1 MATH 107/CCE

Spring 2004
University of Rhode Island
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Quiz 2-Solutions

3/01/2004

1.
(a)
$P(\text{First Prize in 5/35 lottery}) = \dfrac{1}{{}_{35}C_5} = \frac{1}{324{,}632}$
(b
$P(\text{Second Prize in 5/35 lottery}) = \dfrac{{}_5C_4\ {}_{30}C_1}{{}_{35}C_5} = \frac{5\cdot 30}{324{,}632} = \frac{150}{324{,}632}$
(c)
$P(\text{Third Prize in 5/35 lottery}) = \dfrac{{}_5C_3\ {}_{30}C_2}{{}_{35}C_5} = \frac{10\cdot 435}{324{,}632} = \frac{4350}{324{,}632}$

2.
(a)
$P(\text{at least three sophomores}) = \dfrac{{}_7C_3\,{}_4C_2 +{}_7\,C_4\,{}_4C_1 +{}_7\,C_5}{{}_{11}C_5} = \frac{371}{462} = 0.803.$
(b)
$P(\text{three sophomores and two juniors}) = \dfrac{{}_7C_3\,{}_4C_2}{{}_{11}C_5} = \frac{210}{462} = 0.4545.$
(c)
$P(\text{at least three sophomores}) = \dfrac{{}_7C_3\,{}_4C_2 +{}_7\,C_4\,{}_4C_1 +{}_7\,C_5}{{}_{11}C_5} = \frac{371}{462} = 0.803.$

3.

(a)

Probability	Profit
.07	$-\$107$
.93	\$80

Expected value $= .07 \cdot \$ - 107 + .93 \cdot \$80 = \$66.91$
(b) $\$66.91 \cdot 20000 = \$1,338,200$