0. Spiral Review
   Worksheet 0 1 – 20
1. Apply the counting principle and permutations. (Section 10.1)
   Page 686 3, 4, 7 – 12, 18 – 40 even, 43 – 48, 55, 56
   Worksheet 1 1 – 12
2. Use combinations and permutations. (Section 10.2)
   Worksheet 2 1 – 23
3. Define and use probability of single events. (Section 10.3)
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   Worksheet 3 1 – 14
4. Find the probability of multiple events that are not disjoint. (Section 10.4)
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5. Find probabilities of independent and dependent events. (Section 10.5)
   Worksheet 5 1 – 10
6. More Probabilities
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Review Worksheet 1 - 40
UNIT 10 TEST

Worksheet 1

Example 1
Suppose you go to a restaurant that has the menu shown for a complete meal.
How many different meals are possible?
Make a tree diagram to show all the possible outcomes.

<table>
<thead>
<tr>
<th>Main Dish</th>
<th>MENU</th>
<th>Drinks</th>
</tr>
</thead>
<tbody>
<tr>
<td>taco</td>
<td>Sides</td>
<td>coke or tea</td>
</tr>
<tr>
<td></td>
<td>rice</td>
<td>coke</td>
</tr>
<tr>
<td></td>
<td>beans</td>
<td>tea</td>
</tr>
</tbody>
</table>

Lunch special: Main, one side, one drink for $3.99

<table>
<thead>
<tr>
<th>main dish</th>
<th>side dish</th>
<th>drink</th>
<th>outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>taco</td>
<td>rice</td>
<td>coke</td>
<td>taco, rice, coke</td>
</tr>
<tr>
<td></td>
<td></td>
<td>tea</td>
<td>taco, rice, tea</td>
</tr>
<tr>
<td></td>
<td>beans</td>
<td>coke</td>
<td>taco, beans, tea</td>
</tr>
<tr>
<td></td>
<td></td>
<td>tea</td>
<td>taco, beans, coke</td>
</tr>
</tbody>
</table>

There are 4 different meals possible
Worksheet 1

Problems

1. Jana Lee is ordering a new car. She has three choices to make.
   1. 4-cylinder or 6-cylinder engine
   2. Standard or automatic transmission
   3. Blue, white or black color

Complete the tree diagram to show all possible outcomes. How many outcomes are there?

<table>
<thead>
<tr>
<th>engine</th>
<th>transmission</th>
<th>color</th>
<th>outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-cylinder</td>
<td>standard</td>
<td>blue</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>white</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>black</td>
<td></td>
</tr>
<tr>
<td></td>
<td>automatic</td>
<td>blue</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>white</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>black</td>
<td></td>
</tr>
<tr>
<td>2-cylinder</td>
<td>standard</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>automatic</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. A bicycle dealer sells 8 different models of bikes. Each model is available in 3 colors. How many different bikes are available?

3. The vowels \( a, e, i, o, u \) are to be used to form three-letter patterns. How many patterns can be formed if the vowels can repeat? (For example \( a, a, a \) is an acceptable pattern)

4. Using the same vowels in problem 3, how many three-letter patterns are possible if you can’t repeat a letter once it’s been used?

5. How many ways can a 5 question multiple choice quiz be answered if there are the choices a, b, c, d for each question and each question is answered?

<table>
<thead>
<tr>
<th>Choices</th>
<th>Question 1</th>
<th>Question 2</th>
<th>Question 3</th>
<th>Question 4</th>
<th>Question 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of choices</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
</tr>
</tbody>
</table>

(cont)
Worksheet 1 (cont)

In some problems there are specific restrictions. Study the following.

Example 2
How many arrangements are possible using all the letters $a,b,c$ and no repeats.

Solution:

<table>
<thead>
<tr>
<th>Choices</th>
<th>$1^{st}$ letter</th>
<th>$2^{nd}$ letter</th>
<th>$3^{rd}$ letter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of choices</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

$= 6$

Example 3

How many arrangements are possible using all the letters $a,b,c$ with no repeats and the letter $c$ must be first.

