**1. A university wants to understand the relationship between the SAT scores of its**

**applicants and their college GPA. They collect data on 500 students, including their SAT**

**scores (out of 1600) and their college GPA (on a 4.0 scale). They find that the correlation**

**coefficient between SAT scores and college GPA is 0.7. What does this correlation**

**coefficient indicate about the relationship between SAT scores and college GPA?**

**Solution:**

A correlation coefficient of 0.7 indicates a strong positive relationship between SAT scores and college GPA. This means that there is a tendency for students with higher SAT scores to have higher college GPAs, and vice versa. The correlation coefficient ranges from -1 to 1, with 1 indicating a perfect positive relationship, 0 indicating no relationship, and -1 indicating a perfect negative relationship.

In this case, the correlation coefficient of 0.7 suggests a relatively strong positive association between SAT scores and college GPA. It implies that as SAT scores increase, there is a higher likelihood of observing higher college GPAs among the students in the sample. However, it's important to note that correlation does not imply causation. While the correlation coefficient suggests a relationship between the two variables, it does not establish a cause-and-effect relationship.