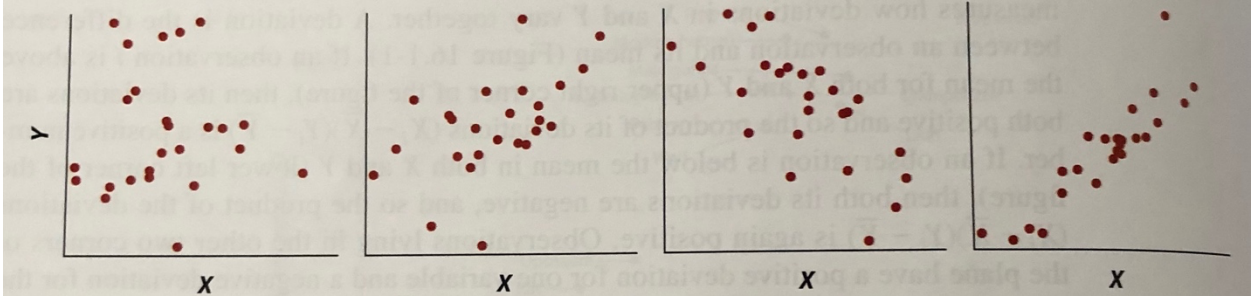


### Module 3D Questions:

1. Match the Graphs below with the most appropriate  $r$  value. (possible values: -0.7, 0.0, 0.5, 0.9)
  - a. Graph 1: 0.5, Graph 2: 0.9, Graph 3: -0.7, Graph 4: 0.0
  - b. Graph 1: 0.0, Graph 2: 0.5, Graph 3: -0.7, Graph 4: 0.9
  - c. Graph 1: -0.7, Graph 2: 0.0, Graph 3: 0.5, Graph 4: 0.9
  - d. Graph 1: 0.0, Graph 2: 0.5, Graph 3: 0.9, Graph 4: -0.7



2. Researchers observe a **positive correlation** between **activity level** in mice (distance traveled per day) and **lifespan**. Mice that move around more tend to live longer.
  - a. Is it appropriate to conclude that **increasing a mouse's activity** will directly **cause** it to live longer?
  - b. Why or why not?
  - c. In your explanation, discuss at least one possible **third variable** that could explain this relationship.
3. Scientists find a **strong negative correlation** between **fasting glucose levels** and **cognitive performance** in middle-aged humans. People with lower glucose levels tend to score higher on memory tests.
  - a. Should we conclude that **lowering a person's glucose levels** will **improve their memory**?
  - b. Why or why not?
  - c. Consider what other factors might produce this correlation without a direct causal relationship.