

Math 206 - Quiz 4

Name key

February 24, 2010

Score _____

Show each step to receive full credit. Supply explanations when necessary.

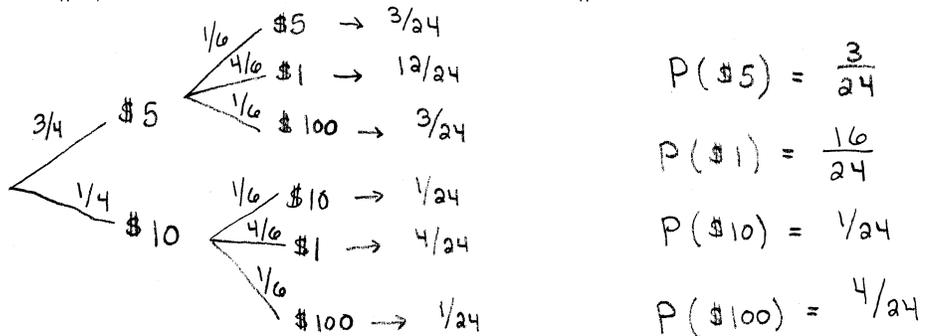
NOTICE THAT A & B ARE INDEPENDENT.

1. (1 point) Suppose $P(A) = 0.65$, $P(B) = 0.40$ and $P(A \cap B) = 0.26$. Determine $P(A|B)$ and $P(B|A)$.

$$P(A|B) = \frac{P(A \cap B)}{P(B)} = \frac{0.26}{0.40} = \boxed{0.65}$$

$$P(B|A) = \frac{P(A \cap B)}{P(A)} = \frac{0.26}{0.65} = \boxed{0.40}$$

2. (2 points) Bucket #1 contains three \$5 bills and one \$10 bill. Bucket #2 contains four \$1 bills and one \$100 bill. A bill is drawn at random from bucket #1, placed into bucket #2, and then a bill is drawn from bucket #2.



- (a) How much, on average, would you expect to win from this game?

$$(\$1) \left(\frac{16}{24} \right) + (\$5) \left(\frac{3}{24} \right) + (\$10) \left(\frac{1}{24} \right) + (\$100) \left(\frac{4}{24} \right)$$

$$= \frac{\$441}{24} = \boxed{\$18.375}$$

- (b) What are the odds against winning more \$8?

PROB OF WINNING MORE THAN \$8 = $P(\$10) + P(\$100) = \frac{5}{24}$

ODDS AGAINST = $\frac{19/24}{5/24} = \boxed{\frac{19}{5}}$

3. (2 points) After taking four 50-point tests, Sally's class average was 86.5%. What must she get on her 100-point final exam in order to end up with a class average of 90%?

$$\frac{\text{Sally's Points}}{200} = 0.865 \Rightarrow \text{Sally's Points} = 173$$

LET X BE HER FINAL EXAM SCORE

THEN $\frac{173 + X}{300} = 0.90 \Rightarrow 173 + X = 270$

$$\Rightarrow \boxed{X = 97}$$