

Name: \_\_\_\_\_

Community \_\_\_\_\_

**Math 7/Science Checklist: Q3 Weeks 9 - 11ish- March 12th-29th**

**Big Ideas:**

<p style="text-align: center;"><b>Math:</b></p> <ul style="list-style-type: none"> <li>● Statistics!</li> <li><input type="checkbox"/> Theoretical &amp; Experimental Probability</li> <li><input type="checkbox"/> Independent &amp; Dependent Events</li> <li><input type="checkbox"/> Tree Diagrams to visualize probability</li> </ul>	<p style="text-align: center;"><b>Science:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Microbes and Diseases             <ul style="list-style-type: none"> <li><input type="checkbox"/> What makes a virus different than a bacteria</li> <li><input type="checkbox"/> What is life?</li> </ul> </li> </ul>
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**Upcoming Dates:**

<u>Week 1</u>	<u>Week 2</u>	<u>Week 3ish</u>
3/16: Math Study Guide Due	<input type="checkbox"/> 3/23: ALL Quarter 3 work Due	<input type="checkbox"/> 3/26: Math assessment <input type="checkbox"/> 3/28: Seminar <input type="checkbox"/> 3/28: Math assessment corrections due <input type="checkbox"/> 3/29: No school- SPRING BREAK!!

**Shelfwork: Show All Work. Explore work is to be checked against the control and then marked complete. Complete individually unless noted with a "G"**

Lesson	Explore	Expand	Extend
<input type="checkbox"/> Theo & Exp prob HW Video <input type="checkbox"/> #1 Lesson Check-in 3/12	<input type="checkbox"/> Experimental Probability Riddle (___✓, M, 0) <input type="checkbox"/> Probability Maze! (___✓, M, 0) AND <input type="checkbox"/> Theoretical Versatile (___✓, M, 0) <b>OR</b> <input type="checkbox"/> What are the odds? (___✓, M, 0)	<input type="checkbox"/> Probability Study Guide #'s 1-14 (___%)	<input type="checkbox"/> Purple Book, Unit 8.1 p. 203-204 (___%)
Monday's work plan: (Add missing works from last checklist)		Tuesday's work plan:	
Time Estimate:		Time Estimate:	
<input type="checkbox"/> Biotech PP HW <input type="checkbox"/> #2 Lesson Check-In 3/13	<input type="checkbox"/> Biotechnology Webquest(G) (___✓, M, 0)	<input type="checkbox"/> Extracting DNA from Fruit LAB (___%) <input type="checkbox"/> GMO Seminar Article (___%)	<input type="checkbox"/> Cellular Respiration Lab (___%) <input type="checkbox"/> Choice Extension proposal (___%)
Wednesday's work plan:		Thursday's work plan:	
Time Estimate:		Time Estimate:	
<input type="checkbox"/> HW Videos Ind. & Dep. Events <input type="checkbox"/> #3 Lesson Check-In 3/15	<input type="checkbox"/> Ind. & Dep. Events Coloring (___✓, M, 0) AND <input type="checkbox"/> Ind. & Dep. Events Card sort (___✓, M, 0) OR <input type="checkbox"/> Probability- Ind. & Dep. Events (___✓, M, 0)	<input type="checkbox"/> Inferences Study guide #'s 9-12 (___%)	<input type="checkbox"/> Purple Book Unit 8,2, p. 213-214 (___%)

Friday's work plan:		Monday's work plan:	
Time Estimate:		Time Estimate:	
<input type="checkbox"/> Tree Diagrams HW Video <input type="checkbox"/> #4 Lesson Check-In 3/16	<input type="checkbox"/> Tree Diagrams, Algebra, Conditional & Independent Events <b>ODD OR EVEN</b> (___✓,M,0) <b>AND</b> <input type="checkbox"/> Counting Principle (___✓,M,0) <b>OR</b> <input type="checkbox"/> Tree Diagram Worksheet 1	<input type="checkbox"/> Making the link -Adult Signature Work (___%)	<input type="checkbox"/> Purple Book Unit 8.3 p. 225-226 (___%)
Tuesday's work plan:		Wednesday's work plan:	
Time Estimate:		Time Estimate:	
<input type="checkbox"/> Photosynthesis and Cell Respiration HW <input type="checkbox"/> #5 Lesson Check-In 3/20	<input type="checkbox"/> Photosynthesis and cellular respiration card sort and Venn diagram (___✓, M, 0)	<input type="checkbox"/> Cellular energy product (___%)	<input type="checkbox"/> Cellular Respiration Lab (___%) <input type="checkbox"/> Choice Extension proposal (___%)
Thursday's work plan:		Friday's work plan:	
Time Estimate:		Time Estimate:	
<input type="checkbox"/> Inferring Information HW <input type="checkbox"/> #6 Lesson Check-In 3/21	<input type="checkbox"/> Using Samples Card Sort (___✓, M, 0) <input type="checkbox"/> Red Probability Stations	<input type="checkbox"/> Complete Inferences Study guide (___%) <input type="checkbox"/> AND Probability Study Guide (___%)	<input type="checkbox"/> Choice purple book practice problems from Unit 8 (___%) <b>OR</b> <input type="checkbox"/> Choice purple book Apply from Unit 8
Monday's work plan:		Tuesday's work plan:	
Time Estimate:		Time Estimate:	
<input type="checkbox"/> Re-loop: #7	<input type="checkbox"/> Earth history practice with test taking strategies (___%) <input type="checkbox"/> Log into Edgenuity through the student portal page, <b>NOT NC Edcloud</b> and complete the orientation video(___✓, M, 0)		

**Homework:** *(All assignments are to be done independently and are due the next day unless noted):*

- **Monday 3/12: Biotech PP** video on EdPuzzle with guided notes
- **Tuesday 3/13: Experimental Probability** videos with guided notes on EdPuzzle
- **Wednesday 3/14: Independent Events AND Dependant Events** videos with graphic organizer on EdPuzzle
- **Thursday 3/15: Tree diagrams video** on EdPuzzle with guided notes
- **Friday 3/16:** Review and organize binder and complete missing work as needed as well as test corrections
- **Monday 3/19: Photosynthesis and Cell Respiration** video with guided notes on EdPuzzle
- **Tuesday 3/20: Inferring information from a random sample (Ratios)** video on EdPuzzle with guided notes.
- **Wednesday 3/21:** Complete missing assignments.
- **Thursday 3/22: Test corrections and late work**
- **Friday 3/23:** Review and organize binder Review Study Guide and EdPuzzle videos for the Assessment on Monday
- **Monday 3/26: Review Seminar reading for tomorrow**
- **Tuesday 3/27:** Organize binder and backpack.
- **Wednesday 3/28:** Take home only what you need and put your backpack in a safe place that you will remember. Collect supplies you will need when you return. **Be safe** and have Fun!

