

Formulas HW 1: Pizza

In this homework, we'll connect something from back in the day (unit cost) with our new(ish) ideas of formulas. Start by visiting this website! <https://thebackyardpizza.com/menu/#menu>. (You can also just find Backyard Pizza's website. From there, find their "Specialty Pizza" menu from their "Menu" link.)

Once you're there, find one of their specialty pizzas that sounds tasty. Circle it below!

The Heater	Taco Pizza	Margherita	All Meat
Chicken Bacon Ranch	Veggie	Dan's Spicy BBQ Chicken	Mama G's Spicy Chicken Alfredo
The Backyard	The 3 Sisters	Buffalo Chicken	Mediterranean

Last time I checked, each of these Backyard pizzas came in three sizes (small, medium, and large). If yours doesn't anymore, please go back and pick another one. Make a note of the diameters of each (they're the "inch" measures given with the menu).

Diameters: Small _____ Medium _____ Large _____

The first thing we need to do is figure out the area of the pizza: that is, the two-dimensional surface that a circle with a given diameter "takes up" (I'm assuming they all have roughly the same depth). So, for a circle, the formula for the area can be written in one of two ways:

$$\text{Area of a Circle} = \pi(\text{radius})^2$$

$$\text{Area of a Circle} = \frac{\pi(\text{diameter})^2}{4}$$

Some notes:

- The "radius" of a circle is half of the diameter.
 - The mathematical symbol " π " is just a special symbol that means "about 3.14". So feel free to use the number 3.14, if you want.
1. **(4 points) (w)** Pick whichever formula you like best (or hate least) and use it to give me the areas of these three pizza sizes. Show me how you got each one. Make sure to include units in your answers.

Now, here's a new formula: unit cost of a pizza.

$$\text{Unit Cost of a Pizza} = \frac{\text{Cost of Pizza}}{\text{Area of Pizza}}$$

It's the same basic idea of "unit cost" that we chatted about back in Unit Arithmetic (except it's a "geometric" version)!

2. **(5 points) (w)** Figure out the unit cost of each of the three sizes of the pizza you selected. Make sure that you have the correct unit on the number you finish with.

In case that last one is a little confusing, here's an example. Let's deal with a fictitious Backyard Pizza where the extra-large size (18") costs \$30.

I'll start by figuring out the area of the pizza. If the diameter is 18", the radius is 9". So the area of this pizza is $3.14 \times (9")^2$, or about **254.34 square inches**. You can also use the other formula: $3.14 \times (18")^2 / 4$.

- The cost of this pizza is \$30. So, the unit cost is $\frac{\$30}{254.34 \text{ square inches}}$
- The only problem with that is that it's hard to see, mentally, what "254.34 square inches" is. So, let's rewrite that last unit fraction with a denominator of 1 square inch (I'll just divide the 30 by 254.34)!

$$\frac{\$30}{254.34 \text{ square inches}} = \frac{\$0.12}{\text{square inch}}$$

3. **(1 point)** Which of the three sizes results in the least unit cost per square inch for your pizza? Please circle the correct choice!

Small

Medium

Large