<table>
<thead>
<tr>
<th>Choices</th>
<th>$1^{st}$ letter</th>
<th>$2^{nd}$ letter</th>
<th>$3^{rd}$ letter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of choices</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

$= 2$

6. In how many different ways can a pre-school teacher, her aide and 5 children line up if the teacher must be at the front of the line and the aide must be at the end of the line?

7. How many computer passwords are possible if a password must be comprised of 6 items. The first two must be symbols from the list # $ * @
The next 4 must be digits from 0, 1,2,3,4,5,6,7,8,9
Repeats are ok. (In other words your code could be ##8888)

8. How many distinguishable permutations are there of the letters DIVER

9. How many distinguishable permutations are there of the letters RIVER

10. How many distinguishable permutations are there of the letters SEVERE

11. You are ordering a fruit smoothie. You have your choice of a small, medium, or large smoothie and you can include one of the following fruits: strawberries, bananas, and oranges. How many possible choices of smoothies are there?

A. 2  B. 9  C. 3  D. 6

12. How many distinguishable permutations of the letters NEEDED are possible?

A. 60  B. 120  C. 360  D. 720
Worksheet 2

Tell whether each of the following is a combination (order is **not** important) or a permutation (order is important).

1. An arrangement of the letters in the word MATH.
2. Choosing a clean-up committee from the 40 students in our class.
3. Determining 1\textsuperscript{st} place, 2\textsuperscript{nd} place and 3\textsuperscript{rd} place in a race.
4. Looking at your 14 senior photos and selecting the 2 you want to order
5. Dialing the numbers in a telephone number.
6. Determining the batting order for the 9 players on a baseball team.
7. The answers on a true-false test.
8. Ordering a dish of ice cream with 2 scoops chosen from 31 flavors.
10. Buying ten items at the grocery store.

11. Evaluate $\binom{6}{4}$  
12. Evaluate $\binom{9}{3}$  
13. Evaluate $\binom{9}{P_3}$  
14. Evaluate $\binom{100}{2}$

Work the following problems. Some are combinations and some are permutations.

15. AP Literature students must do summer reading. From a list of 9 books, how many groups of 5 readings can be selected?
16. The Sharpie Company manufactures felt tip ink pens. To test for quality control 2 out of 150 pens will be chosen and tested. In how many ways can the 2 pens be chosen from the 150?
17. 100 people are running in the race at Woodward Park this weekend. In how many ways can 1\textsuperscript{st} place, 2\textsuperscript{nd} place and 3\textsuperscript{rd} place be awarded?
18. John goes to the store to buy the toppings for the hamburgers. He needs to buy mustard, relish, mayonnaise, ketchup, tomatoes, and lettuce. John realizes he does not have enough money and can only purchase 3 of the items. How many different groups of 3 items are possible?
19. A school club has 8 boys and 7 girls as members. How many different 6-person committees can be selected from the membership if three boys and three girls are to be selected?
20. The junior and senior class councils have 10 members each. In how many ways can a prom committee be formed if it is to consist of 3 seniors and 2 juniors selected from the two class councils?
21. How many different arrangements are possible of the letters ROAM?
22. How many different arrangements are possible of the letters ROOM?
23. Java Juice has 10 kinds of fruit – bananas, strawberries, peaches, pineapples, kiwi, boysenberries, blueberries, mangoes, oranges, limes. How many different tasting drinks are possible that contain 4 of the fruits?
Worksheet 3

1. When you roll a six-sided die there are 6 possible outcomes:
   Find the probability of each event:
   a. Getting a 1    b. Getting an odd number
   c. Getting a number less than 5    d. Getting a number less than 8
   e. Getting a number greater than 9

2. A spinner is divided into 8 equal parts and colored green (G), red (R), and white (W)
   If the spinner is spun one time find the probability of the following events:
   a. It lands on a red section
   b. It lands on a section that is not green
   c. It lands on a yellow section

Find the probability of choosing each type of card at random from a standard deck.

