M118
FALL 2000

QUIZ 8

NAME _____

Due: Wednesday, October 11.

10) (5 PTS.) Three of Astrids friends - Gorm, Per, and Steen - will turn 25 years old on the same day in January. Astrid is going to give each one a different kind of gift. She is going to select gifts from a store that offers 8 different kinds of gifts. In how many ways can Astrid select a gift for Gorm, a gift for Per, and a gift for Steen?

$8 \cdot 7 \cdot 6 = P(8,3) = 8 \cdot 7 \cdot 6 = 336$

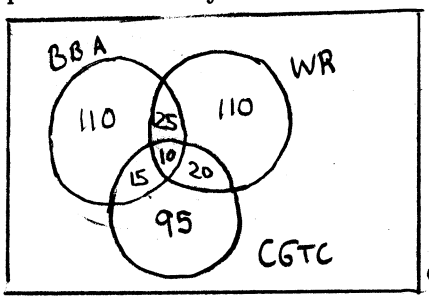
Answer: 336

11) (5 PTS.) A sale bin has 4 different Beethoven CD's, 5 different Mozart CD's, and 3 different Tchaikovsky CD's. If Steen buys one of the Beethoven CD's, Gorm buys one of the Mozart CD's, and Sue buys one of the Tchaikovsky CD's, how many possible outcomes are there?

$4 \cdot 5 \cdot 3 = 60$

Answer: 60

12) (5 PTS.) In a survey of 970 voters, 160 supported a balanced budget amendment (BBA), 165 supported welfare reform (WR), 140 supported a capital gain tax cut (CGTC), 35 supported a BBA and WR, 25 supported a BBA and a CGTC, 30 supported WR and a CGTC, and 10 supported all three of these proposals. How many of these voters supported none of these proposals?



$160 + 110 + 20 + 95 = n(BBA \cup WR \cup CGTC) = 385$

$970 - 385 = n((BBA \cup WR \cup CGTC)')$

$= 585$

Answer: 585

13) (10 PTS.) An urn contains 3 red, 4 green, and 5 yellow balls. Two balls are withdrawn silmultaneously and at random. What is the probability that both balls are the same color?

$$\frac{\binom{3}{2} + \binom{4}{2} + \binom{5}{2}}{\binom{12}{2}} = \frac{3+6+10}{66} = \frac{19}{66}$$

Answer: $19/66$

SEE OTHER SIDE

14) (5 PTS.) An urn contains 3 red, 4 green, and 5 yellow balls. Two balls are withdrawn silmultaneously and at random. What is the probability that neither is green?

8 balls are not green.

$$\frac{\binom{8}{2}}{\binom{12}{2}} = \frac{28}{66} = \frac{14}{33}$$

Answer: $\frac{14}{33}$

15) (5 PTS.) An old incomplete deck of cards contains 3 spades (black), 6 diamonds (red), 2 hearts (red), and 8 clubs (black). Two cards are drawn at random without replacement. What is the probability that one is red and one is black?

black cards, # red cards

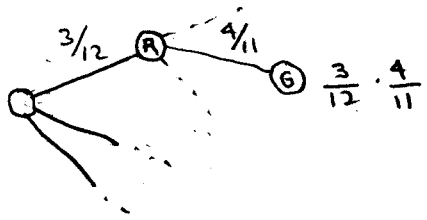
$$\frac{\binom{11}{1}\binom{8}{1}}{\binom{19}{2}} = \frac{88}{171}$$

Answer: $\frac{88}{171}$

16) (10 PTS.) An urn contains 3 red, 4 green, and 5 yellow balls. Two balls are withdrawn at random one after the other without replacement. The color of each ball is noted. What is the probability that the first ball is red and second ball is green?

OR Draw a tree

$$\frac{3 \cdot 4}{12 \cdot 11} = \frac{1}{11}$$



Answer: $\frac{1}{11}$

17) (5 PTS.) A green and a red fair die are rolled and the result is noted. What is the probability that the sum of the two results is 4?

$1+3=4$
$2+2=4$
$3+1=4$

$$\frac{3}{36} = \frac{1}{12}$$

Answer: $\frac{1}{12}$