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ECON 0150 | MiniExam 2 | Demo

MiniExams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly, completely, and concisely. Data tables are provided at the end.

Academic Conduct Code

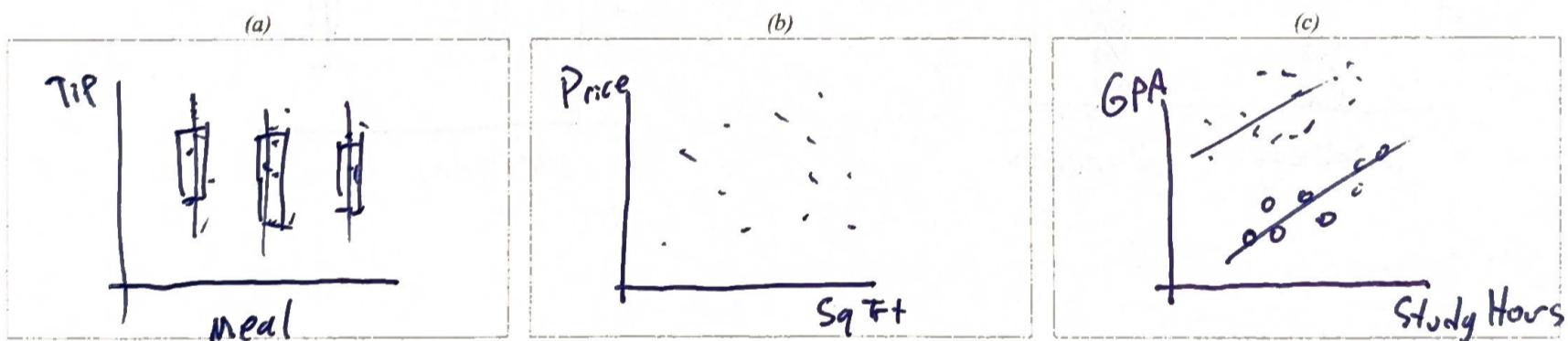
The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- I will complete this MiniExam solely using my own work.
- I will not use any digital resources unless explicitly allowed by the instructor.
- I will not communicate directly or indirectly with others during the MiniExam.

Q1. Choose the Right Visualization (see Data 1a, 1b, 1c)

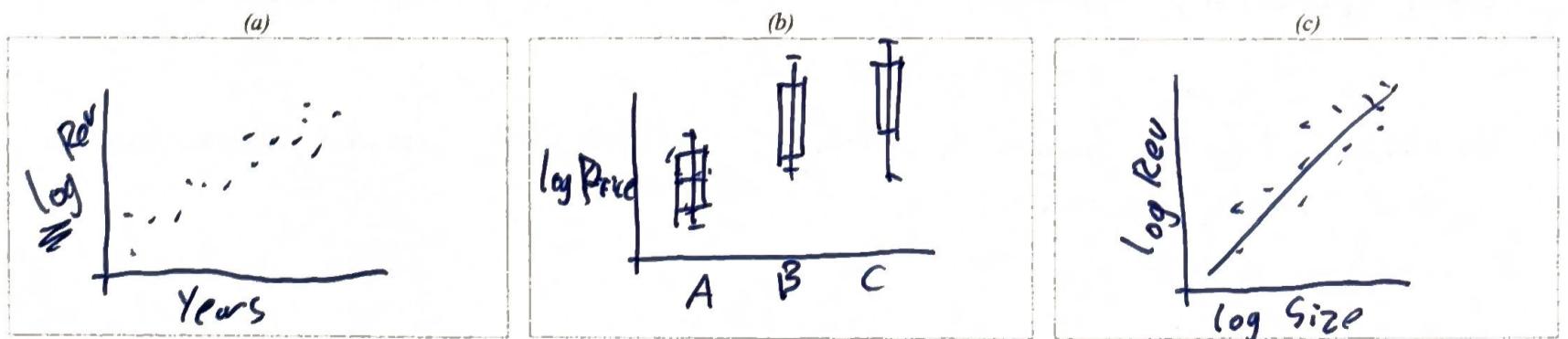
For each dataset, identify the variable types and draw the most appropriate Part 2 visualization.