3. an ace  4. a heart  5. a face card  6. a red card

A bag contains 3 red, 6 blue, 4 white, and 3 green marbles. One marble is selected at random.
Find each probability.
7. it is blue  8. it is red or green  9. it is not white

A letter is picked from the 26 letters of the alphabet. We are identifying vowels as the letters a,e,i,o,u. All other letters will be classified as consonants. Find each probability
10. The letter is a vowel  11. The letter is one of the letters in the word ROAM
12. The letter is not a vowel

13. If the probability of rain today is 40%, what is the probability of no rain?

14. All the lockers at Jefferson High are on the first three floors of the building. The probability of having a locker on the third-floor is 1/2. The probability of having a locker on the second-floor is 1/3. What is the probability of having a locker on the first floor?
1. Two cab companies, one with green cabs, and one with blue cabs, operate in Fresno. 85% of the cabs in Fresno are green and 15% are blue. The percentage of automatic transmissions or manual transmissions of each color is shown. Find the probability that a cab I ride in is blue in color and has a manual transmission.

```
Cabs
<table>
<thead>
<tr>
<th></th>
<th>0.85</th>
<th>0.15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>0.80</td>
<td>0.20</td>
</tr>
<tr>
<td></td>
<td>0.70</td>
<td>0.30</td>
</tr>
<tr>
<td>Blue</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

2. A jar contains red marbles and green marbles. Ray randomly chooses one marble and places it in his pocket, then randomly chooses a second marble. Find the probability that the first marble is red and the second marble is green.

```
marbles
<table>
<thead>
<tr>
<th></th>
<th>5/8</th>
<th>3/8</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>4/7</td>
<td>5/7</td>
</tr>
<tr>
<td>G</td>
<td>3/7</td>
<td>2/7</td>
</tr>
</tbody>
</table>
```

3. In a high school class, males and females were asked whether or not they liked the movie Jurassic Park. The results are shown below. Find $P(\text{male and disliked})$