Lesson Requests:



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Notes and formulas:

Unit - Probability  
Lesson 1 - Video Notes Guide  
Theoretical Probability

By the end of this lesson you will be able to \_\_\_\_\_

What is Probability? \_\_\_\_\_

Probability can be represented in three ways:

- 1) \_\_\_\_\_
  - a. What value would represent an impossible situation? \_\_\_\_\_
  - b. What value would represent a certain to occur situation? \_\_\_\_\_
  - c. What value would represent a situation as likely as not to occur? \_\_\_\_\_
  
- 2) \_\_\_\_\_
  - a. What value would represent an impossible situation? \_\_\_\_\_
  - b. What value would represent a certain to occur situation? \_\_\_\_\_
  - c. What value would represent a situation as likely as not to occur? \_\_\_\_\_
  
- 3) \_\_\_\_\_
  - a. What value would represent an impossible situation? \_\_\_\_\_
  - b. What value would represent a certain to occur situation? \_\_\_\_\_
  - c. What value would represent a situation as likely as not to occur? \_\_\_\_\_

**Example 1: The Shell Game**

What is the theoretical probability that you can choose the correct shell with the ball underneath?



What is the Ratio for probability = \_\_\_\_\_

How many favorable outcomes are there in the shell game? \_\_\_\_\_

How many total outcomes are there in the game? \_\_\_\_\_

What is the probability as a fraction? \_\_\_\_\_ Decimal? \_\_\_\_\_ Percent? \_\_\_\_\_

Let's add a few more shells and balls to the game.

How many favorable outcomes are there in the shell game? \_\_\_\_\_

How many total outcomes are there in the game? \_\_\_\_\_

What is the probability as a fraction? \_\_\_\_\_ Decimal? \_\_\_\_\_ Percent? \_\_\_\_\_



## Example 2: Pick a Card

What is the theoretical probability that you can pick...

### A Red Card?

How many red cards are in a standard deck? \_\_\_\_\_

How many cards are in a standard deck? \_\_\_\_\_

What is the probability as a fraction? \_\_\_\_\_ Decimal? \_\_\_\_\_ Percent? \_\_\_\_\_

### A Black Card?

How many black cards are in a standard deck? \_\_\_\_\_

How many cards are in a standard deck? \_\_\_\_\_

What is the probability as a fraction? \_\_\_\_\_ Decimal? \_\_\_\_\_ Percent? \_\_\_\_\_

### A Spade?

How many cards with a spade suit are in a standard deck? \_\_\_\_\_

How many cards are in a standard deck? \_\_\_\_\_

What is the probability as a fraction? \_\_\_\_\_ Decimal? \_\_\_\_\_ Percent? \_\_\_\_\_

Would the probability change if you were asked for a diamond card? Explain your answer.

### A Heart or Face card?

How many heart or face cards are in a standard deck? \_\_\_\_\_

How many cards are in a standard deck? \_\_\_\_\_

What is the probability as a fraction? \_\_\_\_\_ Decimal? \_\_\_\_\_ Percent? \_\_\_\_\_

**Your Turn to Practice. [Fill in each problem using the information from the video]**

**Find the theoretical probability for each event below. Write as a fraction, decimal, and percent.**

- 1) Rolling a 6-sided die and having it land on \_\_\_\_\_.
- 2) Choosing the vegetable \_\_\_\_\_ or \_\_\_\_\_, from the choices of potato, carrots, green beans, or corn.
- 3) Getting the \_\_\_\_\_ gumball from a box of \_\_\_\_\_ green, \_\_\_\_\_ blue, \_\_\_\_\_ white, and \_\_\_\_\_ red gumballs.
- 4) Choosing a boy from a class of \_\_\_\_\_ students with \_\_\_\_\_ girls.

By the end of this lesson you will be able to \_\_\_\_\_

What is Probability? \_\_\_\_\_

What three ways can probability can be represented?

What values represent Certain, As Likely As Not, or Impossible?

Certain			
As Likely As Not			
Impossible			

**Example 1: Shooting Baskets**

Hank shoots a basket 20 times during practice. He made 15 of the shots he took. What is the experimental probability that he will make his next shot?

What ratio can we set up to solve this problem? \_\_\_\_\_

How many shots did he make? \_\_\_\_\_

How many shots did he take? \_\_\_\_\_

What is the probability he will make his next shot...

As a fraction? \_\_\_\_\_ As a decimal? \_\_\_\_\_ As a percent? \_\_\_\_\_

If Hank decides to shoot 30 more times, how many shots is he expected to make?

QUESTION: What is \_\_\_\_\_% of \_\_\_\_\_ shots?

What operation will you use to solve? \_\_\_\_\_

Answer in completed sentence. \_\_\_\_\_

## Example 2: Rolling a Die

Julius rolled a 6-sided die and recorded the results in the table. What was the experimental probability that he rolled a 5?

Number on Cube	Frequency
1	
2	
3	
4	
5	
6	

What is the ratio we can use to set up the problem? \_\_\_\_\_

How many occurrences came up with the 5? \_\_\_\_\_

How many trials were there? \_\_\_\_\_

How did you get this number? \_\_\_\_\_

What was the experimental probability he rolled a 5...

As a fraction? \_\_\_\_\_ As a decimal? \_\_\_\_\_ As a percent? \_\_\_\_\_

If Julius decides to roll the die 18 more times, how many times would he expect to land on 5?

QUESTION: What is \_\_\_\_\_ of \_\_\_\_\_ rolls?

What operation will you use to solve? \_\_\_\_\_

Answer in completed sentence. \_\_\_\_\_

**Your Turn to Practice.** [Fill in each problem by writing in the correct values from the video.]

Find the experimental probability of each event below. Write as a fraction, decimal, and a percent.

- 1) If a car factory checks \_\_\_\_\_ cars and \_\_\_\_\_ of them have defects, what is the probability the next check will have a defect?
- 2) In ten frames of bowling, Hillary was able to get a strike 3 times. What is the experimental probability that she will not get a strike if she bowls 20 more times?
- 3) You plant \_\_\_\_\_ African violet seeds and \_\_\_\_\_ of them spout. Use experimental probability to predict how many seeds will spout if you plant \_\_\_\_\_ seeds.

Unit - Probability  
Lesson 3 - Video Notes Guide  
Independent Events

By the end of this lesson you will be able to \_\_\_\_\_.