a) Data 1a Variable Types: Cat x Num b) Data 1b Variable Types: Num x Num c) Data 1c Variable Types: Cat Nom x Num(Cont) x Num(Cont)



Q2. Fix the Figure (see Data 2)

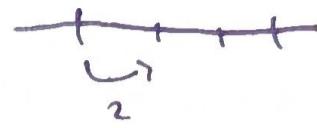
The three figures in Data 2 each have a problem that makes it hard to see patterns in the data. For each one, draw a better version of the figure (in the boxes below). Clearly label your figure to make it clear what the improvement is.



Q3. Interpret Log Scales (no data needed)

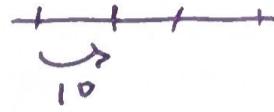
a) On a log₂ scale, each one-unit increase means the original value has:

[increased by 2] [doubled] [tripled] [increased by 10]



b) On a log₁₀ scale, each one-unit increase means the original value has:

[increased by 2] [doubled] [tripled] [increased by 10]



c) Product A has $\log_2(1 + \text{Revenue}) = 4$. Product B has $\log_2(1 + \text{Revenue}) = 7$. The difference is 3 units. About how many times more revenue does B have than A?

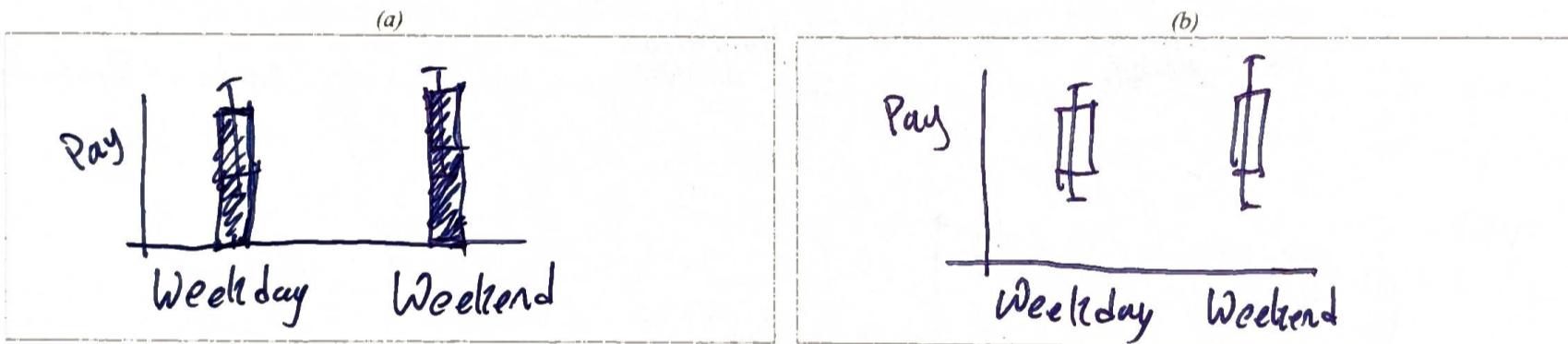
[2 times] [3 times] [8 times] [128 times]

$$2 \cdot 2 \cdot 2 = 8$$

Q4. Investigate and Visualize (see Data 4)

A nonprofit tracks shift data for its volunteers and employees. Data 4 shows each person's role, the day of their shift, and their shift pay. Volunteers are unpaid. Show how the distribution changes after the filter.

a) Visualize Shift_Pay grouped by Day using all the data in Data 4. b) Filter for employees only. Visualize Shift_Pay grouped by Day for employees only:



Q5. Interpret a Scatter Plot by Category (see Data 5)

a) As Study Hours increase, what happens to Exam Score for Online students?

Exam Score increases with study hours for online students.

b) As Study Hours increase, what happens to Exam Score for In-Person students?

Exam Score also increases " " in-person students.

c) Which group benefits more from additional study hours?

In person students have a stronger relationship between exam score and study hours.

