

Hi, I'm Greg. I'm a NYC tutor! I love helping students. I tutor many subjects, assist with homework help, etc. I mainly specialize in specialized tests.

As it turns out, I haven't been able to get to do as many livestreams as I have in past years (yet, hopefully that changes). Therefore, I thought it would be fun to start a Problem Of The Day Series. I will put up a problem and leave it running for a while. You guys will then analyze it, and come up with possible solutions and alternative solutions on your own. I'll eventually post the answer in some manner.

For now we'll play it by ear how that will happen and for how long I'll leave up a problem. But right now I'm thinking of keeping the problem up maybe 2 hours minimum and maybe even in some cases 4 or 5 hours depending upon the dynamics and my situation. Unlike my AMA (Ask Me Anything) livestream sessions, I will not be checking in every few minutes although I may from time to time join into the discussion. Again, the idea is for you guys to discuss out the problem.

Please be respectful to each other in this endeavor and let's make this fun, educational and forward-thinking. Keep the comments within the spirit of what I'm doing here. Please email me at GregsTutoringNYC@gmail.com if needed.

HERE'S THE PROBLEM: <—
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Pete's Zuh sells assorted foods. Today, there is a special on rice balls: \$10 each if you purchase 30 larger rice balls or \$8 each if you purchase 45 smaller rice balls. They looks so good! What is a fair amount of rice balls to request from Pete that is in perfect alignment with his existing pricing if you want to pay \$11 per extra large rice ball?

HERE'S THE SOLUTION:
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As you're trying to get a fair amount, you're going to consider this linearly, therefore we're going to be considering a line ala:

$$y = mx + b$$

in our case:

$$p = mq + b$$

where p is the price and q is the quantity.

We can figure out m, our slope, by looking at Pete's offering as pairs: 30@\$10 and 45@\$8 as (30, 10) and (45, 8) respectively. Therefore, our rise/run is change in price/change in quantity:

$$\frac{8 - 10}{45 - 30} = \frac{-2}{15}$$

Therefore we have

$$p = \frac{-2}{15} q + b$$

We can plug in one of the coordinates to calculate b:

$$10 = \frac{-2}{15} (30) + b$$

$$10 = -4 + b$$

$$14 = b$$

That gives us:

$$p = \frac{-2}{15}q + 14$$

Checking it with Pete's other offer we get:

$$8 = \frac{-2}{15}(45) + 14$$

$$8 = -6 + 14$$
$$8 = 8$$

Now using our \$11 offer:

$$11 = \frac{-2}{15}q + 14$$

$$-3 = -\frac{2}{15}q$$

$$q = 45 / 2 = 22.5 \text{ extra large rice balls to request of Pete}$$

We can also solve this problem logically. If \$8 gives 45 and \$10 gives 30 that would mean \$9 would give $45+30/2 = 75/2 = 37.5$ pieces. Note that 37.5 is 7.5 away from 30 and also 7.5 away from 45. That means 7.5 per \$1, therefore to go to \$11 is 7.5 pieces less than the 10 price count $\therefore 30 - 7.5$ is 22.5

- Greg / GregsTutoringNYC@gmail.com LLAP ☺