

# MAT1372, Quiz1, Fall2025

ID: \_\_\_\_\_

Name: Sol

- This quiz consists of 2 sets of questions, each worth 5 points, for a total of 10 points.
- You have 15 minutes to complete the quiz.
- Show all work and justify your answers.
- Wishing you success.

1. Identify the flaw(s) in reasoning in the following scenario. Explain what the individuals in the study should have done differently if they wanted to make such strong conclusion.

(a) Students at an elementary school are given a questionnaire that they are asked to return after their parents have completed it. One of the questions asked is, "Do you find that your work schedule makes it difficult for you to spend time with your kids after school?" Of the parents who replied, 85% said "no". Based on these results, the school officials conclude that a great majority of the parents have no difficulty spending time with their kids after school.

Non-responders may have a different response to this question. The parents who returned that survey are probably those who do not have difficulty spending time with their children after school. Parents who have a busier schedule might not have returned the survey since they didn't have time to fill it and also have difficulty spend time with their children.

Please turn over and finish the rest of the question.

2. The following summary table shows the number of space launches in the US by the type of launching agency and the outcome of the launch (success or failure).

	1957 - 1999		2000 - 2018	
	Failure	Success	Failure	Success
Private	13	295	10	562
State	281	3751	33	711
Startup	-	-	5	65

- (a) What variables were collected on each launch in order to create the summary table above?
- (b) State whether each variable is numerical or categorical. If numerical, state whether it is continuous or discrete. If categorical, state whether it is ordinal or not.
- (c) Suppose we wanted to study how the success rate of launches vary between launching agencies and over time. In this analysis, which variable would be the response variable, and which variable would be the explanatory variable?

(a) Variables: year, launching agency, whether the launching was a success or failure.

(b) "year" could be numerical (discrete) or categorical (not ordinal).  
"launching agency" and "success or failure" are categorical. (not ordinal).

(c) The response variable: whether the launching was a success or failure.  
The explanatory variable: launching agency and year.