Mean, Standard Deviation and the Normal Model (Bell Curve)

Do now: What is the probability of failing a quiz if you guess on each one and the choices are A,B,C or D? There are 10 questions. What is the Probability of passing?

Find the mean, median and mode of the following set of grades:

80,82, 56, 72, 90, 83, 92, 98

Who knows what Standard Deviation is and how to find it? 80,82, 56, 72, 90, 83, 92, 98 Calculator Steps:

• Hit STAT, ENTER

- Enter the data values in L1
- Hit STAT
- Arrow over to CALC
- Choose #1:1-Var Stats
- Hit ENTER
- Scroll down to find $\boldsymbol{\sigma}$
- Square to find $\sigma^{\scriptscriptstyle 2}$

Main Ideas/Questions	Notes/Examples		
Data			
Distribution			
Normal Distribution	 A symmetrical defined by the mean (μ) and the standard deviation (σ) of the data set. 		
	The area under the curve represents, with the total area equal to		
The	In a normal distribution with mean μ and standard deviation σ :		
Fmpirical Dula	• Approximately of the data falls within 1σ of the mean.		
	• Approximately of the data falls within 2σ of the mean.		
	• Approximately of the data falls within 3σ of the mean.		
	$-3\sigma -2\sigma -1\sigma \mu 1\sigma 2\sigma 3\sigma$		



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Directions: Draw and label normal distribution curves, then answer the questions.

 The weights of the 50 football players are normally distributed with a mean of 178 pounds and a standard deviation of 8 pounds. 	 a) What percent of the players weigh between 178 lbs and 194 lbs?
	b) What is the probability that a player weighs at most 170 lbs?
	c) What is the probability that a player weighs less than 162 lbs or greater than 194 lbs?
	d) How many players weight between 170 lbs and 186 lbs?







4. Mrs. Fuller recently tested her 120 keyboarding students to see how many words per minute they can type. The results were normally distributed with a mean of 45 and a standard deviation of 6.



- a) About how many students can type at least 39 words per minute?
- b) About how many students can type within one standard deviation of the mean?
- c) Students need to be in the top 2% in order to be eligible for the national typing competition. If Carla can type 56 wpm, is she eligible?

Steps on the Calculator

- 1) 2nd VARS (this will take you to Distributions)
- 2) 2 (Normalcdf)
- 3) Put in the lowest and highest values as well as the mean and standard deviation.
- 4) Press Enter (maybe twice)

Name:	Unit 11: Probability & Statistics			
Date:	Bell:	Homework 5: M	leasures of Center, Variation,	
	** This is a 2-pag	e document! **	and Normal Distribution	
Directions: Find the mean,	median, and mode of	each data set below.		
1. {11, 14, 11, 5, 17, 28, 3}		2. {24, 29, 31, 16, 4	49, 52, 29, 35, 62, 29}	
Mean = Median = Mode(s) =			Mean =	
			Median =	
		Mode(s) =		
Directions: Find the mean a	absolute deviation, va	riance, and standard o	leviation for each data set.	
3. The following data shows {1, 2, 2, 4, 5, 6, 8}	the number of fish ca	ught by a seven boy s	scouts on their camping trip:	
			MAD =	
			Variance; σ^2 =	
		Standa	rd Deviation: σ =	
4. The following data shows the season: {27, 32, 41, 9, 1	he points scored by a 4, 20, 31, 33, 20, 13}	football team during	their first ten games of the	
			MAD =	
	Variance: σ ² =			
	Standard Deviation: σ =			
5. The following data shows t {66, 46, 53, 50, 52, 47, 45	he high temperature , 49}	for the past eight days	5:	
			MAD =	
			Variance: σ^2 =	
		Standa	rd Deviation: σ =	
6. The following data shows t {\$2.79, \$1.99, \$4.29, \$2.4	he price of six differe 9, \$2.29, \$3.49}	nt jars of pasta sauce	at the grocery store:	
			MAD =	
			Variance: $\sigma^2 =$	
		Standa	rd Deviation: σ =	
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Name:	_ Unit 11: Probability & Statistics				
Date: Bell:	Homework 5: Measures of Center, Variation, and Normal Distribution				
** This is a 2-pag	e document! **				
Directions: Find the mean, median, and mode of each data set below.					
1. {11, 14, 11, 5, 17, 28, 3}	2. {24, 29, 31, 16, 49, 52, 29, 35, 62, 29}				
3, 5, 11, 11, 14, 17, 28	16, 24, 29, 29, 24, 31, 35, 49, 52, 62				
Mean = 12.71	Mean = <u>35.6</u>				
Median = 11	Median =3o				
Mode(s) =	Mode(s) = _ 29				
Directions: Find the mean absolute deviation, variance, and standard deviation for each data set.					
3. The following data shows the number of fish caught by a seven boy scouts on their camping trip: {1, 2, 2, 4, 5, 6, 8} $Mean = 4$					
3+2+2+0+1+2+4	MAD =				
	Variance: $\sigma^2 = 5.43$				
	Standard Deviation: $\sigma = 2.33$				
 4. The following data shows the points scored by a football team during their first ten games of the season: {27, 32, 41, 9, 14, 20, 31, 33, 20, 13} Mtan = 24 					
3+8+17+15+10+4+7+9+4+9					
10	$\frac{1}{2} = \frac{1}{2} = \frac{1}$				
	Standard Deviation: $\sigma = -9.85$				
5. The following data shows the high temperature for the past eight days:					
16+ =+ 7 +1+1+4 + 6+7					
	MAD= 4.5				
8	Variance: σ ² = 38.94				
	Standard Deviation: $\sigma = \frac{1}{2}$				
6. The following data shows the price of six different jars of pasta sauce at the grocery store: { $$2.79, $1.99, $4.29, $2.49, $2.29, 3.49 } mCan = 2.89					
.10 + .90+ 1.40 + .40 + .60 + .60					
ما	Variance: $\sigma^2 = 0.61$				
	Standard Deviation: $\sigma = 0.18$				