What is Probability? \_\_\_\_\_.

What three ways can probability can be represented?

1) \_\_\_\_\_ 2) \_\_\_\_\_ 3) \_\_\_\_\_

What values represent Certain? \_\_\_\_\_

What values represent As Likely As Not? \_\_\_\_\_

What values represent Impossible? \_\_\_\_\_


What are independent events? \_\_\_\_\_.

How is rolling a die an independent event?

How is flipping a coin an independent event?

Example 1: Using an Area Model

What is the probability that you can roll a \_\_\_\_\_ on a die and flip \_\_\_\_\_ up on a coin?

Outcomes for  
the 2<sup>nd</sup> event 

What is the ratio we use for probability?  
\_\_\_\_\_

Outcomes for  
the 1<sup>st</sup> event



How many outcomes do the two events  
have together?

What is the probability of the events  
occurring together?

As a fraction? \_\_\_\_\_

As a decimal? \_\_\_\_\_

As a percent? \_\_\_\_\_



### Example 2: Using Multiplication

What is the probability that you can flip \_\_\_\_\_ up on a coin and roll a \_\_\_\_\_ on a 12-sided die?

Outcomes for  
the 2<sup>nd</sup> event



Outcomes for  
the 1<sup>st</sup> event

What is the probability for the first event to occur? \_\_\_\_\_ 2<sup>nd</sup> Event to occur? \_\_\_\_\_

What operation will you use to determine the probability of these events occurring together? \_\_\_\_\_

What is the probability for these events to occur together?

As a fraction? \_\_\_\_\_ As a decimal? \_\_\_\_\_ As a percent? \_\_\_\_\_

### Example 3: With Replacement

What is the probability that you can pick a red card put it back in the deck and pick the black card?

What is the probability for the first event to occur? \_\_\_\_\_ 2<sup>nd</sup> Event to occur? \_\_\_\_\_

What operation will you use to determine the probability of these events occurring together? \_\_\_\_\_

What is the probability for these events to occur together?

As a fraction? \_\_\_\_\_ As a decimal? \_\_\_\_\_ As a percent? \_\_\_\_\_



### Example 4: With Replacement

What is the probability that you can pick the Ace of Hearts, put it back in the deck, and pick the King of Clubs?

What is the probability for the first event to occur? \_\_\_\_\_ 2<sup>nd</sup> Event to occur? \_\_\_\_\_

What operation will you use to determine the probability of these events occurring together? \_\_\_\_\_

What is the probability for these events to occur together?

As a fraction? \_\_\_\_\_ As a decimal? \_\_\_\_\_ As a percent? \_\_\_\_\_

### Math 7

### Unit - Probability

**Your Turn to Practice.** [fill in the missing information for each problem using the video]

Find the probability of the events. Write as a fraction, decimal and a percent. Round to the nearest thousandths when necessary.

- 1) Probability of rolling an \_\_\_\_\_ number on a standard die and flipping a \_\_\_\_\_.
- 2) Probability of choosing two vowels, with replacement, from the word \_\_\_\_\_.
- 3) Probability of picking an \_\_\_\_\_ number, putting it back, and then picking a multiple of \_\_\_\_\_, from the numbers \_\_\_\_\_.
- 4) Probability of rolling a die three times, all coming up \_\_\_\_\_ numbers.
- 5) Probability of picking a red gumball, replace it and then choose a blue gumball, from \_\_\_\_\_ red and \_\_\_\_\_ blue gumballs.

**Unit - Probability**  
 Lesson 4 - Video Notes Guide  
 Dependent Events

By the end of this lesson you will be able to \_\_\_\_\_.

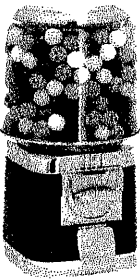
What are dependent events? \_\_\_\_\_.

How does a gumball machine help explain dependent events?

**Example 1: Without Replacement**

What is the probability that you can get two red gumballs from the machine?

- \_\_\_ blue
- \_\_\_ yellow
- \_\_\_ pink
- \_\_\_ red
- \_\_\_ green
- \_\_\_ white
- \_\_\_ Total



Probability for  
the 1<sup>st</sup> event

Probability for  
the 2<sup>nd</sup> event

How did you determine the probability for the 1<sup>st</sup> event?

How did you determine the probability for the 2<sup>nd</sup> event?

What is the probability for these events to occur together?

As a fraction? \_\_\_\_\_ As a decimal? \_\_\_\_\_ As a percent? \_\_\_\_\_

**Example 2: Without Replacement**

What is the probability that you can get the red gumball and then the blue gumball?

Probability for  
the 1<sup>st</sup> event

Probability for  
the 2<sup>nd</sup> event

How did you determine the probability for the 1<sup>st</sup> event?

How did you determine the probability for the 2<sup>nd</sup> event?

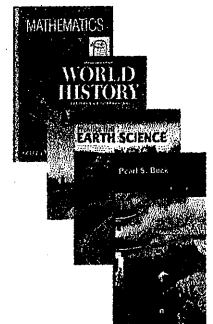
What is the probability for these events to occur together?

As a fraction? \_\_\_\_\_ As a decimal? \_\_\_\_\_ As a percent? \_\_\_\_\_

**Example 3: Without Replacement**

Probability for  
the 1<sup>st</sup> event

Probability for  
the 2<sup>nd</sup> event



You have four homework assignments to complete in each of your core classes. What is the probability that you will choose to complete your math homework first and your science homework second?

How did you determine the probability for the 1<sup>st</sup> event?

How did you determine the probability for the 2<sup>nd</sup> event?

What is the probability for these events to occur together

As a fraction? \_\_\_\_\_

As a decimal? \_\_\_\_\_

As a percent? \_\_\_\_\_

#### Example 4: Without Replacement

Two girls and a boy are taking a test. What is the probability that they will finish in the order girl, boy, girl?

Probability for  
the 1<sup>st</sup> event

Probability for  
the 2<sup>nd</sup> event

Probability for  
the 3<sup>rd</sup> event

How did you determine the probability for the 1<sup>st</sup> event?

How did you determine the probability for the 2<sup>nd</sup> event?

How did you determine the probability for the 3<sup>rd</sup> event?

What is the probability for these events to occur together?

As a fraction? \_\_\_\_\_

As a decimal? \_\_\_\_\_

As a percent? \_\_\_\_\_

**Your Turn to Practice.** [Fill in the missing information for each problem using the video.]

Find the probability of the events. Write as a fraction, decimal and a percent. Round to the nearest thousandth.

