DAILY LESSON LOG OF M10SP-IVh-j-1 (Week Ten-Day Three)

School		**Grade Level**	Grade 10
Teacher		**Learning Area**	Mathematics
Teaching Date and Time		**Quarter**	Fourth
I. OBJECTIVES	*Objectives must be met over the week and connected to the curriculum standards. To meet the objectives, necessary procedures must be followed and if needed, additional lessons, exercises and remedial activities may be done for developing content knowledge and competencies. These are assessed using Formative Assessment Strategies. Valuing objectives support the learning of content and competencies and enable children to find significance and joy in learning the lessons. Weekly objectives shall be derived from the curriculum guides.*		
A. Content Standards	The learner demonstrates understanding of key concepts of measures of position.		
B. Performance Standards	The learner is able to conduct systematically a mini-research applying the different statistical methods.		
C. Learning Competencies/ Objectives	Learning Competency: Uses appropriate measures of position and other statistical methods in analysing and interpreting research data.**(M10SP-IVh-j-1)** Learning Objectives: 1. Define z-score; 2. Use z-score in analysing and interpreting research data; and 3. Demonstrate appreciation in using z-score in analysing and interpreting research data.		
II. CONTENT	Statistics and Probability (z-score)		
III. LEARNING RESOURCES	teacher's guide, learner's module,		
A. References			
1. Teacher's Guide			
2. Learner's Materials			
3. Textbook pages	https://www.youtube.com/watch?v=SwKhknbhWsc Stats: Percentile, z-score, and Area Under Normal Curve https://www.youtube.com/watch?v=1o-t_mVDDYQ Statistics - Find the z score https://www.youtube.com/watch?v=c11d3vVM5v8 What is Standard Normal Distribution http://www-pub.naz.edu:9000/~dpage2/Z.htm Z-score problems		
4. Additional Materials from Learning Resource (LR) portal			
B. Other Learning Resources			
IV. PROCEDURES	*These steps should be done across the week. Spread out the activities appropriately so that pupils/students will learn well. Always be guided by demonstration of learning by the pupils/ students which you can infer from formative assessment activities. Sustain learning systematically by providing pupils/students with multiple ways to learn new things, practice the learning, question their learning processes, and draw*		

	conclusions about what they learned in relation to their life experiences and previous knowledge. Indicate the time allotment for each step.
A. Review previous lesson or presenting the new lesson	The Teacher will prepare strips of cartolina/ bond paper containing the symbol z, = , μ ,x , σ ÷ Guessing game: Allow the students to guess and arrange on the board the different figures to form the formula for the z-score. Answer: $z = (\dot{x} - \mu) \div \sigma$ Now, what is a z-score basically is, is it tells you how many standard deviations either above or below the mean a particular data value is. μ = Mu- which stands for our mean, σ - Lower case sigma -for our standard deviation
B. Establishing a purpose for the lesson	The teacher lets the students realize that knowing the z -scores is important skills needed to understand the concepts of *using statistical methods in analysing and interpreting research data*.
C. Presenting examples/ instances of the new lesson	The Teacher allows the students to watch this video clip: https://www.youtube.com/watch?v=1o-t_mVDDYQ This example shows how to find the z-score for a data point. Remember that the z-score tells you how many standard deviations away from the mean a particular point lies. z scores Z scores are great. Z sores allow us to avoid the hassle of memorizing algebra rules. At the end of lecture 12 "Normal Distribution," we took 4 different scores and placed them on a single distribution so we could compare them. That was a lot of work. Thankfully we have a formula that allows us to quickly compare scores with different means and SD's... As long as we have a mean and standard deviation, z scores allow us to compare individual scores on a single distribution where the mean =0 and each standard deviation is expressed as +1, -1, etc. A z score of +1 = 1 SD above the mean. A z score of -1 = 1 SD below the mean. A z score of 0 = the score is right on the mean. **Note**: the Teacher will prepare the z-distribution table
D. Discussing new concepts and practicing new skills #1	The Standard Normal Distribution (SND) or "normal curve" Recall from the readings, lecture 12 "normal distributions," that the standard normal distribution is the same as the normal curve. The standard normal distribution is special type of normal distribution for a continuous random variable Z with a common dimension. This is the distribution upon which our zscores convert to, if you will. In the standard normal distribution • mean=median=mode • sd=1 and mean =0 In the SND we also have a formula to convert any "raw score" to a z score. Watch this video on Standard Normal Distribution https://www.youtube.com/watch?v=c11d3vVM5v8 **What is Standard Normal Distribution**

