

## question

38 views

## problem set 7 question 3

I'm not sure this time what I did wrong.  $z = (\text{sample mean} - \text{mean}) / \text{standard deviation} = (31.5 - 28) / 11 = 0.64545$

Z score table (week 2, chap. 4 reading) said  $z = 0.6$  corresponds to score 0.7258. So since 31.5 is above sample mean, subtract from 1.0 to get 0.274. Why is the answer 3.1?

3c. What is the z-score for the neighboring company's sample mean? (*Round to 1 decimal place.*)

0.6 - incorrect

0.6



3.1

problem\_set7

2 days ago by Karen West

**the students' answer**, *where students collectively construct a single answer*

your 31.5 should be 35.1. Looks like you transposed some digits. Also you need to use standard error, not the standard deviation. include  $\sqrt{23}$  somewhere

2 days ago by Anonymous

**followup discussions** *for lingering questions and comments*

☐ Resolved

☒ Unresolved



**Karen West** 1 day ago

That is a typo actually! I did use 35.1 not 31.5 when I calculated "z". So that was not actually my careless mistake I made.  
My notes read:  $z = (35.1 \text{ (company next door sample mean)} - 28 \text{ (mean of normal distribution)}) / (11 \text{ (standard deviation)}) = 0.64545$

So I still do not know what I did wrong - that was just a typo on my part (in a rush, sorry about that!) and my question still remains:

Z score table (week 2, chap. 4 reading) said  $z = 0.6$  corresponds to score 0.7258. So since 35.1 is above sample mean, subtract from 1.0 to get 0.274. Why is the answer 3.1?

Shouldn't a z score be between 0 and 1?



**Anonymous** 1 day ago Karen, I said to include  $\sqrt{23}$  somewhere. You need to use std error. No, z scores range from  $-\infty$  to  $+\infty$ . The proportions range from 0 to 1.



**Karen West** 1 day ago Can you provide any more detail on that? Why do you use standard error for the z-score? The chapter examples showed calculating z, and finding the value in the table that corresponds to it. So there is something fundamental I'm missing. Is there another example in the chapter to reference on it? I have a lot going on right now, so I've been unable to re-read the entire chapter to see what example I should have followed rather than that one.

Today is my children's 5th snow day in a few weeks! Life has been outrageous here! So much snow to shovel, 2 kids sick both for 2 days. I plan to finish up the rest of this class anyway, even if I do not catch up by the end of tomorrow, just to finish up the learning experience. So apologies for not being able to dig into things as I usually do! ;-)



**Anonymous** 1 day ago if you have a sample of size 1, then you can only calculate the z score for it using the population standard deviation as the reference.

if you have a sample of size different from 1, then you calculate the z score for it using the standard error as the reference, which is  $\text{pop\_std\_dev}/\sqrt{\text{sample\_size}}$

the z score is either the number of standard deviations or the number of standard errors that the observation is away from the population mean.

the reason that you use standard error is because you are comparing samples that are not of size 1. Samples of size  $> 1$  have means that bunch together closely, that approximate the population mean. The standard deviation of the means of all those samples is called the standard error, and is less than the population standard deviation. Samples of size 1 have a mean equal to the sample, which occurs anywhere on the normal distribution, and can only be referenced to the larger population std deviation.

To understand standard error is to understand that samples of size  $> 1$  have means that tend to cluster near the population mean, and the spread of those means (the standard error) is LESS than the spread of the normal population. Chapter 11 first mentions standard error. Hope this helps.



**Karen West** 7 hours ago Yes it does - thanks. ;-)

By the way - today is my kids 6th snow day here - life has been outrageous in the amounts of snow we have been getting! My husband's university has had classes cancelled for the 5th day in a few weeks time.

So I'm doing the best I can here - thank you for the help.



**Anonymous** 5 hours ago good luck to you Karen. You didn't give up! Hope you make the 70%!

Maybe you should prioritize the simpler questions in the remaining units that you haven't tackled yet?



**Karen West** 4 hours ago That is a very good idea actually, and then go back and finish up the rest after the course ends. I just finished my shovelling - now back to work again! ;-)