Algebra 2--H HW #_____ Name_____

12.5 & review

Date_____

Give answers as fractions in simplest form, unless otherwise requested.

For questions 1 and 2: a jar contains 12 red marbles, 16 blue marbles, and 18 white marbles.

1. Marbles are selected at random, one at a time. Find the probability of choosing these marbles:

a) red, then blue, with replacement

$\frac{12}{46} \times \frac{16}{46} = \frac{6}{23} \times \frac{8}{23}$

b) red, then blue, without replacement

c) red, then red, then white, with replacement

$\frac{12}{46} \times \frac{12}{46} \times \frac{18}{46}$ $\quad \frac{6}{23} \times \frac{6}{23} \times \frac{9}{23}$

d) red, then red, then white, without replacement

$\frac{12}{46} \times \frac{11}{45} \times \frac{18}{44}$ $\quad \frac{6}{23} \times \frac{11}{45_5} \times \frac{9}{22_2}$

For questions 1 and 2: a jar contains 12 red marbles, 16 blue marbles, and 18 white marbles.

2. Marbles are selected 3 at a time. Find the probability of choosing:

a) all blue marbles

b) exactly 1 red marble

1R and 2 others

$\frac{{}_{12}C_1 \times {}_{34}C_2}{{}_{46}C_3}$ any 3

$\frac{34 \cdot 33}{2 \cdot 1}$

3. The probability of selecting a rotten apple from a basket is 12%. One apple is selected from each of 3 different baskets. What is the probability of selecting 2 good apples and 1 rotten apple? Round answer to the nearest thousandth.

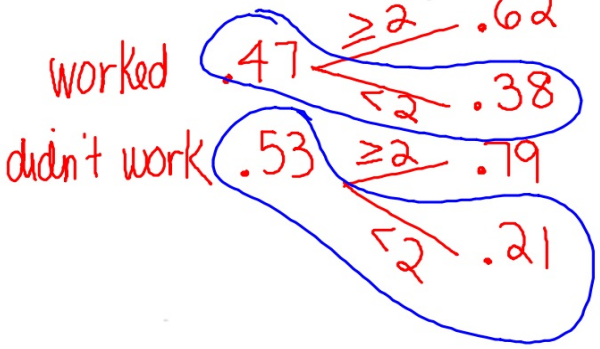
G and G and R

$(.88)(.88)(.12)$

4. Events A and B are independent. $P(A) = \frac{2}{3}$ and $P(B) = \frac{7}{8}$. Find $P(A \text{ and } B)$.

5. Events A and B are dependent. $P(A) = 0.1$ and $P(B \mid A) = 0.1$. Find $P(A \text{ and } B)$.

6. A survey of high school students over the age of 16 showed that 47% of them worked during the summer. Of those who worked, 62% said they watched 2 hours or more of TV day in the summer. Of those who did not work, 79% watched 2 hours or more. Make a probability tree diagram and use it to find the probability that a randomly chosen high sc student older than 16 watched less than 2 hours of TV per day during the summer. (round answer to the nearest thousandth)



$.47(.38) + .53(.21)$

7. $P(A) = 0.2$, $P(B) = 0.55$, and $P(A \text{ or } B) = 0.6$.

a) Find $P(A \text{ and } B)$. Are events A and B mutually exclusive?

$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$
$$.6 = .2 + .55 - x$$

b) Find $P(B')$.

8. A card is randomly drawn from a standard 52-card deck. Find the probability that th card is:

a) an ace or a club

ace of clubs

$$\frac{4}{52} + \frac{13}{52} - \frac{1}{52}$$

b) not an ace

$$\frac{48}{52}$$

$$1 - \frac{4}{52}$$

$$1 - P(\text{ace})$$

9. To win the lottery, you must correctly select six different numbers from 1 to 50, in an order. What is the probability that you select the winning combination of numbers?

$$\frac{1 \text{ winner}}{{}_{50}C_{6}}$$

10. An art gallery has six paintings by the same painter. How many ways can 4 of the 6 paintings be arranged on a gallery wall?

$$6 \times 5 \times 4 \times 3$$