- 1) Probability of choosing two vowels, without replacement, from the word \_\_\_\_\_.
- 2) Probability of picking an odd number, not putting it back, and then picking a multiple of 10, from the numbers \_\_\_\_\_.
- 3) Probability of picking two red gumballs, without replacement, from \_\_\_\_\_ red and \_\_\_\_\_ blue.
- 4) \_\_\_\_\_ boys and \_\_\_\_\_ girls are running in a race. What is the probability that the order of finishers will be in the order of \_\_\_\_\_?

Unit - Probability  
Lesson 5 - Video Notes Guide  
Tree Diagrams

By the end of this lesson you will be able to \_\_\_\_\_.

**Example 1: Sundae Shoppe**

Construct a tree diagram of the following ice cream choices: You can have vanilla, chocolate, or strawberry ice cream and you can have either hot fudge or caramel topping.

Choice #1

Choice #2

How can probability be represented?

Question: What is the probability that you will choose \_\_\_\_\_ and \_\_\_\_\_  
\_\_\_\_\_?

**Example 2: Swim Shop**

You are buying swim trunks from a store. You have to choose a size, color, and style. You can choose between Small, Medium, Large for size, blue, pink, red, brown for color, and patterned or solid for style. Draw a tree diagram to count the number of choices.

Decision #1

Decision #2

Decision #3

How many outcomes do you have with the first decision? \_\_\_\_\_

How many outcomes do you have when you change your mind on the first decision? \_\_\_\_\_

How many outcomes do you have when you change your mind again on the first decision? \_\_\_\_\_

How many total outcomes are there in this situation? \_\_\_\_\_

Question: What is the probability that you will choose a \_\_\_\_\_?

Question: What is the probability that you will choose a \_\_\_\_\_?

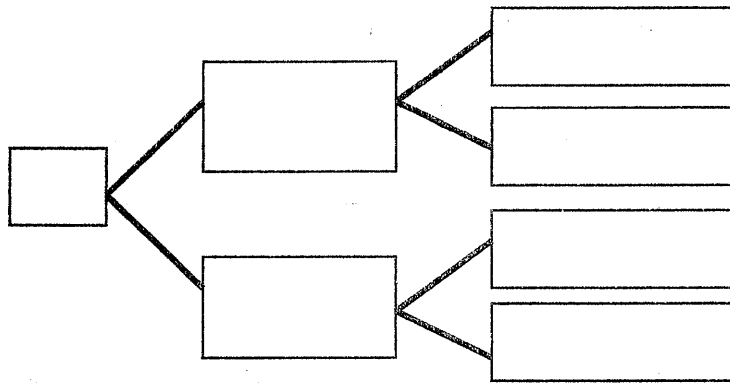
**Example 3: Soccer Game**

You are off to soccer, and love being the Goalkeeper, but that depends who is the Coach today.

- With Coach Sam the probability of being Goalkeeper is \_\_\_\_\_.
- With Coach Alex the probability of being Goalkeeper is \_\_\_\_\_.
- Sam is Coach more often with a probability of \_\_\_\_\_.

So, what is the probability you will be a Goalkeeper today?

What is the probability that if Sam is coach, you will be goalie? \_\_\_\_\_



What does the probability of Sam being coach and not being the coach add up to? \_\_\_\_\_

What does the probability of you being goalie and not being the goalie add up to? \_\_\_\_\_

What is the probability that if Alex is coach, you will be goalie? \_\_\_\_\_

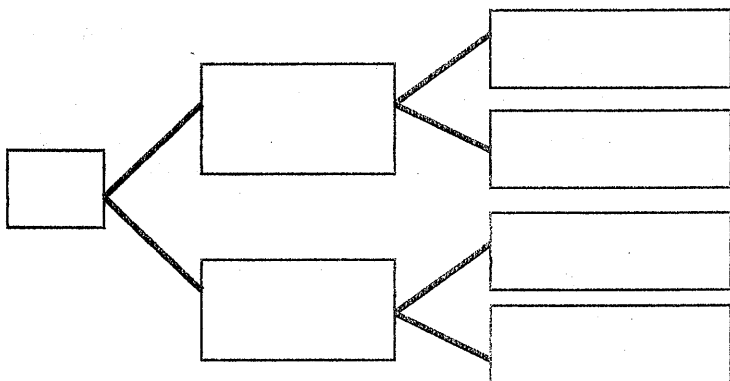
What is the probability that you will be the goalie today? \_\_\_\_\_

**Example 4: Don't Be Late**

Jack wakes up late on average 3 day in every 5.

- If he wakes up late the probability that he'll be late for school is \_\_\_\_\_.
- If he wakes up on time, the probability that he'll be late for school is \_\_\_\_\_.

So, what is the probability you will Jack will get to school on time?



What does the probability of Jack waking up late and waking on time need to add up to? \_\_\_\_\_

What does the probability of Jack being tardy and not tardy need to add up to? \_\_\_\_\_

What is the probability that if Jack wakes up late he will be on time? \_\_\_\_\_

What is the probability that if Jack wakes up on time he will be late? \_\_\_\_\_

What is the probability that Jack will get to school on time? \_\_\_\_\_

**Your Turn to Practice.** Create a tree diagram to help you solve each probability problem.

- 1) You have three tops in the colors green, blue, and orange. You also have 4 bottoms in the colors brown, black, white and grey. What is the probability that you will choose a \_\_\_\_\_?
- 2) Two dice are thrown together. What is the probability that one die will show an \_\_\_\_\_ number and the other die will show a \_\_\_\_\_?
- 3) Justine's favorite meal is pasta followed by ice cream for dessert. Justine's mom cooks pasta 35% of the time.
  - If she cooks pasta the probability Justine gets ice cream is \_\_\_\_\_.
  - If she doesn't cook pasta, the probability that Justine gets ice cream is \_\_\_\_\_.

What is the probability that Justine will get ice cream for dessert?

When you have a good representative sample, you can \_\_\_\_\_.

This is important because \_\_\_\_\_.

Examples (assuming good sampling methods):

- 1) Your school cafeteria is going to make some changes to the menu. They ask 150 students if they would like to have pizza as an option every day. One hundred five students answered, "Yes." If the school has 900 students, how many would you expect to answer "Yes" if asked the same question?
- 2) Your PTA is going to pay for a cultural arts assembly. They ask 200 students what kind of assembly they would prefer. Seventy-five asked for a speaker, fifty-eight asked for an animal show, and the rest said that they would prefer an acrobatic show. If there are 1100 students in the school, about how many would you expect to want to see an animal show?
- 3) A team of researchers wants to study the travel patterns of squirrels. They capture and tag 150 squirrels with a tracking device. Over the next 6-months, they collect data off of the tracking devices. Half of the squirrels keep within 10 miles of the area where they were tagged. Fifty squirrels travel within 15 miles, and the remaining twenty-five travel over 20 miles from where they were tagged. Based on this data, how many squirrels would you expect to travel over 20 miles in a population of 1,100 squirrels.

