# Work sheet #2 ch3

[1] Given $P(A) = 0.6$, $P(B) = 0.2$ and $P(A \cup B) = 0.68$ what is $P(A \cap B)$ ?

[2] Let A and B be events such that $P(A|B) = 0.2$, $P(A) = 0.15$, and $P(B) = 0.1$ then $P(A \cap B) = ?$

[3] Suppose $P(A) = 0.3$, $P(B|\overline{A}) = 0.6$ and $P(B|A) = 0.4$. Find

1. $P(B)$
2. $P(\overline{B}|\overline{A})$
3. $P(\overline{B}|A)$
4. $P(A \cap B)$

[4] Suppose that $P(A) = 0.5$, $P(B) = 0.4$ and $P(\overline{B} \cap \overline{A}) = 0.3$, then $P(\overline{A} \cap B) =$ ?

[5] Let A and B be Independent events such that $P(A) = 0.2$, $P(B) = 0.5$, Find $P(A \cup B)$ ?

[6] In a certain population, 2% of individuals have specific type of Cancer. A screening test is used to detect this Cancer. For people who actually have Cancer the test comes back posive 90% of the time. However for people who dont have Cancer, the test still positive result 15% of the time. If randomly selected person from this population tests positive what is the probability that they truly have Cancer.

[7] A screening test of a certain disease is applied to a population. the probability that a randomly selected individual from this population has the disease is 15%.

If an individual has the disease, the probability that they test positive is 80%.

If an individual does not the disease, the probability that they test positive is 17.65%.

a) what is $PV^+$

b) what is $PV^-$

c) what is the sensitivity.

d) what is the specificity

e) calculat RR (relative Risk). of testing positive for individuals with the disease compared to those without the disease.