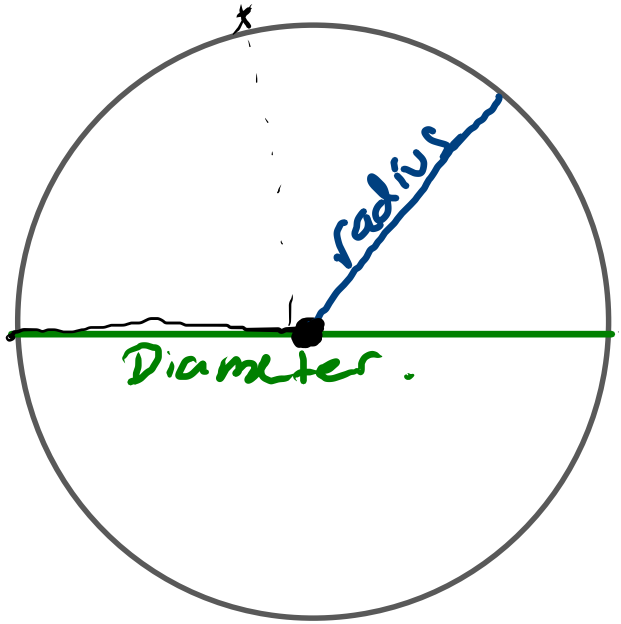
Topics for exam 2: orginally: §11.1 – §12.6.

Now: 11.4, 12.3 – 12.6. ***

11.1, 11.2, 11.3 → Save for Final

NEXT WEEK SPRING BREAK!!! Who-Hoo!

§12.6 Circles: Area, Circumference and π.



Keywords.

① <u>Circumferance</u>: Distance around the circle. (Perimeter).

② <u>Radius</u>: Distance from center to end of the circle.

③ <u>Diameter</u>: Distance <u>Across</u> the circle going through the middle.

Diameter = 2·radius.

$$\underline{\underline{d = 2r.}}$$

Circumference and Diameter.

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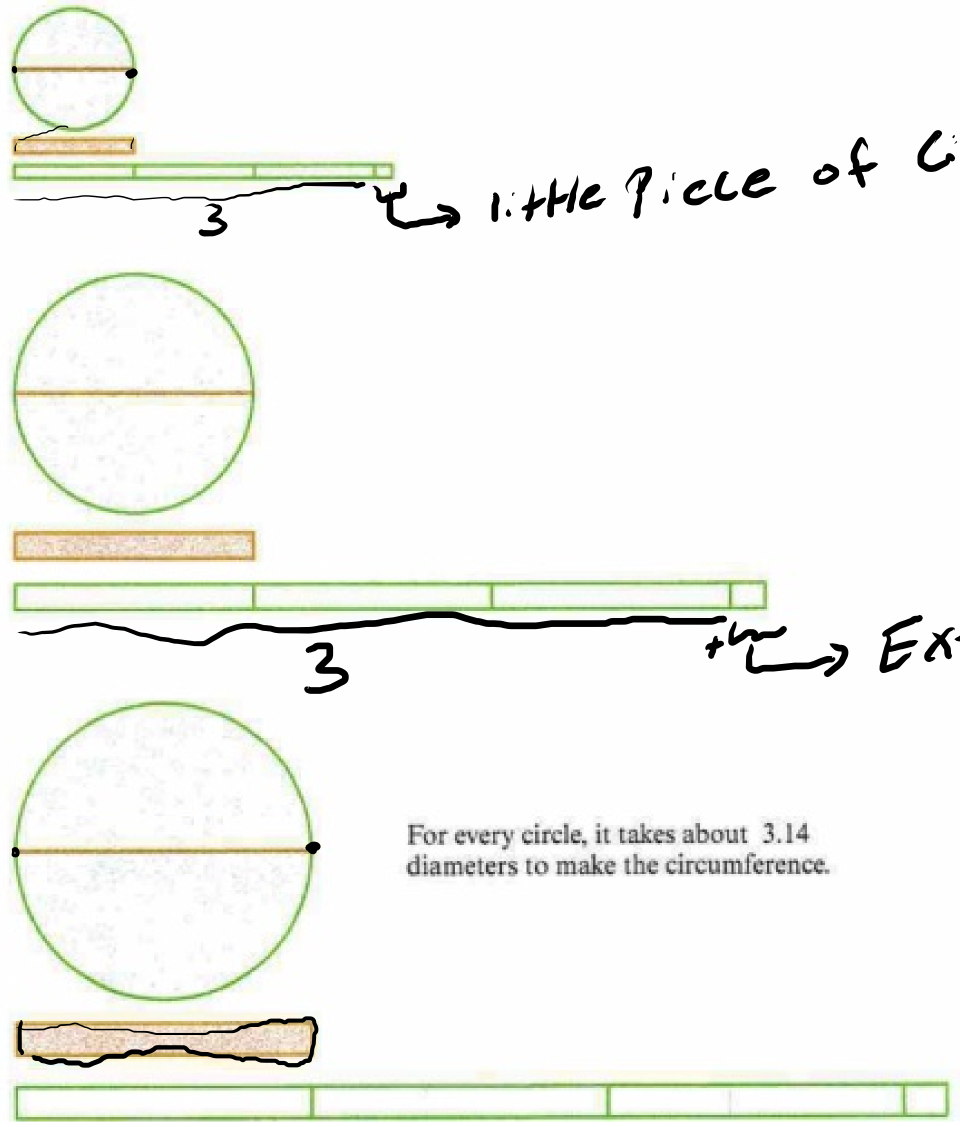
How would you measure the Circumference using diameter?