Now you try:

- 1) Your school is going to buy some new physical education equipment. Of a survey of 225 students, one-hundred students would like new basketballs, seventy-five would like new hockey equipment, and the remaining would like new footballs. Based on this data, how many students would you expect to like new basketballs in a school of 1,000 students?
- 2) Your school cafeteria is going to look at adding a salad bar to the lunch line. Of the 200 students they surveyed, 125 students said that they liked that idea. If the school has 1300 students, about how many would you expect to like the idea of a salad bar?

Name: \_\_\_\_\_ Date Due: \_\_\_\_\_

### Making the Link: Sample Spaces

Directions:

- Students, once you complete the problem you must provide a written explanation. Then, go ahead and teach/explain it to your parent/guardian.
- Parents/Guardians: Sit back and Learn :)

A pizza company makes pizza in three different sizes: small, medium, and large. There are four possible toppings: pepperoni, sausage, green pepper, and mushroom. How many different kinds of pizza with one topping are available?

Explain how you did the problem.

**Clothes** Ardell has four suit jackets (white, blue, green, and tan) and four dress shirts in the same colors. How many different jacket/shirt outfits does Ardell have?

1. Draw a Tree Diagram showing Ardell's possible jacket/shirt outfits.
2. How many jacket/shirt outfits does Ardell have? \_\_\_\_\_
3. Suppose he grabs a suit jacket and a dress shirt without looking. what is the probability that they will not be the same color?

Tree Diagram:

Explain how you did each piece of Ardell's clothing problem:

**Parents/Guardians**

Please check the following as appropriate

- The student explained his/her reasoning clearly. I understood the strategy used.
- The student struggled explaining his/her reasoning clearly so that I could understand.
- I had to guide the student in their reasoning and explanation.

**Questions/Comments:**

SIGNATURE: \_\_\_\_\_



# Biotechnology Lesson

Biotechnology Definition:

Three Types of Biotechnology:

- 1.
- 2.
- 3.

Traditional:

- 1.
- 2.

Modern:

- 1.
- 2.

Effect on our Lives:

Cellular Energy

What is Food?  
1.  
2.

Cellular Respiration  
1.  
2.  
3.

Cell Growth  
1.  
2.  
3a.  
3b.  
3c.

Plants and Food  
1.  
2.

Student:

Class:

Date:

TEST NAME: Williams MS 7 Inferences and Statistics SP A&B  
TEST ID: 2244191  
GRADE: 07 - Seventh Grade  
SUBJECT: Mathematics  
TEST CATEGORY: School Assessment

1. A research group wants to know what types of car accessories drivers prefer. The research group will survey 1000 people. Which group would be BEST to use as a sample?
  - A. employees at a car repair shop
  - B. people who answered the phone
  - C. drivers who stopped for gas at a service station
  - D. high school students who just got their driver's licenses
  
2. A national study showed that 33.7% of boys and 28.3% of girls are involved in sports after school. Ethan concluded that more boys than girls are involved in after-school activities. Why might his conclusion be incorrect?
  - A. He over-generalized by thinking of sports as the only after-school activity.
  - B. He assumed a large group of boys and a small group of girls were studied.
  - C. He did not name a specific activity in his conclusion.
  - D. He misinterpreted the percent of boys who were involved in sports.
  
3. An owner of a pizza restaurant surveyed customers about the delivery service of the restaurant. Which method would give the owner the MOST accurate results?
  - A. Survey a random group of customers who have pizza delivered from 7 p.m. to 8 p.m.
  - B. Survey a random group of customers who have pizza delivered on the first two Fridays of the month.
  - C. Survey all customers who ordered pizza delivery within a certain radius of the restaurant in a given week.
  - D. Survey a group of customers who ordered pizza delivery on randomly selected streets in the same city as the restaurant.
  
4. La Shan wanted to find the most popular type of music among the 200 students at her school. She didn't want to ask all 200, so she decided to ask 20 representative students. Which group should she survey?
  - A. 20 girls in the gym
  - B. 20 students at the football game
  - C. 2 friends in each of the school's 10 classes
  - D. 2 students at random from each of the school's 10 classes

5. Mrs. Hawkins is researching high school students' preferences for types of movies. She will collect data from their opinions about five, pre-selected movies. Which is the most appropriate method Mrs. Hawkins to gather data for her research?

- A. interview every athlete on the basketball team
- B. survey every sophomore in the Spanish club
- C. interview every 6th person in the library
- D. survey every 9th person in the cafeteria

6. Which BEST represents a sampling error?

- A. A survey of dog owners to find out their favorite brand of dog food
- B. A survey of students in a school to find out their favorite lunch item
- C. A survey of people at a comedy movie to find out their favorite type of movie
- D. A survey of teachers to find out their years of teaching experience in the school

7. Camp Pine Tree is planning a reunion jamboree. They survey three random groups of former campers about possible activities. The table shows the results from the final survey question.

**Survey Question: Which activity would be the most fun?**

Activity	Group 1	Group 2	Group 3
Canoe Race	12	9	10
Talent Show	15	13	5
Competitive Ropes Course	6	12	13
Team Swimming Competition	7	6	12
<b>Total Responses</b>	<b>40</b>	<b>40</b>	<b>40</b>

Based on the responses, which activity is the LEAST popular?

- A. canoe race
- B. talent show
- C. competitive ropes course
- D. team swimming competition

8. In a random survey of 300 people about the kind of apples they preferred, 178 said they preferred red apples. Based on these results, how many people out of 4500 would they prefer red apples?

- A. 1830
- B. 2670
- C. 3084
- D. 4322

9. Tina and Craig have a birdfeeder in their backyard. They decide to record the number of bird visits at different times over a period of five days. Their results are in the table below.

**Bird Visits to a Feeder**

	7 a.m.	10 a.m.	1 p.m.	4 p.m.	7 p.m.
Day 1	15	8	1	3	12
Day 2	21	6	4	8	14
Day 3	19	10	6	7	11
Day 4	25	2	2	9	14
Day 5	20	7	9	11	17

Based on the data in the table, what could Tina and Craig infer about the birds visiting their feeder?

- A. The birds do not need to eat during most of the day.
- B. The birds need to eat the same amount all day long.
- C. The birds need to eat most early and late in the day.
- D. The birds show no clear pattern in their eating habits.

