1. A deli has a lunch special which consists of a sandwich, soup, dessert and drink for $4.99. They offer the following choices: **Sandwich**: chicken salad, ham, and tuna, and roast beef **Soup**: tomato, chicken noodle, vegetable **Dessert**: cookie and pie **Drink**: tea, coffee, coke, diet coke and sprite. How many lunch specials are there?

2.

In a bag there are 3 red marbles, 2 yellow marbles, and 1 blue marble. After a marble is selected, it is replaced. Using this new situation, find the probability of each outcome listed above.

a) a red marble and then a yellow marble

b) a blue marble and then a yellow marble

c) a red marble and then a blue marble

d) any color marble except yellow and then a yellow marble

e) a red marble three times in a row

f) A red marble or a blue marble

3. In a bag there are 4 red marbles, 2 yellow, and 5 blue marbles. After a marble is selected, it is **NOT** replaced. Find the probability of each outcome below:

a. a red marble and then a yellow marble

b a blue marble and then a yellow marble

c a red marble and then a blue marble

d any color marble except yellow and then a yellow marble

e a red marble three times in a row

4. Each of the letters of the word "GEOMETRY " is on a separate card. The cards have been mixed and placed in a box. If you select one card at random, what is the probability that its letter will be "E or a consonant"?

5. A card is randomly selected from a standard deck of 52 cards. Find the indicated probability. **Hint: There are 4 jacks, 4 queens, 4 kings, 4 aces, 13 diamonds, 13 spades, 13 clubs, 13 hearts, 36 numbered cards, 26 red cards, and 26 black cards, **16 odd numbered cards, 20 even numbered cards** **

a) P(Face cards or Odd numbered cards) b) P(Face card and Spades)

c) P(Red or Face Cards) d) P(Diamonds or even cards)

6. Two cards are randomly selected from a standard deck of 52 cards (WITH REPLACEMENT). Find the indicated probability. **Hint: There are 4 jacks, 4 queens, 4 kings, 4 aces, 13 diamonds, 13 spades, 13 clubs, 13 hearts, 36 numbered cards, 26 red cards, and 26 black cards, **16 odd numbered cards, 20 even numbered cards** .**

a) P(Face cards and Odd numbered cards) b) P(Face card and Spades)

c. P(Red and Face Cards) d) P(even card 3 times)

7) Two cards are randomly selected from a standard deck of 52 cards (~~WITHOUT~~ REPLACEMENT). Find the indicated probability. **Hint: There are 4 jacks, 4 queens, 4 kings, 4 aces, 13 diamonds, 13 spades, 13 clubs, 13 hearts, 36 numbered cards, 26 red cards, and 26 black cards.** **16 odd numbered cards, 20 even numbered cards**

a. P(Face cards and Odd numbered cards) b) P(Spades Face card and Spades)

(c) P(Hearts Face Cards and Red) d) P(even card 3 times)

8) The probability that a student plays tennis is 56%. The probability that a student plays tennis and Lacrosse is 26%. What is the probability that student plays Lacrosse, given that they play tennis?

For #9 - 12, refer to the following table.

	Male	Female	Subtotal
Blue Eyes	40	20	
Green Eyes	10	80	
Subtotal			

9) P (Female) =

10. P (Green Eyes) =

11.P(Green Eyes | Female) = 12. P(Female | Green Eyes) =

13. Are Green eyes and Female independent or dependent?

CCGPS Analytic Geometry Probability Test Review 3

Key

1. A deli has a lunch special which consists of a sandwich, soup, dessert and drink for $4.99. They offer the following choices: **Sandwich**: chicken salad, ham, and tuna, and roast beef **Soup**: tomato, chicken noodle, vegetable **Dessert**: cookie and pie **Drink**: tea, coffee, coke, diet coke and sprite. How many lunch specials are there?

$4 \cdot 3 \cdot 2 \cdot 5 =$ 120 lunch combinations

2.

In a bag there are 3 red marbles, 2 yellow marbles, and 1 blue marble. After a marble is selected, it is replaced. Using this new situation, find the probability of each outcome listed above. 6 total

a) a red marble and then a yellow marble $\frac{3}{6} \cdot \frac{2}{6} = \frac{1}{6}$

b) a blue marble and then a yellow marble $\frac{1}{6} \cdot \frac{2}{6} = \frac{1}{18}$

c) a red marble and then a blue marble $\frac{3}{6} \cdot \frac{1}{6} = \frac{1}{12}$

d) any color marble except yellow and then a yellow marble $\frac{4}{6} \cdot \frac{2}{6} = \frac{2}{9}$

e) a red marble three times in a row $\frac{3}{6} \cdot \frac{3}{6} \cdot \frac{3}{6} = \frac{1}{8}$