```
class
<table>
<thead>
<tr>
<th></th>
<th>males</th>
<th>females</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(55%)</td>
<td>(45%)</td>
</tr>
<tr>
<td>liked</td>
<td>(80%)</td>
<td>(64%)</td>
</tr>
<tr>
<td>disliked</td>
<td>(20%)</td>
<td>(36%)</td>
</tr>
</tbody>
</table>
```
4. John is choosing between 2 majors in college, either architecture or engineering. His preferences in each area are shown. If \( P(\text{architecture and commercial}) = 72\% \)

a. Find \( P(\text{architecture}) \)
b. Find \( P(\text{engineering}) \)

<table>
<thead>
<tr>
<th>college majors</th>
<th>architecture</th>
<th>engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>residential</td>
<td>(10%)</td>
<td>(90%)</td>
</tr>
<tr>
<td>commercial</td>
<td>(90%)</td>
<td>(10%)</td>
</tr>
</tbody>
</table>

| mechanical      | (40\%)       | electrical  | (60\%)       |

5. Martha Stewart likes to garden and she also likes to cook. If she could only do one, find the probability she’d choose gardening if the probability she’d choose everyday cooking is 33\%. (Hint: First find the probability of cooking.)

<table>
<thead>
<tr>
<th>Martha</th>
<th></th>
<th>gardening</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>cooking</td>
<td>gourmet</td>
<td>everyday</td>
<td>inside</td>
</tr>
<tr>
<td>(25%)</td>
<td>(25%)</td>
<td>(75%)</td>
<td>(12%)</td>
</tr>
</tbody>
</table>

6. At Pal Distributing, 7 men employed are college graduates and 12 women employed are college graduates. They also employ 2 men who didn’t graduate college and 3 women who didn’t graduate college.

<table>
<thead>
<tr>
<th></th>
<th>college graduates</th>
<th>not college graduates</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>male</td>
<td>7</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>female</td>
<td>12</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>total</td>
<td>19</td>
<td>5</td>
<td>24</td>
</tr>
</tbody>
</table>

If one person is randomly selected from this table, find the following:

a. Find the probability the person is female college graduate
b. Find the probability the person is a male
c. Find the probability the person is female given they are a college graduate.
d. Find the probability the person is a college graduate given that they are male.
7. A survey was done regarding which homes had garages, swimming pools, both or neither. The data is shown in the chart below.

<table>
<thead>
<tr>
<th></th>
<th>Swimming Pool</th>
<th>No Swimming Pool</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Garage</td>
<td>6</td>
<td>19</td>
<td>25</td>
</tr>
<tr>
<td>No Garage</td>
<td>5</td>
<td>11</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>11</td>
<td>30</td>
<td>41</td>
</tr>
</tbody>
</table>

If a house is randomly selected from this table, find the following probabilities.

a.  \( P(\text{garage}) \)

b.  \( P(\text{garage and swimming pool}) \)

c.  \( P(\text{garage or swimming pool}) \)

d.  \( P(\text{swimming pool | garage}) \)

e.  \( P(\text{no garage | swimming pool}) \)

8. In a room there were 19 male smokers, 12 female smokers, 41 male non-smokers and 28 female non-smokers. Draw a table to represent this information, and use it to find the following probabilities if a person is selected at random.

a.  \( P(\text{non-smoker}) \)

b.  \( P(\text{male and non-smoker}) \)

c.  \( P(\text{female or smoker}) \)

d.  \( P(\text{smoker | female}) \)

e.  \( P(\text{male | non-smoker}) \)

9. In a small town the ethnic and religious backgrounds of the townspeople are as shown.

<table>
<thead>
<tr>
<th></th>
<th>Italian</th>
<th>Spanish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catholic</td>
<td>120</td>
<td>130</td>
</tr>
<tr>
<td>Baptist</td>
<td>100</td>
<td>200</td>
</tr>
</tbody>
</table>

If one person is randomly selected from this table, find the following probabilities.

a.  \( P(\text{Baptist}) \)

b.  \( P(\text{Catholic or Spanish}) \)

c.  \( P(\text{Catholic | Italian}) \)

d.  \( P(\text{Spanish | Baptist}) \)

10. A bag has 1 yellow diamond, 3 white diamonds, 6 yellow opals and 10 white opals. Draw a table to represent this information, and use it to find the following probabilities if a stone is selected at random out of the bag.

a.  \( P(\text{yellow and opal}) \)

b.  \( P(\text{diamond or white}) \)

c.  \( P(\text{yellow | diamond}) \)

d.  \( P(\text{opal | yellow}) \)
Unit 10 Worksheet 6

1. Vi has 6 nickels, 4 pennies and 3 dimes in her purse. She selects one. What is the probability it is a penny or a nickel?

2. A card is to be selected from a deck of 52 cards. What is the probability that it is a red card or a face card?

For problems 3-8, identify whether the following are independent events or dependent events.

3. Earning grades on your tests and earning your final semester grade.

4. Selecting a red apple and then a green apple from a bag of 6 red and 4 green apples, if no apples are returned to the bag.

5. Tossing a coin and it landing on tails and rolling a 4 on a die

6. Pick a prize winning ticket from a bowl and then picking a second winner from the bowl.

7. Choosing a shirt to wear and choosing a television show to watch.

8. Rolling a die and getting a 5 and then rolling the die and getting a 2

9. You have 10 coins … 3 quarters, 5 dimes and 2 nickels.
   a. A coin is selected and then replaced. A second coin is selected and then replaced. A third coin is selected and then replaced. Find the probability that all 3 coins were dimes.
   b. If three coins are selected at random without replacement, find the probability that all three coins are dimes.

10. A committee of 3 people is to be formed from 6 men and 4 women. Find the probability all 3 are men.

11. A bag contains 2 red, 4 yellow, and 6 blue marbles. Two marbles are drawn at random. Find the probability of each event:
   a. Both are red  
   b. Both are yellow

12. Using the above bag of marbles, find the probability that if 4 marbles are drawn they will all be blue.

