Extra questions

Q1. The mean squared deviation is also known as the ______.

A. standard deviation

B. mode

C. variance

D. median

Extra questions

Q2. Which of the following is false?

A. Descriptive statistics are generally categories into three groups: measures of mean, measures of spread, and measures of optimal number

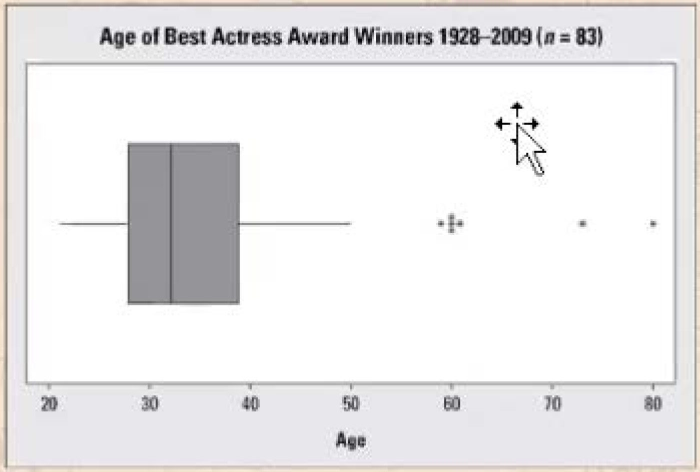
B. Measures of location include mean, median and mode

C. Measures of spread include range, variance and standard deviation

D. Graphical methods can help summarize the data quickly

Extra questions

Q3. In the figure, age is:



A. distributed symmetrically
B. positively skewed
C. negatively skewed
D. skewed to the left

Extra questions

Q4. Ranked data : 30 40 45 52 77 77 80 92 93 95

What is the 40th percentile?

A. 40

B. 44

C. 45

D. 50

Np/100=10(40)/100=4

Average of 4^{th} and 5^{th} largest observations

=(80+77)/2=157/2=78.5

Extra questions

Q5. The following stem-and-leaf plot shows the ages of a group of people in a restaurant.

What is the mode, median and mean of the ages?

Stem	Leaf
1	7 8 9
2	0 2 2 4 5 6
3	
4	1 2 4

2 | 4 means 24 years

A. Cannot be found

B. mode=23, median=26.67, mean=22

C. mode=26.67, median=22, mean=22

D. mode=22, median=23, mean=26.67

Extra Question

Q1. The random variable x is known to be uniformly distributed between 70 and 90. The probability of x having a value between 85 to 92 is__________.

% of data lies between each two values:
=100%/(90-70)
=100%/20
=5%

(92-85)*% of data lies between each two values
=7*5%
=35%

A. 25%
B. 30%
C. 35%
D. 40%

Extra Question

Q2. The table represents the probability of guessing correct on a 5-question true-false quiz. Find the mean.

A. 1.5

B. 2

C. 2.5

D. 3

x	P(x)
0	.03125
1	.15625
2	.3125
3	.3125
4	.15625
5	.03125

Extra Question

Q3. Use the same table. Find the standard deviation.

A. 1.25
B. 1.12
C. 4.77
D. 2.18

x	P(x)
0	.03125
1	.15625
2	.3125
3	.3125
4	.15625
5	.03125

Extra Question

Q4. The mean temperature in Queen Falls for the month of January is 23 degrees with a standard deviation of 4.2 degrees.

How many standard deviations from the mean would a temperature of 17 degrees be?

A. -6

B. 6

C. 1.429

D. -1.429

Extra Question

Q5. The mean temperature in Queen Falls for the month of January is 23 degrees with a standard deviation of 4.2 degrees.

Approximately what percent of days in February will be between 14.6 and 31.4 degrees?

A. 75%

B. 80%

C. 95%

D. 100%

X=temp

$Pr(14.6<X<31.4)$

$=Pr[(14.6-23)/4.2<Z<(31.4-23)4.2]$

$=Pr(-2<Z<2)$

~95%

Extra Question

Q1. A random survey of 75 death row inmates revealed that the mean length of time on death row is 17.4 years with a standard deviation of 6.3 years.
If you were conducting a hypothesis test to determine if the population mean time on death row could likely be 15 years, what would the null and alternative hypotheses be?

H_0:_____

H_1:_____

A. $H_0 : \mu=75; H_1 : \mu \neq 75$

B. $H_0 : \mu =17.4; H_1 :$ mu $\neq 17.4$

C. $H_0 : \mu =6.3; H_1 : \mu \neq 6.3$

D. $H_0 : \mu =15; H_1 : \mu \neq 15$

Extra Question

Q2. group of doctors is deciding whether or not to perform an operation. Suppose the null hypothesis, H0 is: the surgical procedure will go well. What are the Type 1 and Type II errors?

A. Type 1: The procedure will go well, but the doctors think it will not.
Type 2: The procedure will not go well, but the doctors think it will.

B. Type 1: The procedure will not go well, but the doctors think it will.
Type 2: The procedure will go well, but the doctors think it will not.

C. Type 1: The procedure will go well and the doctors think it will.
Type 2: The procedure will not go well, but the doctors think it will.

