Sample quiz

Math 142 – Spring 2004 NAME: ~~Key~~
Quiz #4 15
Sections 11.3 - 11.4 Seat: ______

Partial credit is based on work shown!

2pts

1. If the probability of event E occurring is $\frac{2}{3}$, what are the odds in favor of event E? $2:1$

4pts

2. According to a certain publisher's records, 20% of the books published break even (no loss & no profit), 30% lose \$1000, 25% lose \$8,000, and 25% make a profit of \$20,000. What is the expected value (average profit) for a book published by this company?

$$\text{Exp. value} = \underset{P_1 V_1}{\frac{20}{100}(\$0)} + \underset{P_2 V_2}{\frac{30}{100}(-\$1000)} + \underset{P_3 V_3}{\frac{25}{100}(-\$8000)} + \underset{P_4 V_4}{\frac{25}{100}(\$20,000)}$$

$$\text{ave profit} = \$0 + (-\$300) + (-\$2000) + (\$5000)$$
$$= \$2700$$

3pts

3. A state has license plates with three letters followed by four numbers.
   a. How many license plates can be made that ~~begin with~~ ATW?

$$\underset{A}{1} \cdot \underset{T}{1} \cdot \underset{W}{1} \cdot 10 \cdot 10 \cdot 10 \cdot 10 = 10,000$$

   b. How many of these plates have four numbers that are all the same? (For example, ATW 4444)

10

   c. What is the probability of having a license plate like those described in part b?

$$\frac{10}{10,000} \text{ or } \frac{1}{1000}$$

Like 11.3 SA #21, sol #2, Chap rev 11.3 #5

6pts

4. If a group of 5 students must be chosen from 6 boys and 3 girls, (9 students) how many different groups are possible if:

   a. there are no restrictions?

Fund. Counting Prop

$$\frac{(9 \cdot 8 \cdot 7 \cdot 6 \cdot 5)}{5!} = \frac{15120}{120} = \boxed{126}$$

or $_9C_5 = \frac{9!}{4!5!}$

   b. there must be 3 boys and 2 girls in the group?

$$\underset{\text{boys}}{_6C_3} \cdot \underset{\text{girls}}{_3C_2}$$

$$\frac{6!}{3!3!} \cdot \frac{3!}{1!2!}$$

$$\frac{6 \cdot 5 \cdot 4}{6} \cdot \frac{3 \cdot 2}{2}$$

$$20 \cdot 3 = \boxed{60}$$