

MATH 160 Practice Problems Ch 7-10

NAME: _____

The monetary value of a diamond is determined by its exact quality as defined by the 4C's: cut, color, clarity and carat weight. The price and the carat weight of a diamond are the two most known characteristics. In order to understand the role carat weight has in determining the price of a diamond, the carat weight and price of 10 randomly selected loose round diamonds (color D and clarity VS1) are given below.

X Carat weight	.56	.90	.50	.53	.92	.51	.41	.40	.80	.57
Y Price in dollars	2055	5433	1735	1962	5554	1900	1264	1242	4182	2085

Round your values below to the thousandths place

- 1) Find the value of the linear correlation coefficient (r) Round to 3 places.
- 2) Is there a significant linear correlation? (This is not just a “yes” or “no” question, NEATLY show **all steps in a hypothesis test** leading to your answer for credit)
- 3) If a significant linear correlation exists, find the regression **equation**. If there is no significant linear correlation, find \bar{y} .
- 4) According to this information, what is the best predicted price for a 0.75-carat loose diamond? Round to the nearest dollar.

- 5) Surgical complications: A medical researcher wants to construct a 99% confidence interval for the proportion of knee replacement surgeries that result in complications. He found an article in the Journal of Bone and Joint Surgery that reported that approximately 8% of such operations result in complications. Using this estimate, what sample size is needed so that the confidence interval will have a margin of error of 0.04?

A study comparing attitudes toward death was conducted using the Death Anxiety Scale known as the DAS. On this scale, high scores indicate high anxiety concerning death. The DAS results are given below for a random sample of organ and non-organ donors. The study's goal was to compare attitudes toward death between organ donors and non-organ donors.

	n	Mean	Standard deviation
Organ donors	25	5.36	2.91
Non-organ donors	69	7.62	3.45

- 6) Construct a 95% confidence interval for the difference between the two population means. Round to three places.

- 7) Is there a difference in attitudes toward death between the two groups? Explain for credit.

- 8) In a survey of families in which both parents work, one of the questions asked was, “have you refused a job, promotion, or transfer because it would mean less time with your family?” A total of 200 men and 200 women were asked this question. “Yes” was the response given by 29% of men and 24% of women. Test the claim that the proportion of men who answered “Yes” was greater than the proportion of women who answered “Yes”. Use a .05 significance level.

Clearly label and show all your steps in your process for credit:

A nationwide random sample of college students revealed that 24 students consumed an average of 226 mg of caffeine each day, with a standard deviation of 48 mg. Assuming that the amount of caffeine consumed per person daily is normally distributed, test the claim that the mean amount of caffeine consumed daily by college students is less than 250 mg? Use a significance level of 0.05.

According to the experts there are no health risks associated with moderate caffeine use, which is about 250 mg a day.

9) Which parameter is being tested here?

- a) μ b) P c) σ d) P_1, P_2 e) μ_1, μ_2 f) μ_d

10) The null hypothesis is _____

11) The alternate hypothesis is _____

12) The test statistic is _____

13) The p- value is _____

14) Choose one. a) FAIL TO REJECT H_0 b) REJECT H_0 .

15) **Which is the correct conclusion for the problem.** _____

- a) The sample data support the claim that the mean amount of caffeine consumed daily by college students is less than 250 mg
- b) There is not sufficient sample evidence to support the claim that the mean amount of caffeine consumed daily by college students is less than 250 mg
- c) There is sufficient evidence to warrant rejection of the claim that the mean amount of caffeine consumed daily by college students is less than 250 mg
- d) There is not sufficient evidence to warrant rejection of the claim that the mean amount of caffeine consumed daily by college students is less than 250 mg

A sample of eight subjects with borderline-high cholesterol levels were obtained from a study that involved taking a nutrition education class. Cholesterol readings were taken before the class and 3 months after the class. Test the claim that cholesterol levels went down after the nutrition class. Use significance level of .05

Before class	295	279	250	235	255	290	310	260
After class	265	266	249	240	230	235	350	280

16) The null hypothesis is _____

Use the DATA option from your calculator for credit and write down the command.

17) The alternate hypothesis is _____

18) The test statistic is _____

19) The P-value is _____

20) Choose one. a) FAIL TO REJECT H_0 b) REJECT H_0 .

21) **Which is the correct conclusion for the problem.** _____

- a) The sample data support the claim that cholesterol levels went down after the nutrition class.
- b) There is not sufficient sample evidence to support the claim that cholesterol levels went down after the nutrition class.
- c) There is sufficient evidence to warrant rejection of the claim that cholesterol levels went down after the nutrition class.
- d) There is not sufficient evidence to warrant rejection of the claim that cholesterol levels went down after the nutrition class.