D. Type 1: The procedure will go well, but the doctors think it will not.
Type 2: The procedure will not go well and the doctors think it will not.

Extra Question

Q3. The one-sample z test is used instead of the one-sample t test when:

A. μ is unknown
B. μ is known
C. σ is unknown
D. σ is known

Extra Question

Q4. The evidence against the null hypothesis provided by the data is stronger, when the P-value is:

A. unknown
B. larger
C. smaller

Extra Question

Q5. An investigator hypothesizes that in people free of diabetes, fasting blood glucose, a risk factor for coronary heart disease, is higher in those who drink at least 2 cups of coffee per day. A cross-sectional study is planned to assess the mean fasting blood glucose levels in people who drink at least two cups of coffee per day. The mean fasting blood glucose level in people free of diabetes is reported as 95.0 mg/dL with a standard deviation of 9.8 mg/dL.7 If the mean blood glucose level in people who drink at least 2 cups of coffee per day is 100 mg/dL, this would be important clinically.

How many patients should be enrolled in the study to ensure that the power of the test is 80% to detect this difference? A two-sided test will be used with a 5% level of significance.

A. 20
B. 31
C. 42
D. 50

Extra Question

Two substances are being considered as material for machinery parts. The mean melting point of the two substances is to be compared. 15 pieces of each substance are being tested. Both populations have normal distributions. The following table is the result. It is believed that Alloy Zeta has a different melting point.

	Sample Mean Melting Temperatures (°F)	Population Standard Deviation
Alloy Gamma	800	95
Alloy Zeta	900	105

Q1. State the null and alternative hypotheses.

Subscripts: 1=gamma, 2 =zeta

A. H0: mu1=mu2; H1: mu1<mu2

B. H0: mu1=mu2; H1: mu1>mu2

C. H0: mu1=mu2; H1: mu1!=mu2

D. H0: mu1=0; H1: mu2=0

Extra Question

Q2. How can we check whether two samples have equal variances? Choose a correct statement below.

A. We can check by calculating F: F=S1-S2, if F > Fn1-1,n2-1,1-a/2 or F < Fn1-1,n2-1,a/2, we reject H0

B. We can check by calculating F: F=S1^2/S2^2, if F > Fn1-1,n2-1,1-a/2 or F < Fn1-1,n2-1,a/2, we reject H0

C. We can check by calculating F: F=S1-S2, if F > Fn1-1,n2-1,1-a/2 or F < Fn1-1,n2-1,a/2, we accept H0

D. We can check by calculating F: F=S1^2/S2^2, if F > Fn1-1,n2-1,1-a/2 or F < Fn1-1,n2-1,a/2, we accept H0

u1!=mu2

D. H0: mu1=0; H1: mu2=0

Extra Question

Q3. Suppose a sample of 11 35- to 39-year-old non-pregnant, premenopausal OC users who work in a company and have a mean systolic blood pressure (SBP) of 130 mm Hg and sample standard deviation of 19 mm Hg are identified. A sample of 31 nonpregnant, premenopausal, non-OC users in the same age group are similarly identified who have mean SBP of 110 mm Hg and sample standard deviation of 25 mm Hg.

At 5% significance level, what is your conclusion?

A. There is sufficient evidence to reject the null hypothesis. The data support that the mean blood pressures of the OC users and non-OC users significantly differ from each other.

B. There is not enough evidence to reject the null hypothesis. The data support that the mean blood pressures of the OC users and non-OC users significantly differ from each other.

C. There is not enough evidence to reject the null hypothesis. The data support that the mean blood pressures of the OC users and non-OC users do not significantly differ from each other.

D. There is sufficient evidence to reject the null hypothesis. The data support that the mean blood pressures of the OC users and non-OC users do not significantly differ from each other.

Extra Question

Q4. Which of the following is incorrect about the two-sample t test for independent samples with unequal variances:

A. we use this test when the variances of the two samples are significantly different

B. we calculate the test statistics like this: t=x1bar-x2bar / sqrt(s1^2/n1+s2^2/n2)

C. we can use this as the critical value: tn1+n2-2, alpha (one-sided test) or tn1+n2-2, alpha/2 (two-sided-test)

Extra Question

Q5.

Mean difference $\bar{d} = (d_1 + d_2 + \ldots + d_n)/n$

$t = \bar{d}/(s_d/\sqrt{n})$

s_d is the sample SD of the observed differences:

$$s_d = \sqrt{\left[\sum_{i=1}^{n} d_i^2 - \left(\sum_{i=1}^{n} d_i\right)^2 \Big/ n\right] \Big/ (n-1)}$$

n = number of matched pairs

$t > t_{n-1,1-\alpha/2}$ or $t < -t_{n-1,1-\alpha/2}$ → reject H_0

$-t_{n-1,1-\alpha/2} \le t \le t_{n-1,1-\alpha/2}$ → accept H_0

The procedure above is used for:

A. Z-test

B. Two-sample t-test with equal variances

C. Two-sample t-test with unequal variances

D. Paired t-test