E. Discussing new concepts and practicing new skills #2

The most common z score formula is for population data below but we have more

Z score formulas

Population data (most common)

$$z = \frac{x - \mu}{\sigma}$$

x = the raw score or the "test score"
μ = population mean
σ = population standard deviation

Test Scores from Lecture 12

Area	test score x	Mean μ	SD σ	
management	90	90	5	
service	75	80	10	
computers	60	50	5	
writing	81	76	10	

We did a whole lot of algebra at the end of lecture 12 (Normal Curve). And figured out that the person's score were best in computers, followed by writing, management, and service

1. computers
2. writing
3. management
4. customer service

But we can use the z formula to avoid all that algebra. Simply plug the information in to the z formula.

z-scores for all 4 tests

Below I plug the information for all 4 tests into the z formula:

$$z = \frac{x - \mu}{\sigma}$$

management

score (x)= 90 z= $\frac{\text{x-mean=}}{\text{sd}}$ $\frac{90 - 90}{5} = \frac{0}{5} = 0$
mean= 90
sd= 5

service

score (x)= 75 z= $\frac{\text{x-mean=}}{\text{sd}}$ $\frac{75 - 80}{10} = \frac{-5}{10} = -0.5$
mean= 80
sd= 10

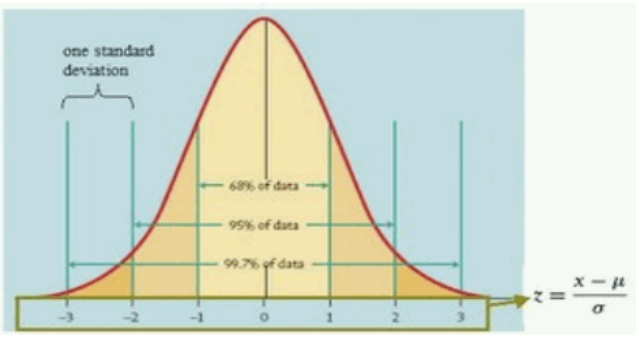
computers

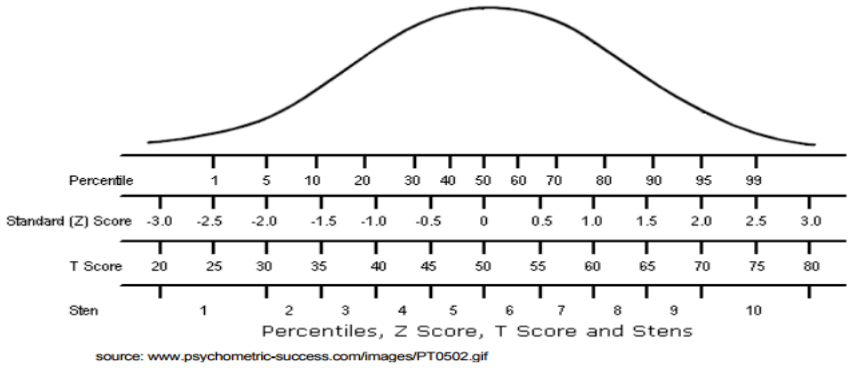
score (x)= 60 z= $\frac{\text{x-mean=}}{\text{sd}}$ $\frac{60 - 50}{5} = \frac{10}{5} = 2$
mean= 50
sd= 5

writing
score (x)= 81 z= $\frac{\text{x-mean=}}{\text{sd}}$ $\frac{81 - 76}{10} = \frac{5}{10} = 0.5$
mean= 76
sd= 10

So to summarize those calculations:
z (management) = 0
z(service) = -0.5
z(computers)= 2
z(writing)= 0.5

What do these z-scores tell us? These z –scores allow us to compare all 4 tests on "the z distribution" where the mean =0 and each unit of standard deviation =1. Converting those 4 tests to z scores allows us to skip all that math from the end of lecture 12! And we can do the same thing: compare all the test scores (when the mean and standard deviation is the same). The sign (+ or -) is important! Here is what those z scores mean in plain English.