10. The activity committee for Fairway Middle School is choosing a movie for the All School Fun Night. They use the following online survey of random moviegoers to consider four possible movies.

**Random Moviegoers Were Asked: Did You Like the Movie?**

Movie	Percentage That Liked the Movie		
	Ages 7-10	Ages 11-15	Ages 16 and up
Mission to Mimas	41%	53%	81%
Pond World	80%	52%	31%
Roller Band	34%	79%	22%
Triassic Leap	77%	65%	59%

The committee wants to pick a movie that most of the middle school students will like. Based on the information in the table, which movie should they choose?

- A Mission to Mimas
- B Pond World
- C Roller Band
- D Triassic Leap

11. The head of the student council at a school with 200 total students conducts a survey among 30 randomly selected students. In the survey, he asks each student's first choice for an after-school activity. Basketball is the first choice for 6 of the students. Based on these survey results, how many students at the school would be expected to select basketball as an after-school activity?

12. As part of a science project, students observe the behavior of bees at a hive. Over a 15-minute period, 50 bees are observed as they leave the hive. The students note and record the direction each bee travels. They create a table of their results.

**Directions Bees Travel From the Hive**

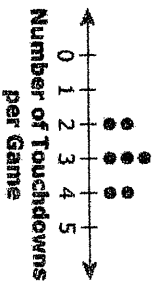
Direction	Number of Bees
North	15
South	20
East	5
West	10

Over a 12-hour period, the students estimate that 2,400 bees will leave the hive. How many of the bees should they expect to travel west?

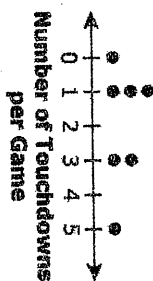
- A 240
- B 480
- C 720
- D 960

13. The graphs below show the number of touchdowns each of two teams scored during the last football season.

**LIIONS**



**TIGERS**



What is the approximate difference between the means of the teams' touchdowns in terms of the Lions' Mean Absolute Deviation?

- A 0.7
- B 1
- C 1.75
- D 3

14. The lists below show the weights, in ounces, of fish caught and released back into the water by Joanna and Manuel.

- Weights of Joanna's fish: 16, 20, 23, 28, 33
- Weights of Manuel's fish: 22, 22, 26, 30, 35

Approximately how many times the difference between the mean weight of Manuel's fish and the mean weight of Joanna's fish is the range of the weights of Manuel's fish?

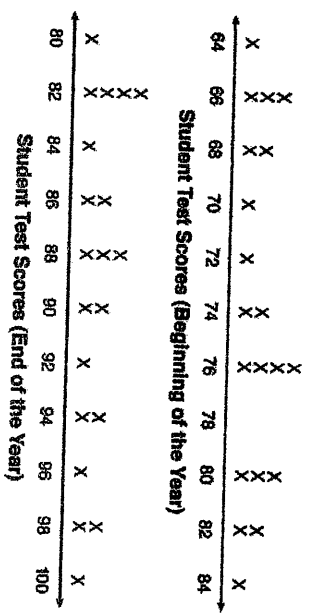
- A. 3
- B. 4
- C. 13
- D. 17

15. A teacher was comparing two sets of quiz scores shown below.

Quiz Scores	
Quiz 1	Quiz 2
70	75
91	82
85	78
97	96
73	92
74	79
77	90
83	88

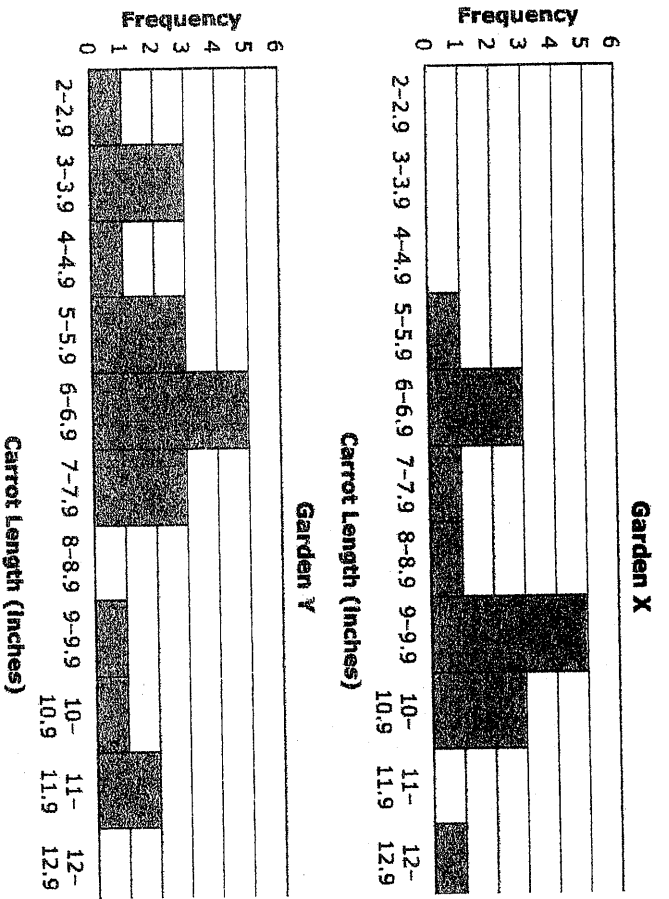
- What reasonable conclusion can be drawn from the data?
- A. The mean of Quiz 1 scores is greater than the mean of Quiz 2 scores, but the variability is the same.
  - B. The mean of Quiz 2 scores is greater than the mean of Quiz 1 scores, but the variability is the same.
  - C. The variability of Quiz 1 scores is greater than the variability of Quiz 2 scores, but the mean is the same.
  - D. The variability of Quiz 2 scores is greater than the variability of Quiz 1 scores, but the mean is the same.

16. Mrs. Schultz gave her students a math fact test at the beginning of the school year and again recorded the grades for each of her 20 students. She gave the same quiz at the end of the year and again recorded the grades for each student. The grades for both quizzes are displayed below.



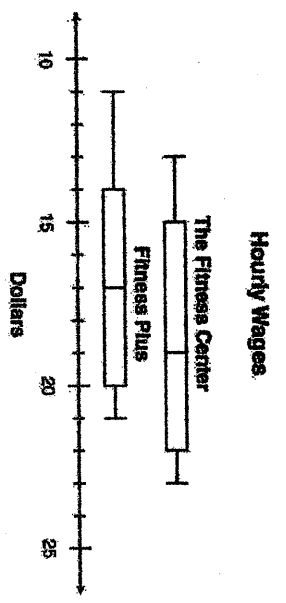
- How many points higher was the average score for the second test than the first test?
- A. 13
  - B. 14
  - C. 15
  - D. 16

17 Carrots were grown in two gardens. In Garden X, the mean carrot length was 9.5 inches and the absolute deviation was 2 inches for both gardens.



