Practice for Test 1, Math 125

(The test will be on Friday, March 14) Math 125 Kovitz Spring 2025

On the test, show your work. The test will consist of 8 similar questions, each worth 13 points.

1. A fair die was rolled 2,400 times and the number of spots on each roll was recorded. From that, the total number of occurrences of each possible result (1, 2, 3, 4, 5, or 6) was found.

Percents were found for each of the six possible numbers, and a histogram was drawn for the data. (This histogram will have 6 blocks.)

Does the histogram follow the normal curve?

(A) Yes. (B) No.

2. A group of 100 little people has an average height of 42 inches with an SD of 3 inches. A group of 100 basketball players has an average height of 76 inches with an SD of 3 inches.

For the two groups together, was the SD of heights less than 3 inches, just about 3 inches, or more than 3 inches?

- (A) less (B) about 3 inches (C) more (D) cannot be determined (E) don't know
- 3. A group of men had heights that averaged 69 inches, and the SD was 3 inches. The heights followed the normal curve.

Estimate the 20th percentile height.

(A) 65.1 inches (B) 66.45 inches (C) 67.2 inches (D) 67.425 inches (E) 68.25 inches (F) 69.75 inches

4. Find the correlation coefficient for the data set below.

x	y			
1	10			
4	11			
8	7			
10	13			
12	9			
(1) 0.05	$(\mathbf{D}) = 0.00\mathbf{r}$	(D) 0.205	(D) 0 105	$(\mathbf{T}) = 0.00\mathbf{r}$
(A) - 0.05	(B) - 0.025	(B) 0.325	(D) 0.125	(E) 0.225

5. Suppose that the correlation between weight (in pounds) and years of schooling completed is about -0.10. (Weight is given and years of schooling is predicted.)

True or false and explain:

- (a) Heavier persons tend to be more educated.
- (b) Persons with more education tend to weigh less.
- (c) The correlation between years of schooling completed and weight (in pounds) is about -0.10. (Years of schooling is given and weight is predicted.)
- (d) The correlation between wt. (in kilograms) and years of schooling completed will not be about -0.10. It will be -0.10/2.2, since 1 kilogram equals about 2.2 pounds.
- (e) Lighter persons tend to be more educated.
- (f) If you eat and put on 25 pounds, you will become less educated.
- 6. For women age 25 and over in the U.S. in 2005, the relationship between age and educational level (years of schooling completed) can be summarized as follows.

average age ≈ 50 years, $SD \approx 16$ years average ed. level ≈ 13.2 years, $SD \approx 3.0$ years, $r \approx -0.20$

- (a) Estimate the average educational level of women who are 65 years old.
- (b) One woman was 65 years old and had 12.00 years of education. True or false: compared to the women her age, her education was a bit on the high side. (A) True. (B) False.
- 7. The percentile of second-year GPAs for a student at the 10th percentile of first-year GPAs is rather likely to be? (The scatter diagram is football-shaped.)
- (A) below the 10th (B) at the 10th (C) between the 10th and the 50th (D) at the 50th (E) above the 50th
- 8. A regression line for predicting test scores has an r.m.s. error of 8 points. About 99.73% of the time, the predictions will be right to within _____ pts.
 - (A) 4 (B) 8 (C) 12 (D) 16 (E) 24