

Name \_\_\_\_\_

Student Number \_\_\_\_\_

## STA107H5S Quiz 2B

1. (2 marks) Let A and B be events in some sample space S. Let  $P(A|B) = 1$ . If  $P(B) = 0.5$ ,  $P(A) \geq$  \_\_\_\_  
How do you know this?

0.5

2. (3 marks) An urn contains 2 blue balls and 1 red ball. 2 balls are taken out at random without replacement. Let A be the event "2 blue balls were drawn". Let B be the event "at least 1 red ball was drawn". Find  $P(B|A)$  and  $P(B)$

$P(B|A)=0$ ,  $P(B)=2/3$

3. (2 marks) Are events A and B independent? Explain. You might want to cite results from a previous question.

No, since  $P(B|A) \neq P(B)$

4. (3 marks) Given that  $P(A|B) = P(B|A)$  and  $P(A \cap B) = P(B)$ , find  $P(A)$ . You may express your answer in terms of the other probabilities given.

$$P(A \cap B)/P(A) = P(A \cap B)/P(B) \Rightarrow P(A) = P(B)$$