Christina School District Assignment Board

Student's First & Last Name _____ Student ID/Lunch # _____ School_____ Grade_____

Grade Level: 10th

Week of June 1st, 2020

	Day 1	CSD PD	Day 2	Day 3	Day 4
ELA	This week you will read blogs in order to become a blog writer ---------- What do you already know about blogs? Have you ever read a blog? Think of a blog you've read and explain what it was about. Why did you choose to read it? Read **"What is A Blog Anyway?"** As you read, annotate important details. Summarize your understanding in 12 words exactly.		Read the blog sample 1. **How to Make an Omelet As** you read and make notes. Underline things you find interesting. Complete the graphic organizer for the blog	Read the blog sample 2. **"Help Your Child …** **"**As you read, make notes. Underline things you find interesting. How is this blog different/ similar to blog 1? Complete the graphic organizer for the blog	Read the blog samples 2. **"The Main Event**". As you read, make notes. Underline things you find interesting. How is this blog different/ similar to blogs 1 and 2. Complete the graphic organizer for the blog. **Challenge:** Create your own Blog
Math (IM2)	*Permutations and Combinations* Answer "Which One Doesn't Belong?" and justify your choice. *(attached)* Read Concept Summary:		Complete Permutations and Combinations Worksheet 2 #1-6. (attached) Refer to Concept Summary if needed.	Complete Permutations and Combinations Worksheet 3 #1-5. (attached) Refer to Concept Summary if needed.	Complete Permutations and Combinations Worksheet 4 #1-7. (attached) Refer to Concept Summary if needed.

Christina School District Assignment Board

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		Permutations and Combinations to complete Permutations and Combinations Worksheet 1 #1-3. (attached)				
Science		**Consume or Be Consumed: Breaking Down the Structure of a Food Web (part 1):** Read article. In GREEN, highlight or underline information about the role of producers in providing energy for an ecosystem. In YELLOW, highlight or underline information about the role of consumers transferring energy in an ecosystem. In BLUE, highlight or underline information about how the number of organisms changes based on different feeding levels.		**Consume or Be Consumed: Breaking Down the Structure of a Food Web (part 2):** Reread article and/or notations as necessary. Write your best answer to the following: All living organisms are part of one or more food chains. Explain the different trophic levels found in an ecosystem. Then, describe how biomass moves through the trophic levels as well as how the biomass of an ecosystem remains in balance. Finally, relate human activities to the process of bioaccumulation and how that varies with each level in the food web.	**Life Cycles: What is an Ecosystem? (part 1):** Read article. In YELLOW, highlight or underline information about how energy is transferred through different trophic levels in an ecosystem. In GREEN, highlight or underline information about how nutrients are cycled through an ecosystem. In BLUE, highlight or underline information about what can happen to disrupt these delicate ecological relationships.	**Life Cycles: What is an Ecosystem? (part 2):** Reread article and/or notations as necessary. Write your best answer to the following: An ecosystem consists of many different living and nonliving things. Choose one producer, one primary consumer, one secondary consumer, and one decomposer. Describe how they interact to form a food chain. In addition, explain how energy is transferred from the producers up through secondary consumers.
Social Studies	**Civics**	Complete Activity 6 and Activity 7 from the document titled, "The Fourth Amendment- Search & Seizure"		Complete Activity 8 from the document titled, "The Fourth Amendment- Search & Seizure"	Complete Activity 9 from the document titled, "The Fourth Amendment- Search & Seizure"	Complete Activity 10 from the document titled, "The Fourth Amendment- Search & Seizure"
	Economics	Complete Activity 1, Questions 1 & 2 from the document titled, "The Great Inflation"		Complete Activity 1, Questions 3 - 5 from the document titled, "The Great Inflation"	Complete Activity 1, Question 6 and Activity 2, For Further Discussion Question 1 from the document titled, "The Great Inflation"	Complete Activity 2, Visual Questions from the document titled, "The Great Inflation"

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What Is A Blog Anyway?

You've seen the word, you've seen the websites and you may even have one. But have you ever wondered: What's the big deal about blogs?