$C = \underbrace{\#}D.$

$\downarrow$

$C = \pi D$

$\pi = 3.14159265358979\ldots$

$\pi = \dfrac{C}{D}$

$C = \pi \cdot D.$; $D = 2r$

$\Updownarrow$

* $C = 2\pi r$ *

Area of a Circle.

$A = \pi \cdot r^2$; How???

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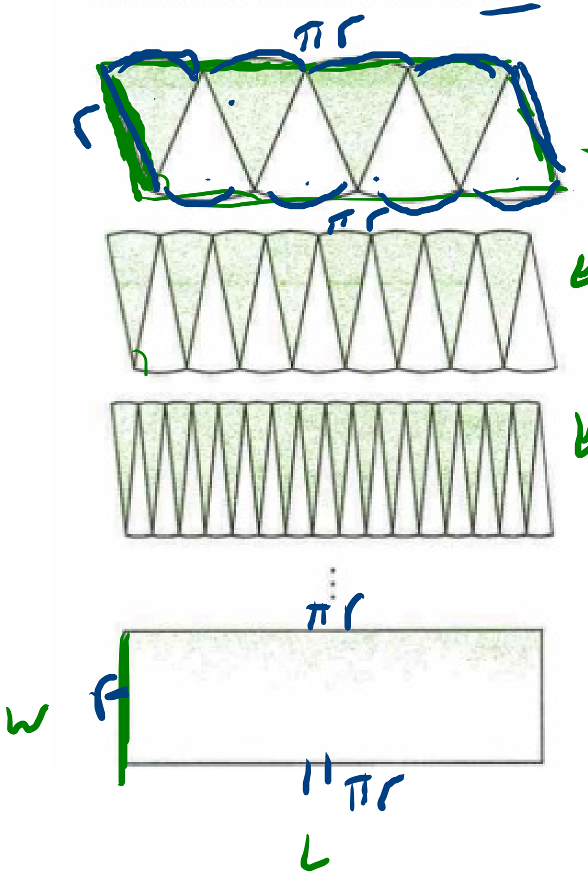
2. Using Figure 12.79, explain why it makes sense that a circle of radius r units has area πr^2 square units, assuming we already know that a circle of radius r has circumference $2\pi r$.



Slice-em even more.