f) a red or blue marble $\frac{3}{6} + \frac{1}{6} = \frac{4}{6} = \frac{2}{3}$

3. In a bag there are 4 red marbles, 2 yellow, and 5 blue marbles. After a marble is selected, it is **NOT** replaced. Find the probability of each outcome below: 11 total

a. a red marble and then a yellow marble $\frac{4}{11} \cdot \frac{2}{10} = \frac{4}{55}$

b a blue marble and then a yellow marble $\frac{5}{11} \cdot \frac{2}{10} = \frac{1}{11}$

c a red marble and then a blue marble $\frac{4}{11} \cdot \frac{5}{10} = \frac{2}{11}$

d any color marble except yellow and then a yellow marble $\frac{9}{11} \cdot \frac{2}{10} = \frac{9}{55}$

e a red marble three times in a row $\frac{4}{11} \cdot \frac{3}{10} \cdot \frac{2}{9} = \frac{4}{165}$

4. Each of the letters of the word "GEOMETRY" is on a separate card. The cards have been mixed and placed in a box. If you select one card at random, what is the probability that its letter will be "E or a consonant"?

$\frac{2}{8} + \frac{5}{8} = \frac{7}{8}$

5. A card is randomly selected from a standard deck of 52 cards. Find the indicated probability. **Hint: There are 4 jacks, 4 queens, 4 kings, 4 aces, 13 diamonds, 13 spades, 13 clubs, 13 hearts, 36 numbered cards, 26 red cards, and 26 black cards.**

a) P(Face cards or Odd numbered cards)

$\frac{12}{52} + \frac{16}{52} = \frac{28}{52} = \boxed{\frac{7}{13}}$

b) P(Face card and Spades)

$\boxed{\frac{3}{52}}$

c) P(Red or Face Cards)

$\frac{26}{52} + \frac{12}{52} - \frac{6}{52}$ $\boxed{\frac{8}{13}}$

d) P(Diamonds or even cards)

$\frac{13}{52} + \frac{20}{52} - \frac{5}{52}$ $\boxed{\frac{7}{13}}$

6. Two cards are randomly selected from a standard deck of 52 cards (WITH REPLACEMENT). Find the indicated probability. **Hint: There are 4 jacks, 4 queens, 4 kings, 4 aces, 13 diamonds, 13 spades, 13 clubs, 13 hearts, 36 numbered cards, 26 red cards, and 26 black cards.**

a) P(Face cards and Odd numbered cards)

$\frac{12}{52} \cdot \frac{16}{52}$ $\boxed{\frac{12}{169}}$

b) P(Face card and Spades)

$\frac{12}{52} \cdot \frac{13}{52}$ $\boxed{\frac{3}{52}}$

c. P(Red and Face Cards)

$\frac{26}{52} \cdot \frac{12}{52}$ $\boxed{\frac{3}{26}}$

d) P(even card 3 times)

$\frac{20}{52} \cdot \frac{20}{52} \cdot \frac{20}{52} = \boxed{\frac{125}{2197} = 0.0568}$

7) Two cards are randomly selected from a standard deck of 52 cards (**WITHOUT** REPLACEMENT). Find the indicated probability. **Hint: There are 4 jacks, 4 queens, 4 kings, 4 aces, 13 diamonds, 13 spades, 13 clubs, 13 hearts, 36 numbered cards, 26 red cards, and 26 black cards.**

a. P(Face cards and Odd numbered cards)

$\frac{12}{52} \cdot \frac{16}{51} = \frac{16}{221}$

b) P(Face card and Spades)

Spades

$\frac{3}{52} \cdot \frac{12}{51} = \frac{3}{221}$

(c) ~~P(Red and Face Cards)~~ ~~Hearts~~

P(Hearts face card and Red)

$\frac{3}{52} \cdot \frac{25}{51}$

d) P(even card 3 times)

$\frac{20}{52} \cdot \frac{19}{51} \cdot \frac{18}{50}$

8) The probability that a student plays tennis is 56%. The probability that a student plays tennis and Lacrosse is 26%. What is the probability that student plays Lacrosse, given that they play tennis?

$\frac{0.26}{0.56}$ $\boxed{\frac{13}{28}}$

For #9 - 12, refer to the following table.

	Male	Female	Subtotal
Blue Eyes	40	20	60
Green Eyes	10	80	90
Subtotal	50	100	150

9) P (Female) = $\frac{100}{150}$ $\boxed{\frac{2}{3}}$

10. P (Green Eyes) = $\frac{90}{150}$ $\boxed{\frac{3}{5}}$

11.P(Green Eyes | Female) = $\frac{8}{10}$ $\boxed{\frac{4}{5}}$

12. P(Female | Green Eyes) = $\frac{8}{9}$

13] Dependent b/c $P(G|F) \neq P(F|Green)$