To make sense of blogs, you have to think about the news and who makes it. We'll look at news in the 20th vs. the 21st century to make our point. In the 20th century, the news was produced professionally. When news happened, reporters wrote the stories and a tiny group of people decided what appeared in a newspaper or broadcast. Professional news was mainstream: general and limited.

The 21st century marked the point where news became both professional and personal. A new kind of web site called a weblog or blog came onto the scene that let anyone be a reporter and publisher - often for free. As blogs became popular, they created millions of news sources and gave everyone an audience for their own version of news. Of course, we're using the word "news" loosely. But really - isn't everything news to someone?

With a blog...A business owner can share news about his business. A mother can share news about her family. A sport's star can share news with fans. These people are all "bloggers".

How did this happen? Well, blogs made sharing news on the web easy. Anyone with an idea can start a new blog with the click of a button and share news minutes later. Here's how blogs work.

Blogs are websites that are organized by blog posts - these are individual news stories, like articles in the paper. Bloggers simply fill out a form and with the click of a button, the blog post appears at the top of the web page, just above yesterday's news. Over time, the blog becomes a collection of these posts, all archived for easy reference.

Also, each blog post can become a discussion through comments left by readers. Blogs make the news a two-way street. Additionally, Bloggers often work together. In addition to comments, you'll read each other's posts, quote each other and link your blogs together. This creates communities of bloggers that inspire and motivate each other.

Whether it's their ease of use or the opportunities they offer, blogs have been adopted in a very big way. Since 2003, there have been over 70 million blogs created, each with its own version of news. So, the big deal about blogs is that they gave people like you the power of the media and creates a personal kind of news that appeals to a high number of small audiences.

Common Blog Features

- A title that grabs the reader's attention
- An exploration of news ideas and content
- Text that is easy to read and formatted
- Text that is written in a "human" voice (avoid academic-ese)
- Blogs can use any layout and can cover many different topics, but they all have basic characteristics in common.
- Blog entries usually include the date and specific time that they were posted (a timestamp).
- The blogger's name is usually listed with the timestamp. By default, blogs usually end "Posted by [blogger's name]."
- Depending upon the blog site, you may also find other kinds of information with each blog entry.
- Blogs often contain pictures or links to other products
- Readers and the blogger can usually comment on (or reply to) a blog entry. The comments can turn into a dialogue, with the readers and blogger talking together.

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BY SALLY VARGAS **Updated May 4, 2020**

How to Make an Omelette

Never fear! Making an omelette at home is not difficult. With a few basic steps and a flip of the wrist you can pull this off in minutes. Fill it with whatever you have on hand—it's a great way to use up leftovers!

Not only is an omelette quick and easy to make, it is a paragon of economy. Odds and ends (a.k.a. leftovers) rise to a new level when placed inside an omelette.

Leftover, cooked vegetables paired with a little cheese and folded into eggs present a much more cheerful meal than a bowl of vegetables haphazardly reheated in the microwave!

FRENCH VERSES AMERICAN OMELETTES

It seems that the French invented omelettes, possibly stealing the idea from the Romans. Let's leave the argument there and just say that the *omelette* has a long history.

A French omelette starts out with beaten eggs in the pan (just like scrambled eggs). The pan is shaken constantly during cooking until the eggs just begin to set. When the eggs are cooked, the omelette is rolled and snugly folded to form an oval and finally turned out onto a plate with the seam side down.

It can be plain or filled, with or without cheese. (An *omelette with fines herbes* is a famous standard French dish. An assortment of chopped herbs is stirred into the eggs before cooking; no cheese.)

American omelettes (or "omelets" as they are sometimes spelled) start out in the same way, but as the eggs cook, the edges are lifted from the sides of the pan with a spatula so the runny eggs can flow underneath.

When the eggs are nearly set, the filling is added and the omelette is folded in half rather than rolled.

HOW TO MAKE AN OMELETTE

For our purposes here, we'll make an American-style omelette and you will see how easy it is to accomplish even if you have never tried to make an omelette before.

