

Name: _____

Conditional Probability

- 1) In a certain college town, 25 percent of the students failed mathematics, 15 percent failed chemistry, and 10 percent failed both mathematics and chemistry. A student is selected at random.
 - 1) If he failed chemistry, what is the probability that he failed mathematics?
 - 2) If he failed mathematics, what is the probability that he failed chemistry?
 - 3) What is the probability that he failed mathematics given that they failed chemistry?
 - 4) What is the probability that he failed neither mathematics nor chemistry?

- 2) A fair die is tossed. Consider events $A = \{2, 4, 6\}$, $B = \{1, 2\}$, $C = \{1, 2, 3, 4\}$. Find:
 - 1) $P(A \text{ and } B)$ and $P(A \text{ or } C)$
 - 2) $P(A | C)$ and $P(C | A)$
 - 3) $P(A | B)$ and $P(B | A)$
 - 4) $P(B | C)$ and $P(C | B)$

- 3) Let A and B be events with $P(A) = 0.6$, $P(B) = 0.3$ and $P(A \cap B) = 0.2$. Find:
 - 1) $P(A \cap B)$
 - 2) $P(A / B)$
 - 3) $P(B / A)$

- 4) Let A and B be independent events with $P(A) = 0.3$ and $P(B) = 0.4$. Find:
 - 1) $P(A \cap B)$ and $P(A \cup B)$
 - 2) $P(A / B)$ and $P(B / A)$