13. The letters A,B,C,D are on slips of paper. Find the probability they are pulled out in alphabetical order.

14. Suppose a card is drawn at random from a standard deck of 52 playing cards. The card is put back in the deck, and a card is again drawn at random. Find the probability of each event.
   a. The first card is a 7 of hearts, and the second card is a 2 of spades.
   b. The first card is a 6 of clubs and the second card is a black face card.

15. Suppose one card is drawn at random from a standard deck of 52 playing cards. Find the probability of each event.
   a. The card is either a face card or an ace.
   b. The card is either a diamond or a black 10.

16. John has twelve CDs that are rock, eight that are jazz, and five that are classical. If three CDs are selected at random, find the probability all three are jazz.
17. The letters of the word FAVOR are each written on a slip of paper and then all five slips of paper are put into a hat. If each one of the slips of paper are removed, find the probability that they will be removed in the order so that they spell the word FAVOR?

18. The six starters for Monday nights game are Bennett, Brady, Garcia, Jones, Washington, and Young. The announcer will randomly introduce all six. What is the probability they will be introduced in alphabetical order?

19. The numbers 1 through 6 are written on separate slips of paper and put into a bag. Find the probability they will be removed one at a time and be in increasing order.

20. A bag contains 5 red marbles and 4 white marbles. A marble is to be selected, and replaced in the bag. A second selection is then made. What is the probability of selecting 2 red marbles?

21. A bag contains 5 red marbles and 4 white marbles. A marble is to be selected, and not replaced in the bag. A second selection is then made. What is the probability of selecting 2 red marbles?

22. Three letters were selected from the 26 letters of the alphabet. What’s the probability that the letter e was picked third?

23. In a class of 16 algebra 2 students, 6 students have the 2007 edition of the algebra 2 text. The other 10 students have the 2004 edition. Miss Aldrige, the teacher, randomly calls on two students.
   a. What is the probability that they both will have the 2007 edition?
   b. What is the probability that the first student called on will have the 2007 edition and the second student will have the 2004 edition?

24. Two sisters auditioned for a position to play clarinet for the Philharmonic. If 6 people in all applied and two people are selected, find the probability the two sisters will be selected.
Unit 10 Review Worksheet

1. Melinda is making sandwiches for lunch. She has white bread and wheat bread. She has turkey meat, ham meat, or roast beef.
   a. Make a tree diagram to show the different sandwich possibilities
   b. How many possible sandwiches are there?

2. How many possible different looking outfits does Danielle have? She picks one skirt from her black or red one; one blouse from her solid, flowered, or plaid; and one pair of shoes from her black or grey.

Find the value of each expression

3. \(4!\)  
4. \(\binom{4}{4}\)  
5. \(\binom{6}{4}\)  
6. \(\binom{9}{5}\)

7. Which multiple choice shows the correct formula for \(8P_2\) ?
   a. \(\frac{8!}{2!}\)  
   b. \(\frac{8!}{6!}\)  
   c. \(\frac{8!}{2!}\)  
   d. \(\frac{8!}{12!}\)

8. How many different license plates can be made by using three letters followed by four digits if letters and digits can repeat?

9. How many committees of 4 people can be selected from a group of 12 people?

10. Lauren looks at a selection of 6 CDs and can afford to buy only 2. How many possible choices does she have?

11. A shoe store carries 20 styles of shoes. The shoes come in 7 different sizes. All the shoes are available in black, brown, tan or blue. What is the number of pairs of shoes that a shoe store must stock to have one pair in each possible style, color and size?

12. How many arrangements are there of the letters
   a. EQUAL  
   b. ARKANSAS

13. How many three-letter codes, without repeats, are possible from A E # $ 3 4

14. A parade consists of a grand marshal, 9 floats and one band. The grand marshal must be first, and the band must be last. How many different arrangements are possible?

15. If you are buying 2 items from your list of mustard, mayo, catsup, relish and onions how many selections could you bring home?

16. Out of a group of 12 students and 5 teachers, 5 students and 2 teachers are selected to serve on a graduation committee. How many committees are possible?

17. How many arrangements are possible if choosing first, second and third chairs from six clarinets in a band?

18. You are going on a trip and plan on taking 6 outfits with you. How many are possible if you have 14 outfits to choose from?

19. 200 people are running a race. In how many different ways can first and second place be awarded?

20. In a bag are 7 pennies, 4 nickels and 5 dimes. What is the probability of selecting one coin and it being a penny?

21. A card is selected from a deck of 52 cards. What is the probability that it is a club or a face card?

22. A bag contains 5 blue marbles, 3 yellow and 1 green. Two marbles are pulled out of the bag without replacement. What is the probability they are both yellow?

23. There are 6 valedictorians in the class of 2007. Their names are written on slips of paper and put into an envelope. Find the probability that the announcer will remove the names and introduce them in alphabetical order?

24. A bag of M&M’s has 6 red, 4 yellow, 8 green and 5 blue candies. Find the probability that if you pick out 1 candy and eat it it will be yellow, and then pick a second candy and it will be blue.
25. The preferences of customers at a local coffee shop are shown below. What is the probability a customer orders coffee with cream?