- Based on the data, which statement is true?
- A The mean carrot length in Garden Y is higher than in Garden X by about 3 times the mean absolute deviation.
  - B The mean carrot length in Garden Y is higher than in Garden X by about 1.5 times the mean absolute deviation.
  - C The mean carrot length in Garden Y is lower than in Garden X by about 3 times the mean absolute deviation.
  - D The mean carrot length in Garden Y is lower than in Garden X by about 1.5 times the mean absolute deviation.

18 The box-and-whisker plots summarize the hourly wages of employees at two different fitness clubs.



- Based on the box-and-whisker plots, which statement must be valid?
- A Fitness Plus has a smaller spread in the upper 25% of the hourly wages than The Fitness Center.
  - B Fitness Plus has a smaller spread in the middle 50% of the hourly wages than The Fitness Center.
  - C The Fitness Center has more employees earning an hourly wage of \$17 than Fitness Plus.
  - D The Fitness Center has a larger range in employee hourly wages than Fitness Plus.

19 An amusement park debuted a new roller coaster this season, and Peter, the park manager, is interested in the number of people who are riding it. The two data sets below represent the number of riders during the first two weeks of June.

DAY	Sun	Mon	Tue	Wed	Thurs	Fri	Sat
Week 1	4,100	4,100	4,400	4,200	4,500	5,000	8,700
Week 2	4,800	2,300	2,300	2,500	2,200	4,800	4,700

Rather than look at all those numbers, Peter wants to select a measure of central tendency that he can use to compare the attendance from week to week. Peter understands that many visitors want to ride the most popular attractions; therefore, he does not want outlier data to have too great an impact.

Given that consideration, which measure of central tendency should Peter use to compare the attendance of week 1 to the attendance of week 2?

- Peter should compare the mean attendance of week 1 to the mean attendance of week 2.
- Peter should compare the mean attendance of week 1 to the median attendance of week 2.
- Peter should compare the median attendance of week 1 to the mean attendance of week 2.
- Peter should compare the median attendance of week 1 to the median attendance of week 2.

20 A student records the change in height, measured in centimeters (cm), of four plants for a science experiment. After several weeks, she uses statistics to summarize her data. Which table shows statistics for the plant with the greatest variation in height since the beginning of the experiment?

A

Plant One	
Median	1.9 cm
Minimum	5.0 cm
Maximum	16.5 cm

B

Plant Two	
Median	2.1 cm
Minimum	4.9 cm
Maximum	16.2 cm

C

Plant Three	
Median	1.9 cm
Minimum	4.7 cm
Maximum	16.4 cm

D

Plant Four	
Median	2.0 cm
Minimum	5.1 cm
Maximum	16.3 cm



21. The chart below shows the number of miles Sam drove each day for two weeks.

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Week 1	30	26	48	34	42	25	48
Week 2	32	23	50	32	44	23	218

What is the **approximate** difference in average daily miles between the two weeks?

- A. 96  
B. 48  
C. 34  
D. 24

22. Stephanie recorded the time, in minutes, she took to walk from home to work.

{15, 16, 18, 20, 21}

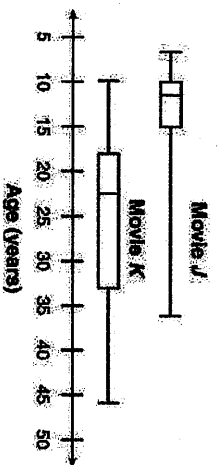
She also recorded the time, in minutes, she took to walk from work to home.

{14, 21, 21, 25, 27}

Based on the data she collected, what is the **BEST** conclusion Stephanie can make?

- A. The range of times for walking to work is more than for walking home.  
B. The range of times is the same for walking to work and walking home.  
C. Stephanie's walk times are more spread out coming home than going to work.  
D. Stephanie's walk times are more spread out going to work than coming home.

23. The box plots shown represent the ages of a random sample of 100 people who attended Movie J and 100 people who attended Movie K.



Which statement **BEST** compares the ages of the people attending Movie J and Movie K?

- A. The median age of the people attending Movie J is about 2 times the median age of the people attending Movie K.  
B. The median age of the people attending Movie J is about 3 times the median age of the people attending Movie K.  
C. The interquartile range of the ages of the people attending Movie J is about  $\frac{1}{3}$  the interquartile range of the ages of the people attending Movie K.  
D. The interquartile range of the ages of the people attending Movie J is about  $\frac{1}{3}$  the interquartile range of the ages of the people attending Movie K.

24. A photographer is planning a group picture of all the students at a middle school. She wants to keep each homeroom class together and arrange the students in each class, by height, from tallest to shortest. Which statement identifies the best measure for comparing and organizing the homeroom classes?

- A. Use the minimum student height from each class.  
B. Use the maximum student height from each class.  
C. Use the mean of the student heights from each class.  
D. Use the range of the student heights from each class.

Student: \_\_\_\_\_  
Class: \_\_\_\_\_  
Date: \_\_\_\_\_

1. There are 6 pink, 2 black, 3 orange, and 3 green jelly beans in a bag. If one jelly bean is selected from the bag at random, which color jelly bean is **LEAST** likely to be selected?

- A. black
- B. green
- C. orange
- D. pink

2. There are 52 cards in a deck. They are numbered 1 - 13 in four color groups: red, yellow, blue, and green. What is the likelihood of drawing a blue 4 on the first draw?

- A. likely
- B. certain
- C. unlikely
- D. impossible

3. Victoria has a bag with orange, yellow, and blue chips in it. Without looking, Victoria reaches into the bag and removes a chip. She records the color and returns the chip to the bag. Victoria performs this experiment 20 times. The table shows the data she collects.

**Chip Experiment**

Chip Color	Number of Times Selected
Orange	9
Yellow	5
Blue	6

Based on the information in the table, how many orange chips should Victoria expect to select out of the bag after repeating this experiment 80 times?

- A. 36
- B. 44
- C. 65
- D. 720

TEST NAME: Williams MS 7 Probability SG

TEST ID: 2245087

GRADE: 07 - Seventh Grade

SUBJECT: Mathematics

TEST CATEGORY: School Assessment

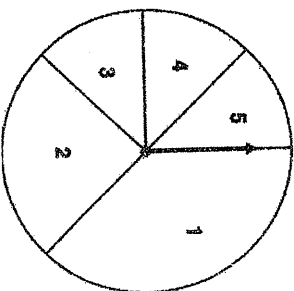
- 4 The table shows the results of the rolls Sara made with a fair number cube.