Datasets

Data 1a: Restaurant Tips by Meal Type

Customer	Meal	Tip (\$)
C1	Lunch	4
C2	Dinner	12
C3	Lunch	5
C4	Dinner	15
C5	Lunch	3
C6	Dinner	10

Data 1b: House Size and Price

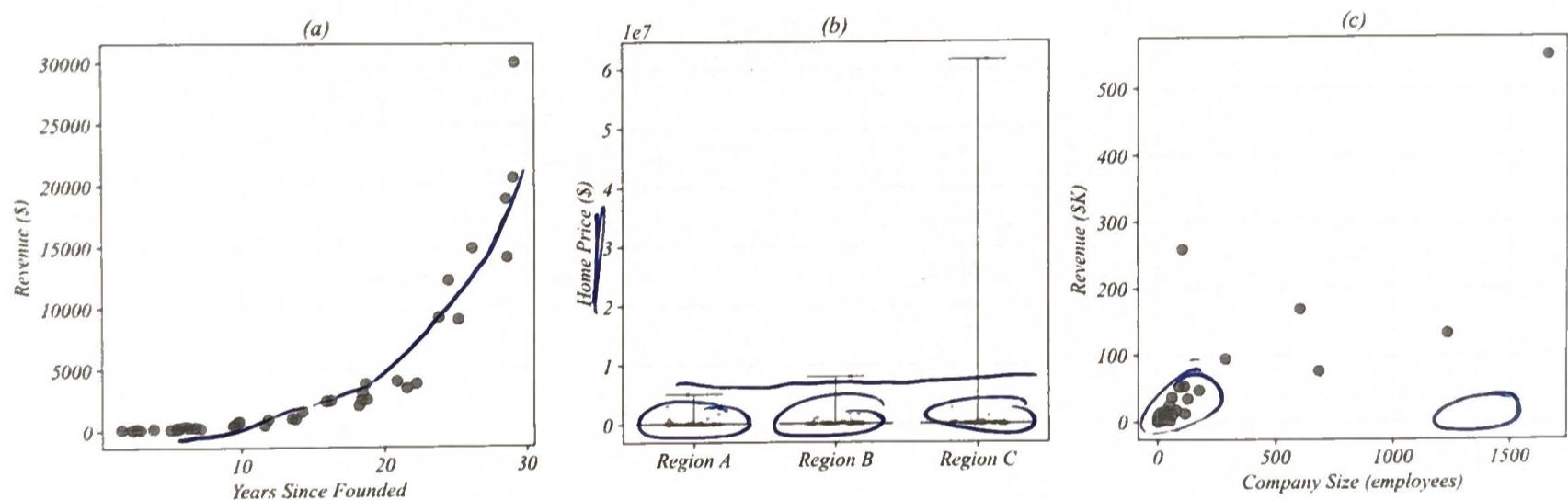
House	Sq_Feet	Price (\$K)
H1	800	180
H2	1,200	250
H3	1,500	310
H4	2,000	420
H5	2,500	530

Data 1c: Study Hours, GPA, and Major

1c

Student	Major	Cat	Study_Hours	Num_Cont	GPA	Num_Cont
S1	STEM	Non	3		2.8	
S2	Arts	Non	3		3.2	
S3	STEM	Non	6		3.1	
S4	Arts	Non	6		3.6	
S5	STEM	Non	9		3.5	
S6	Arts	Non	9		3.9	

Data 2: Three Visualizations



Data 4: Nonprofit Shift Records

Person_ID	Role	Day	Shift_Pay
P01	<u>Volunteer</u>	Weekday	0
P02	Employee	Weekday	100
P03	<u>Volunteer</u>	Weekend	0
P04	Employee	Weekend	160
P05	<u>Volunteer</u>	Weekday	0
P06	<u>Volunteer</u>	Weekend	0
P07	<u>Employee</u>	Weekday	130
P08	<u>Volunteer</u>	Weekend	0
P09	Employee	Weekend	200
P10	<u>Volunteer</u>	Weekday	0
P11	<u>Volunteer</u>	Weekend	0
P12	Employee	Weekday	110
P13	<u>Volunteer</u>	Weekday	0
P14	Employee	Weekend	180

Data 5: Study Hours vs Exam Score by Format

