

## MGMT 230: Introductory Statistics

### Quiz 2: Probability

1. Suppose there are two events, A and B,  $P(A) = 0.5$ ,  $P(B) = 0.6$ , and  $P(A \cap B) = 0.3$ .
  - (a) What is  $P(A \cup B)$ ?
  - (b) What is  $P(A|B)$ ?
  - (c) Are events A and B independent? Why or why not?
2. Suppose for a given event A,  $P(A) = 0.6$ .
  - (a) What is the  $P(A')$ ?
  - (b) What is the  $P(A \cap A')$ ?
  - (c) What is the  $P(A \cup A')$ ?
3. If two events are mutually exclusive, are they independent, dependent, or independence cannot be determined? Explain.
4. On Law and Order - Special Victims Unit - Miami, a person charged with first degree homicide is given a polygraph lie detector test and asked about the details of the night the murder took place. The defendant denied having anything to do with the murder, but the polygraph squiggled during those questions indicating a lie was detected. The polygraph correctly identifies lies 99% of the time. With such a high probability, the district attorney argues to the jury that beyond a reasonable doubt the man committed the murders. Is this an appropriate argument? Explain using probability fundamentals.