

Quiz 8A

Name: **Answer Key**

UAlbany Email:

Closed book/notes. Scientific calculators only.

1. (1 pt.) Suppose the success-failure conditions $np \geq 10$ and $n(1 - p) \geq 10$ are true for a given sample. Which of the following is true about the distribution of $\hat{p}$?
 - (a) It is normal.
 - (b) It is approximately normal.
 - (c) It is uniform.
 - (d) None of the above are true.
2. Dr. Medina is studying student performance across all sections of this course being taught. To do this, he gathers $n = 36$ prior scores from quizzes on normal distribution probabilities. Assume that the population of interest has a normal distribution with mean 7.883 and standard deviation 0.530.

- (a) (1 pt.) Is the sample mean normally distributed? Circle your response below.

Yes

No

- (b) (8 pts.) Compute the probability that the sample mean is between 7.685 and 8.081.

Award:

- Three points if the student converts $\bar{x}$ to a standard normal distribution, as shown in (1).
- Two points if the student computed the standardized scores correctly, as shown in (2).
- Two points if the student found the correct probabilities from the table on the next page, as shown in (4).
- One point for the correct answer, as given in (5).

The table on the next page shows how to obtain (4).

$$P(7.685 \leq \bar{x} \leq 8.081) = P\left(\frac{7.685 - 7.883}{0.530/\sqrt{36}} \leq \frac{\bar{x} - 7.883}{0.530/\sqrt{36}} \leq \frac{8.081 - 7.883}{0.530/\sqrt{36}}\right) \quad (1)$$

$$\approx P(-2.24 \leq z \leq 2.24) \quad (2)$$

$$= P(z \leq 2.24) - P(z \leq -2.24) \quad (3)$$

$$\approx 0.98745 - 0.01255 \quad (4)$$

$$= 97.49\% \quad (5)$$

Grade: /10

Standard Normal Table
Table Values Represent Area to the Left of the z -score

z^*	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
−4.4	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
−4.3	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
−2.6	0.00466	0.00453	0.00440	0.00427	0.00415	0.00402	0.00391	0.00379	0.00368	0.00357
−2.5	0.00621	0.00604	0.00587	0.00570	0.00554	0.00539	0.00523	0.00508	0.00494	0.00480
−2.4	0.00820	0.00798	0.00776	0.00755	0.00734	0.00714	0.00695	0.00676	0.00657	0.00639
−2.3	0.01072	0.01044	0.01017	0.00990	0.00964	0.00939	0.00914	0.00889	0.00866	0.00842
−2.2	0.01390	0.01355	0.01321	0.01287	0.01255	0.01222	0.01191	0.01160	0.01130	0.01101
−2.1	0.01786	0.01743	0.01700	0.01659	0.01618	0.01578	0.01539	0.01500	0.01463	0.01426
−2.0	0.02275	0.02222	0.02169	0.02118	0.02068	0.02018	0.01970	0.01923	0.01876	0.01831
−1.9	0.02872	0.02807	0.02743	0.02680	0.02619	0.02559	0.02500	0.02442	0.02385	0.02330
−1.8	0.03593	0.03515	0.03438	0.03362	0.03288	0.03216	0.03144	0.03074	0.03005	0.02938
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
1.8	0.96407	0.96485	0.96562	0.96638	0.96712	0.96784	0.96856	0.96926	0.96995	0.97062
1.9	0.97128	0.97193	0.97257	0.97320	0.97381	0.97441	0.97500	0.97558	0.97615	0.97670
2.0	0.97725	0.97778	0.97831	0.97882	0.97932	0.97982	0.98030	0.98077	0.98124	0.98169
2.1	0.98214	0.98257	0.98300	0.98341	0.98382	0.98422	0.98461	0.98500	0.98537	0.98574
2.2	0.98610	0.98645	0.98679	0.98713	0.98745	0.98778	0.98809	0.98840	0.98870	0.98899
2.3	0.98928	0.98956	0.98983	0.99010	0.99036	0.99061	0.99086	0.99111	0.99134	0.99158
2.4	0.99180	0.99202	0.99224	0.99245	0.99266	0.99286	0.99305	0.99324	0.99343	0.99361
2.5	0.99379	0.99396	0.99413	0.99430	0.99446	0.99461	0.99477	0.99492	0.99506	0.99520
2.6	0.99534	0.99547	0.99560	0.99573	0.99585	0.99598	0.99609	0.99621	0.99632	0.99643
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
4.3	0.99999	0.99999	0.99999	0.99999	0.99999	0.99999	0.99999	0.99999	0.99999	0.99999
4.4	0.99999	0.99999	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000