Here are the key steps to read before you start so you know where you are going:

1. **Beat the eggs:** Use two or three eggs per omelette, depending on how hungry you are. Beat the eggs lightly with a fork.
2. **Melt the butter:** Use an 8-inch nonstick skillet for a 2-egg omelette, a 9-inch skillet for 3 eggs. Melt the butter over medium-low heat, and keep the temperature low and slow when cooking the eggs so the bottom doesn't get too brown or overcooked.
3. **Add the eggs:** Let the eggs sit for a minute, then use a heatproof silicone spatula to gently lift the cooked eggs from the edges of the pan. Tilt the pan to allow the uncooked eggs to flow to the edge of the pan.
4. **Fill the omelette:** Add the filling—but don't overstuff the omelette—when the eggs begin to set. Cook for a few more seconds
5. **Fold and serve:** Fold the omelette in half. Slide it onto a plate with a silicone spatula.

DON'T OVERSTUFF YOUR OMELETTE!

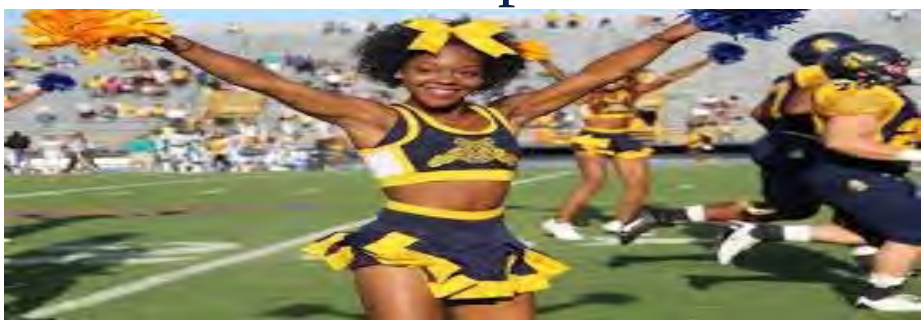
Use your imagination and what appeals to you for the filling.Channel your inner elegant French cook and don't overstuff the omelette! You should have enough filling to make the omelette tasty, but not so much that it's bursting and spilling out of the eggs. With practice, you will be able to eyeball how much to put in the omelette.

So make an omelet and let me know how you fill it. Share below in the comments.

Name _____ ID#/Lunch# _____ School _____ Grade _____

Help Your Child Work Through Their Disappointment of NO Sports

By Janis Meredith | Posted 4/29/2020



Could disappointment in children really be healthy for them? As parents, you hate to see the disappointment your children are feeling now not being able to play the game they love. They may be sad or depressed and their pain is hard to watch. Your instinct is to do everything you can to relieve them of the disappointment, but that would be an unfortunate parenting error.

Disappointment never feels good, but it is not an emotion that should be avoided at any cost. It is actually a healthy and positive feeling that can be beneficial for a child's emotional, intellectual and social development.

Here's how you can help them work through their disappointment in this season:

Check your own attitude. Your attitude towards your child's disappointments influences how they will respond to life's problems. If you show disappointment, you put on them the burden of dealing with their own disappointment as well as yours.

Let them express their disappointment. Trying to talk them out of it, minimizing it, or simply ignoring it is not going to help them work through it. No need to sugarcoat things either. It's okay to admit with them, "this really sucks!"

Gather a village. Your child needs other people in their life besides Mom and Dad that they can turn to in hard times. Studies indicate that the most resilient kids have others to draw on for strength besides parents.

Support them without trying to reward them out of their disappointment. Trying to bribe them out of their sadness with a "consolation" prize is not facing the disappointment, it's medicating it. It's much better to acknowledge it with them, let them vent and then talk about their response and options to the situation.

If your child can acquire the tools to get over disappointment, they'll be able to use them throughout childhood and into adulthood. "When children learn at an early age that they have the tools to get over a disappointing situation, they'll be able to rely on that throughout childhood and even as adults," says Robert Brooks, PhD, coauthor of Raising Resilient Children. "If you bend over backwards to shield them from disappointment, you're keeping them from developing some important skills."

Janis Meredith is a family life coach who wants to help all parents raise champions. You can find out more at rcfamilies.com.