Number Results	
Number	Times Rolled
1	6
2	3
3	0
4	3
5	5
6	4

Using these results, which number will MOST likely land face up on the next roll?

- A 1  
B 3  
C 5  
D 6

- 5 For a probability experiment, Larry spins the spinner below 200 times.



In the spinner above, the section labeled "2" is twice as large as each of the sections labeled "3," "4," and "5"; the section labeled "1" is three times as large as each of the sections labeled "3," "4," and "5." About how many times should Larry expect to land on "1"?

- A 100  
B 75  
C 40  
D 25

- 6 Loretta places 20 red tiles in a bag. How many blue tiles must be added to the bag to make the probability of randomly drawing a red tile equal to  $\frac{1}{10}$ ?

- A 160  
B 180  
C 200  
D 220

- 7 A deck of cards contains 13 As, 13 Bs, 13 Cs, and 13 Ds. What is the probability of randomly selecting one card that is a C?

- A  $\frac{1}{13}$   
B  $\frac{13}{52}$   
C  $\frac{26}{52}$   
D  $\frac{12}{13}$

- 8 Jennifer rolled a fair number cube, numbered 1 through 6. What is the probability that she rolled a number other than 4?

- A  $\frac{1}{6}$   
B  $\frac{1}{5}$   
C  $\frac{1}{3}$   
D  $\frac{5}{6}$

9. This table shows the results of drawing a playing card from a bag without looking.

Playing Card	Times Drawn
♥	8
♣	3
♠	5
♦	4

Using these results, what is the probability that a diamond will be drawn next?

- A  $\frac{1}{5}$   
 B  $\frac{1}{4}$   
 C  $\frac{3}{5}$   
 D  $\frac{4}{5}$

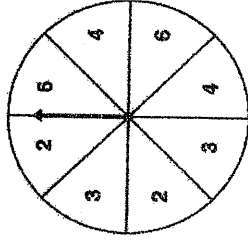
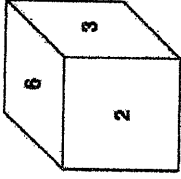
10. Alex flips a coin 20 times. The coin lands on tails 8 times. What is the experimental probability of the coin landing on heads?

- A 0.2  
 B 0.4  
 C 0.5  
 D 0.6

11. At Taylor Street School, 40% of the students bought lunch in the cafeteria today. Of the students who bought lunch in the cafeteria today, 30% chose pizza as their entree. If a student is chosen at random, what is the probability that she or he bought lunch in the cafeteria and chose pizza as an entree?

- A 10%  
 B 12%  
 C 35%  
 D 70%

12. Jonah and Mike are playing a game with a fair number cube with faces numbered 1 to 6 and a spinner, shown below. In order for Jonah to advance to the next level, he must roll an even number on the number cube and spin an even number on the spinner.



What is Jonah's chance of advancing?

- A  $37\frac{1}{3}\%$   
 B 50%  
 C  $66\frac{2}{3}\%$   
 D 75%

- 13 A group of friends is going to play soccer, baseball, or basketball in the morning and then tennis or baseball in the afternoon.

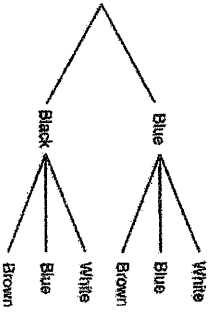
**Sports Played**

	Tennis (T)	Baseball (B)
Soccer (S)	ST	SB
Baseball (B)	BT	BB
Basketball (A)	AT	AB

What is the probability that the friends will play soccer?

- A  $\frac{2}{3}$   
 B  $\frac{1}{3}$   
 C  $\frac{1}{4}$   
 D  $\frac{1}{6}$

- 14 The diagram below shows that Sean has two pairs of jeans (one blue and one black) and three shirts (one white, one blue, and one brown) to choose from.



How many different choices of outfits, consisting of one pair of jeans and one shirt, does Sean have?

- A 2  
 B 3  
 C 5  
 D 6

- 15 A probability experiment involves a bag of 3 marbles. Two of the marbles are black (B) and one is white (W). Which diagram represents one possible outcome if one marble at a time is taken from the bag without replacement?

- A B + W → W  
 B B → B → W  
 C B + B + B  
 D W → W → W

- 16 Cindy (C), Matt (M), Dan (D), and Ana (A) will be singing songs together on stage. If only 2 of these individuals will be singing together at any one time, which table below lists all the singing combinations possible?

A Singing Combinations

C and M
D and A
M and D

B Singing Combinations

D and A
A and M
M and C
C and D

C Singing Combinations

C and M
M and D
D and A
A and M

D Singing Combinations

C and M
M and D
D and A
A and D

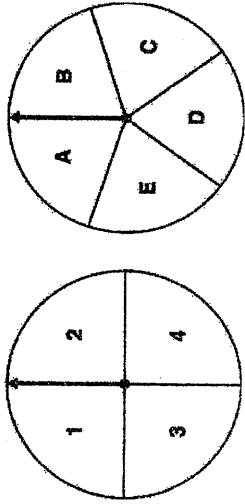
17 Bobby is designing a simulation to answer the question below.

If 21% of the customers at a restaurant order fish, what is the probability that the next 3 customers in a row will order fish?

Which design using red marbles to represent customers who order fish is BEST for the simulation?

- A randomly select 3 marbles from 21 red marbles and 79 green marbles
- B randomly select 3 marbles from 63 red marbles and 37 green marbles
- C randomly select 3 marbles from 7 red marbles and 93 green marbles
- D randomly select 3 marbles from 1 red marble and 99 green marbles

18 There is a 25% chance of rain on Saturday and a 40% chance of rain on Sunday. Matthew designed a simulation to predict the probability of rain on both Saturday and Sunday. He used two fair spinners, as shown below, for the simulation.



Matthew's simulation consists of spinning the arrow on each spinner exactly one time.

- "1" on the first spinner represents the chance of rain on Saturday.
- "A" and "B" on the second spinner represent the chance of rain on Sunday.

Matthew conducted his simulation 25 times. His results are shown in the chart.

4B	1D	2D	3C	2E
1A	2B	2C	2C	1C
4E	3B	4E	1B	2D
4B	4E	2C	2C	4C
3D	1B	3C	2A	4E

Based on the results of Matthew's simulation, what is the probability of rain on both Saturday and Sunday?

- A 4%
- B 12%
- C 20%
- D 24%