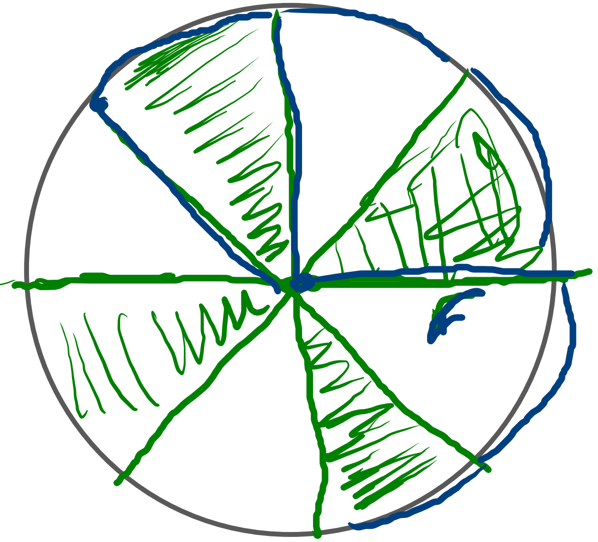
Slice-em up.

→ Rectangle!!

$A = L \cdot w.$

$A = \pi r \cdot r$

$A = \pi r^2$ → Area of Circle.



$C = 2\pi r.$

Half of circumferance: πr.

Pg558 Problem 4

4. The Browns plan to build a 5-foot-wide garden path around a circular garden of diameter 25 feet, as shown in Figure 12.80.

What is the area of the garden path? Explain your answer.

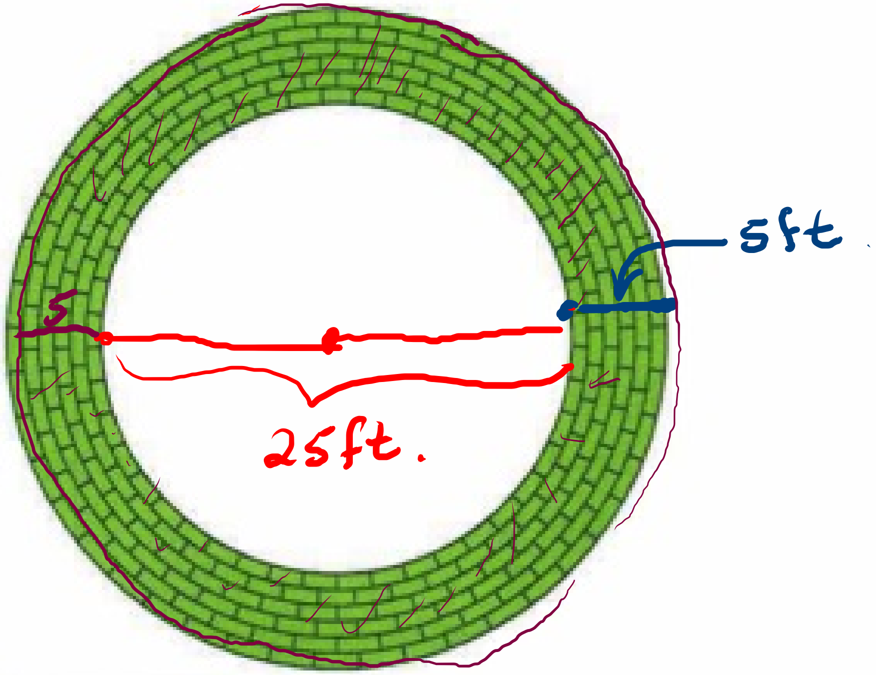
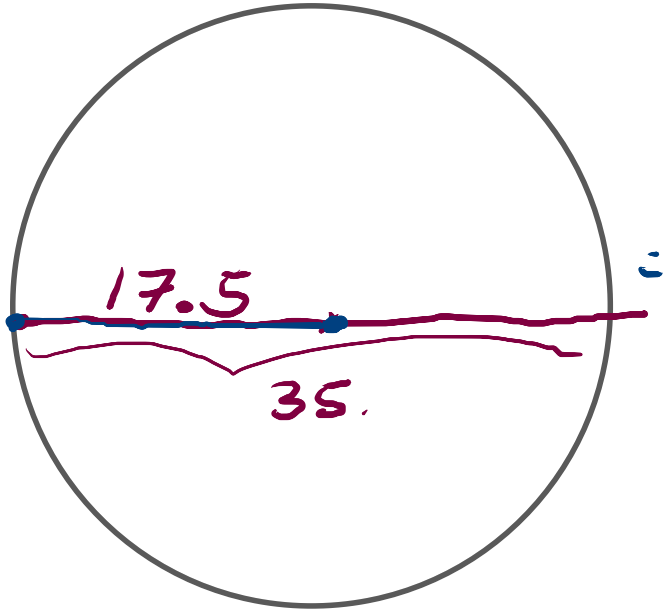


