Stats 60 / Psych 10 **Quiz 1**

Your name: _____

Quiz rules:

- This quiz is closed book, but you are allowed a single page (both sides) of notes and a calculator.
- There are 6 questions, worth 6 points each.
- A normal table is provided on the last page.
- You have 50 minutes to complete this quiz.
- If you fail to show work and/or explain how you arrived at your answer then no points will be awarded.
- You do not need to solve all the problems to do well! So relax and try your best.

1. (a) Calculate the SD of the 5 numbers $[0, 0, 1, 1, 1]$.

   (b) Using your answer to part (a), what is the SD of the 10 numbers $[0, 0, 0, 0, 1, 1, 1, 1, 1, 1]$? Explain without doing the calculation.

   (c) Using your answer to part (a), what is the SD of the 5 numbers $[-1, -1, 9, 9, 9]$? Explain without doing the calculation.

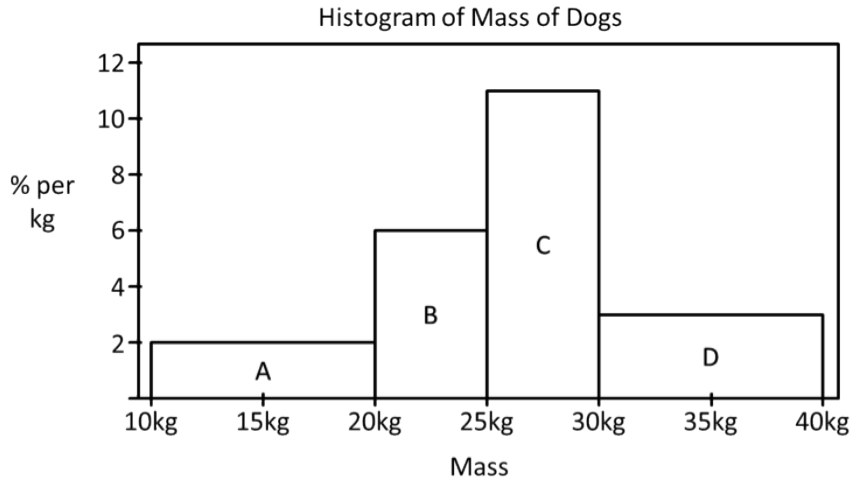
2. Mary has two cats that weigh 5 lbs and 13 lbs. She plans to buy a third cat.

   (a) What is the largest the median could be for the weights of the three cats?

   (b) What is the smallest the average could be for the weights of the three cats?

   (c) After buying the third cat, she is surprised to find that the median of the three weights is equal to the average. What are all the possible weights of the third cat?

3. The local veterinary office recorded the mass of dogs they treated in the last six months. To summarize the mass, they produced the histogram below. Unfortunately, something is wrong with this histogram. Propose a change to exactly one of the blocks, leaving the other three unchanged.



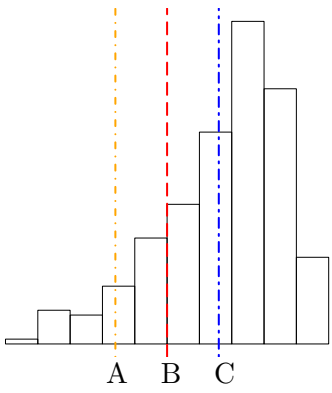
4. The histogram of the heights of a class of 200 students is shaped approximately normal with an average height of 67 inches. You're told that 168 of the students are 64 inches or taller. For this class, what height would you anticipate the 95th percentile is?

5. SAT scores follow the normal curve with average 1500 and SD 300.

   (a) Bob scored in the 25th percentile but would like to get to the 75th percentile. Peter scored in the 15th percentile and would like to get to the 65th percentile. Who requires the greater improvement in score? Or do they require the same improvement?

   (b) The SAT reports each student's score as a range: score $\pm$ 100. What percentage of students will have a score range that includes 1800? Explain carefully.

6. The histogram of GPAs at Stanford is shown below.

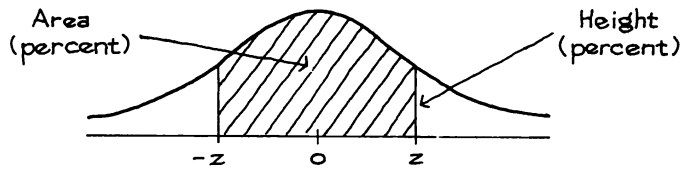


   (a) What percent of students have an above average GPA? Circle one and explain.

   less than 50% more than 50% about 50%

   (b) Which one of the three lines (A, B, or C) corresponds to the average GPA? Explain.

Tables



A NORMAL TABLE

z	*Height*	*Area*	*z*	*Height*	*Area*	*z*	*Height*	*Area*
0.00	39.89	0	1.50	12.95	86.64	3.00	0.443	99.730
0.05	39.84	3.99	1.55	12.00	87.89	3.05	0.381	99.771
0.10	39.69	7.97	1.60	11.09	89.04	3.10	0.327	99.806
0.15	39.45	11.92	1.65	10.23	90.11	3.15	0.279	99.837
0.20	39.10	15.85	1.70	9.40	91.09	3.20	0.238	99.863
0.25	38.67	19.74	1.75	8.63	91.99	3.25	0.203	99.885
0.30	38.14	23.58	1.80	7.90	92.81	3.30	0.172	99.903
0.35	37.52	27.37	1.85	7.21	93.57	3.35	0.146	99.919
0.40	36.83	31.08	1.90	6.56	94.26	3.40	0.123	99.933
0.45	36.05	34.73	1.95	5.96	94.88	3.45	0.104	99.944
0.50	35.21	38.29	2.00	5.40	95.45	3.50	0.087	99.953
0.55	34.29	41.77	2.05	4.88	95.96	3.55	0.073	99.961
0.60	33.32	45.15	2.10	4.40	96.43	3.60	0.061	99.968
0.65	32.30	48.43	2.15	3.96	96.84	3.65	0.051	99.974
0.70	31.23	51.61	2.20	3.55	97.22	3.70	0.042	99.978
0.75	30.11	54.67	2.25	3.17	97.56	3.75	0.035	99.982
0.80	28.97	57.63	2.30	2.83	97.86	3.80	0.029	99.986
0.85	27.80	60.47	2.35	2.52	98.12	3.85	0.024	99.988
0.90	26.61	63.19	2.40	2.24	98.36	3.90	0.020	99.990
0.95	25.41	65.79	2.45	1.98	98.57	3.95	0.016	99.992
1.00	24.20	68.27	2.50	1.75	98.76	4.00	0.013	99.9937
1.05	22.99	70.63	2.55	1.54	98.92	4.05	0.011	99.9949
1.10	21.79	72.87	2.60	1.36	99.07	4.10	0.009	99.9959
1.15	20.59	74.99	2.65	1.19	99.20	4.15	0.007	99.9967
1.20	19.42	76.99	2.70	1.04	99.31	4.20	0.006	99.9973
1.25	18.26	78.87	2.75	0.91	99.40	4.25	0.005	99.9979
1.30	17.14	80.64	2.80	0.79	99.49	4.30	0.004	99.9983
1.35	16.04	82.30	2.85	9.69	99.56	4.35	0.003	99.9986
1.40	14.97	83.85	2.90	0.60	99.63	4.40	0.002	99.9989
1.45	13.94	85.29	2.95	0.51	99.68	4.45	0.002	99.9991