```
Drink
  Coffee
    0.61
  Tea
    0.39

0.60  0.40
black  cream
  0.10  0.90
plain  flavored
```

26. Three numbers are selected without replacement, from 0,1,2,3,4,5,6,7,8,9. What’s the probability that the number 2 is picked second?

27. Carla has a bag containing 12 Snickers and 10 Almond Joys. She randomly gives a piece of candy to two children.
   a. What is the probability that they both will get Snickers?
   b. What is the probability that they first child will get a Snickers and the second child will get an Almond Joy?

28. If there is a 40% probability of rain on Sunday, what is the probability of no rain?

29. Identify the following as independent or dependent events.
   a. Roll a die and get a six. Toss a coin and get a head.
   b. Pick a chocolate chip cookie from an assorted pack of cookies. Pick a second chocolate chip cookie from the assorted pack.
   c. Selected a red marble from a bag of variously colored marbles, replacing it, and selecting another red marble.

30. How many arrangements of the letters MISTAKE are possible with I as the middle letter?

31. Michelle is choosing dessert between cake or pie. Her preferences are shown. The probability she will choose a piece of fruit pie is 3.6%.
   a. Find the probability of choosing pie.
   b. Find the probability of choosing cake.

```
desserts
  cake
    white  chocolate
      (37%)  (63%)
  pie
    cream  fruit
      (82%)  (18%)
```
32. The chart below shows the characteristics of a group of job applicants.

<table>
<thead>
<tr>
<th>Has a high school diploma</th>
<th>Has experience</th>
<th>Does not have experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has experience</td>
<td>54</td>
<td>27</td>
</tr>
<tr>
<td>Does not have experience</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>

If one person is selected at random, find the given probabilities:

a. P(has a diploma)  
b. P(has a diploma and experience)  
c. P(has a diploma or experience)  
d. P(has experience | has diploma)

33. A bag of candy gummy fish contains 15 red gummy fish, 10 yellow gummy fish, and 5 green gummy fish. Find the probability that if three candies were removed they would all be red.

34. John's phone number is 298-6134. Christopher knows the 7 digits in John’s phone number, but he is not sure he remembers the proper order. What is the probability that is Christopher randomly dials the seven digits that he will get them in the proper order to call John?

35. Suppose A and B are independent events, with P(A) = 0.60 P(B) = 0.25

If A and B are disjoint, find each probability

a. P(A and B)  
b. P(A or B)

36. Suppose A and B are independent events, with P(A) = 0.60 P(B) = 0.25

If A and B are not disjoint, find each probability

a. P(A and B)  
b. P(A or B)

37. A group of people were surveyed and asked what they like to do in their spare time. The results are shown below.

<table>
<thead>
<tr>
<th>Sports</th>
<th>Hiking</th>
<th>Reading</th>
<th>Shopping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>30</td>
<td>48</td>
<td>22</td>
</tr>
<tr>
<td>Male</td>
<td>87</td>
<td>62</td>
<td>40</td>
</tr>
</tbody>
</table>

If you randomly selected one individual out of the group, find the following probabilities.

a. P(sports | female)  
b. (hiking | male)  
c. P(female | shopping)  
d. P(reading or male)  
e. P(female and hiking)

38. Using the spinner, find the probabilities of the spinner landing on the following with one spin.

a. P(R)  
b. P(W or Y)  
c. P(B)

39. How many arrangements of the letters S N A C K are possible with K as the middle letter?

40. How many different 6 symbol arrangements can be made if the first 2 must be from the letters A T and the last 4 must be from 1983, with no repeats allowed.