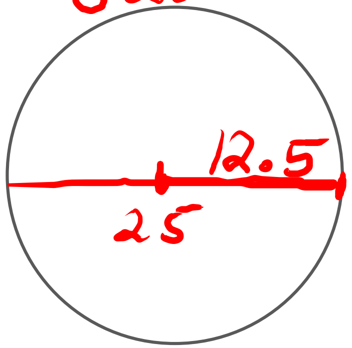
Figure 12.80 A garden path.

Entire Circle.



$A = \pi r^2 = \pi (17.5)^2 = 962.11 \text{ ft}^2$

Garden



$A = \pi (12.5)^2$

$= 490.9 \text{ ft}^2$

Subtract Garden Area from ENTIRE Circle Area.

$962.11 - 490.9 = \boxed{471.1 \text{ ft}^2}$

Pg 559 Problem Section 12.6

2. Tim works on the following exercise:

For each radius r, find the area of a circle of that radius:

$r = 2$ in., $r = 5$ ft, $r = 8.4$ m

Tim gives the following answers:

39.48, 246.74, 696.399

Identify the errors that Tim has made. How did Tim likely calculate his answers? Discuss how to correct the errors; include a discussion on the proper use of a calculator in solving Tim's exercise. Be sure to discuss the appropriate way to write the answers to the exercise.

uses of improper Parenthesis.
Squared both π and r
rather just r.

① Find area w/ $r = 2$ in.

$A = \pi r^2 \rightarrow A = (\pi r)^2$ Huge difference

$A = \pi(2)^2$?!

$A = 4\pi \approx 12.6 \text{ in}^2$

② Find area of circle w/ $r = 5$ ft.

