Name: Pd: LG 7.3

____7.3: **Use mathematical and conceptual evidence to determine if two events are independent.**

1. Determine if the events A and B are independent or dependent, **show your calculations for each problem**, **and explain:**

a) $P(A) = .2$ $P(B) = .9$ and) $P(A \cap B) = .29$

$P(A) \cdot P(B) \neq P(A \cap B)$ $(.2)(.9) \neq .29$ Dependent

b) $P(A|B) = \frac{1}{5}$ $(A|B) = .20$

$= .20$ $= .20$ Independent

2. The following table shows the number of people who studied for an hour and the number of people who passed a quiz.

	Studied for an hour	Did not study for an hour	Total
Passed the test	40	5	45
Did not pass the test	3	12	15
Total	43	17	60

Find a) through d) using the table:
a) What is the probability of a student passing the test? $\frac{45}{60}$

b) GIVEN that a student studied for an hour, what is the probability that they past the test? $\frac{40}{43}$

c) Based on your calculations above, are the events "studying for an hour" and "passing the test" independent or dependent? Explain your answer.

Dependent $\frac{45}{60} = .75$ $\frac{40}{43} = .93$ → If a student studies for one hour, It has an effect on the odds of passing the test.

d)) What does this the data reveal to you about the connection between studying for more than one hour and passing a test?

Studying for one hour increases the probability of passing the test.

3. Do you think the events "having blue eyes" and "wearing a blue shirt" are independent? Explain why or why not. **Your explanation is the most important part of this question!**

Independent because having blue eyes probably does not affect the probability of wearing a blue shirt.