	z (management) = 0 this z score says the test score was right on the mean (look at the first table in this lecture. Recall their score was 90 and the mean =90). z(service) = -0.5 this z score says that the test score is one half of one standard deviation BELOW the mean. Recall this z score is NEGATIVE. That is why it is BELOW the mean. z(computers)= 2 this z score says that the test score is 2 standard deviation ABOVE the mean. Recall this z score is POSITIVE. That is why it is ABOVE the mean. z(writing)= 0.5 this z score says that the test score is one half of one standard deviation ABOVE the mean. Recall this z score is POSITIVE. That is why it is ABOVE the mean.
F. Developing mastery (leads to formative assessment 3)	The Teacher presents another explanation of z scores. Here is another way to understand z scores. A z of 1 corresponds to one SD. A z of 0.5 corresponds to ½ of a SD, a z of 0.1 corresponds to 1/10 of a SD and so on and so on. Negative z scores indicate that the item is "below" the mean and positive z scores indicate it is above the mean. A z score of 0 indicates that the score is right on the mean. So, a z score of +1 = 1 SD above the mean. A z score of -1 = 1 SD below the mean. A z score of 0 = the score is right on the mean. See the book for the best pictures, but one is included below.  Look at the picture below. Notice how the z-score and "raw score" can be on the same dimension. In the picture below the z-score of 0 is the same as the mean for the t-score line of 50. Thus pretend the t-score line is the "x" or "raw score" dimension where the mean = 50 and a SD=10. On the z dimension the mean =0 and every standard deviation is expressed as a unit of one. That is why the z-score of +1 (1 SD above the mean) is equivalent to a raw score (t-score) of 60. In the raw score dimension the mean is 50 and every standard deviation is 10. So the mean +1 SD = 50+10=60

	 Percentiles, Z Score, T Score and Stens source: www.psychometric-success.com/images/PT0502.gif for more examples read: https://laulima.hawaii.edu/access/content/user/hallston/341website/13_zscores.pdf
G. Finding practical applications of concepts and skills in daily living	
H. Making generalizations and abstractions about the lesson	z-score basically is, is it tells you how many standard deviations either above or below the mean a particular data value is. Z scores are great. Z sores allow us to avoid the hassle of memorizing algebra rules. At the end of lecture 12 "Normal Distribution," we took 4 different scores and placed them on a single distribution so we could compare them.
I. Evaluating Learning	Answer Briefly: **Z-score problems** 1) A set of mathematics exam scores has a mean of 70 and a standard deviation of 8. A set of English exam scores has a mean of 74 and a standard deviation of 16. For which exam would a score of 78 have a higher standing? **math** 2) For a distribution of raw scores with a mean of 45, the Z-score for a raw score of 55 is calculated to be -2.00. Regardless of the value of the standard deviation, why must this Z-score be incorrect? **Score is above the mean** 3) A distribution of scores has a standard deviation of 10. Find the z-scores corresponding to the following values: a. A score that is 20 points below the mean **-2** b. A score that is 10 points below the mean **-1** c. A score that is 15 points above the mean **+1.5** d. A score that is 30 points below the mean **-3** 4) In a population of scores a raw score with the value of 83 corresponds to a Z of +1.00 and a raw score of 86 corresponds to a Z of +2.00. What is the mean and standard deviation of this population? **Mean = 80; standard deviation = 3.0** 5) On a statistics exam, you have a score of 73. If the mean of the exam is 65 would you prefer the standard deviation of the scores to be 8 or 16? Why? **8 because that puts you an entire standard deviation above the mean**

	6) A normal distribution has a mean of 120 and a standard deviation of 20. For this distribution a. What score separates the top 40% of the scores from the rest? **125** b. What score corresponds to the 90th percentile? **145.60** c. What range of scores would form the middle 60% of this distribution? **103.2 ù 136.80**
J. Additional activities or remediation	
V. REMARKS	
VI. REFLECTION	*Reflect on your teaching and assess yourself as a teacher. Think about your students' progress. What works? What else needs to be done to help the pupils/students learn? Identify what help your instructional supervisors can provide for you so when you meet them, you can ask them relevant questions.*
A. No. of learners who earned 80% of the evaluation	
B. No. of learners who require additional activities for remediation who scored below 80%	
C. Did the remedial lesson work? No. of learners who have caught up with the lesson.	
D. No. of learners who continue to require remediation	
E. Which of my teaching strategies worked well? Why did these work?	
F. What difficulties did I encounter which my principal or supervisor can help me solve?	
G. What innovation or localized materials did I use/ discover which I wish to share with other teachers	

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