$A = \pi r^2$

$A = \pi(5)^2$

$A = 25\pi = 78.5 \text{ ft}^2$

③ Find Area of Circle w/ $r = 8.4$ m

$A = \pi r^2$

$A = \pi(8.4)^2$

$A = 221.7 \text{ m}^2$

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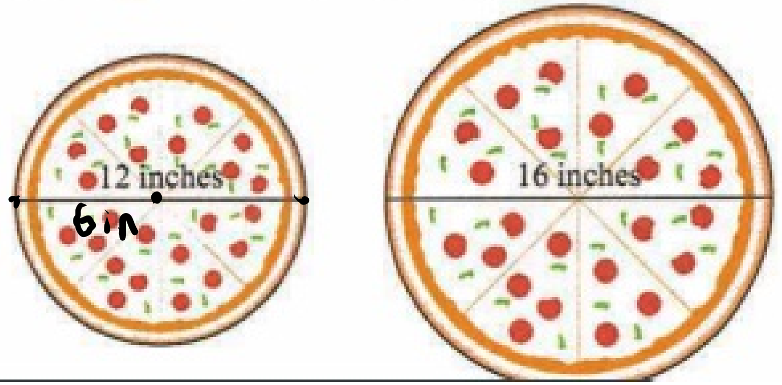
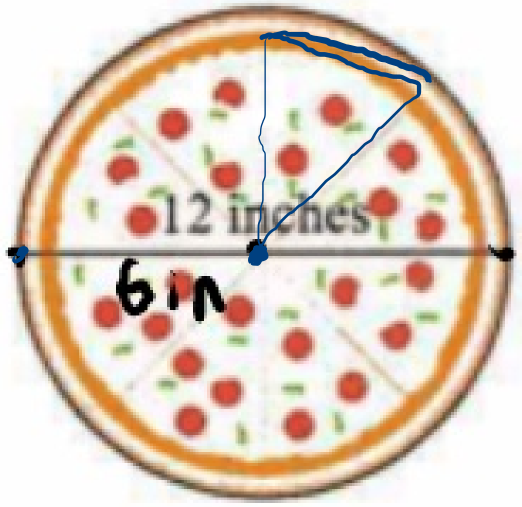
6. Lauriann and Kinsey are in charge of the annual pizza party. In the past, they've always ordered 12-inch-diameter round pizzas, and each 12-inch pizza has always served 6 people. This year, the jumbo 16-inch-diameter round pizzas are on special, so Lauriann and Kinsey decide to get 16-inch pizzas instead. They think that since a 12-inch pizza serves 6 (which is half of 12), a 16-inch pizza should serve 8 (which is half of 16). But when Lauriann and Kinsey see a 16-inch pizza, they think it ought to serve even more than 8 people. Suddenly, Kinsey realizes the flaw in their reasoning that a 16-inch pizza should serve 8. Kinsey has an idea for determining how many people a 16-inch pizza will serve. What mathematical reasoning might Kinsey be thinking of, and how many people should a 16-inch-diameter pizza serve if a 12-inch-diameter pizza serves 6? (See Figure 12.84.) Explain your answers.





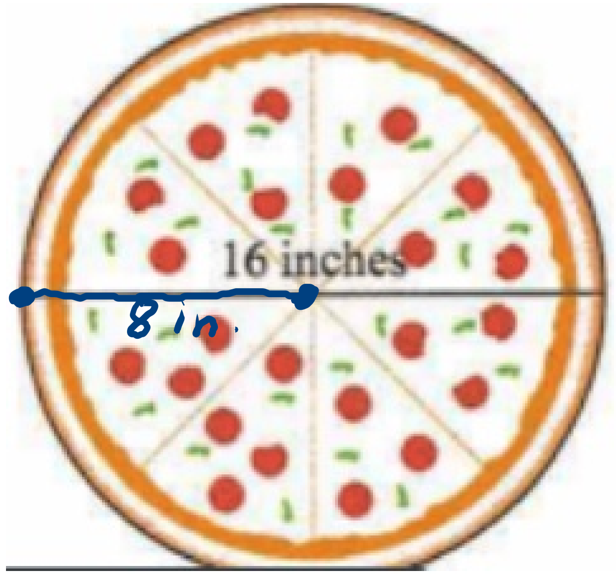
Serves 6 individuals.

$A = \pi r^2$

$A = \pi(6)^2$

$A = 36\pi$

$\frac{36\pi}{6} = 6\pi \rightarrow$ Each Person will get.



$A = \pi(8)^2$

$A = 64\pi$

$\frac{64\pi}{6} = 10.6 = 10\frac{2}{3}$

$\rightarrow$ with 6 servings

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*8. Jack has a truck that requires tires that are 26 inches in diameter. (Looking at a tire from the side of a car, a tire looks like a circle. The diameter of the tire is the diameter of this circle.) Jack puts tires on his truck that are $\boxed{\text{30 inches in diameter.}}$

a. A car's speedometer works by detecting how fast the car's tires are rotating. Speedometers do not detect how big a car's tires are. When Jack's speedometer reads 60 miles per hour is that accurate, or is Jack actually going slower or faster? Explain your reasoning. An exact determination of Jack's speed is not needed.

The truck is going faster.

b. Determine Jack's speed when his speedometer reads 60 mph. Explain why you can solve the problem the way you do.

IN Mario-Kart Bigger Tires, the faster you'll go.

26-inch tires.

$\frac{60 \text{ mph}}{26\text{-inch tire}} = 2.31$

For 30-inch: Faster.

$2.31 * 30 = \boxed{69.2 \text{ mph.}}$