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The Main Event

Nick Allen April 10, 2020

Netflix's "The Main Event" is about a magical mask and wholesale storytelling device that gives superpowers to an 11-year-old wrestling super fan named Leo (Seth Carr). Because it makes him more confident (by making his voice deeper, and giving him super strength), Leo uses those powers to become a wrestling phenomenon, despite still having the scrawny frame of an 11-year-old. The script for "The Main Event" wants to make it about the heart that it takes to be a wrestler worthy of the WWE, but this movie is so blatantly not about that. This fantasy from director Jay Karas, as harmless as it may be, is all because of the mask and the over-the-top abilities it gives one lucky preteen. It's not about the hard work that's intrinsic with all of wrestling, so much as the WWE's open willingness to sacrifice its core values for lazy family-friendly amusement.

Leo stumbles upon this mask as kids always do in movies like this—by accident while escaping school bullies (who are also wrestling fans, but they seem to get a different message from it). Despite how it reeks like "old bus seats," the blue mask gives him Krypton-grade strength: he can kick down trees, do quadruple backflips, and hurl beer kegs through auditorium ceilings. When he does the latter during a tryout, in order to enter an amateur tournament for the corporation's NXT branch, a bunch of real-life wrestlers like The Miz stand in awe. No one questions how someone of Leo's size can do that, or that he does indeed look like a kid, which makes the people in the WWE and the movie's writers look equally dumb.

His invincible alter ego Kid Chaos has no equal when he puts on that mask, and such an overzealous plot component makes for tedious, repeatedly empty moments of watching Leo's physically impossible strength and speed against his adult opponents. Not even the sweaty wrestler who can fart for 25 seconds (Niko Bogojevic) has a chance against him, and that's all part of how the movie tries to make professional wrestling look like it's a PG-rated battle royale that sometimes plays out in slow-motion, all without the threat of an 11-year-old getting hurt. Later on in the story, because the script is so amorphous about the mask's powers, it even lets Leo do some crime-fighting while out with his friends. Kid Chaos becomes a wrestling superstar and also a web-less Spider-Man, while seeming like a cheap version of both.

There's a lot more on Leo's mind outside the ring, and as busy as the script may be with his family and friend drama, it struggles to ring emotionally true despite some spirited supporting work. Tichina Arnold gets in a few giggles as Leo's grandma who wants to be a social media influencer and lusts after the wrestler Kofi Kingston; Adam Pally plays Leo's sad and overworked dad, who keeps putting off an important conversation about how Leo's mom simply abandoned them. For good measure, the script even throws in a talent show that Leo agreed to perform in with his new friend and crush Erica (Momona Tamada), and bases a conflict on whether Leo can look past his time-consuming fame to honor that commitment.

For a movie made to further sell the WWE as a family-friendly fantasy factory, it's not very flattering. For one, you'd think that they'd check IDs when it comes to who enters their tournaments, and the detail that literally anyone could weasel into their competition is a clumsiness that's never really explained (even when one of Kid Chaos' fans speculates that he's Kevin Hart, method actor). And instead of Leo's progress feeling triumphant, it becomes hard to even root for Kid Chaos when his ascension to the climactic cage match is made possible by Leo essentially cheating, with the script's four writers giving up on how to legitimize him. By the time you get to Leo's final showdown with the towering, monosyllabic baddie Samson (Babatunde Aiyegbusi), "The Main Event" fully embraces the laziest shortcuts to glory.

I know, I know. Kids are merely intended to take in the elementary lessons in between the matches, and the adults aren't supposed to overthink something that features so much jaunty music and wide-eyed young actors. But "The Main Event" treats the prospect of making a kid's sports movie as a full excuse to throw together a chintzy product, and when movies are so transparently indifferent like this, it's hard to forgive them even if they depict a good kid living a dream. Even worse, it's a considerable step back from last year's WWE story "Fighting with My Family," a much better movie that was inspired in its filmmaking and story about rising the top. "The Main Event" pointlessly adds magic to the spectacle of wrestling, and makes for a bland, wearying movie that should be a lot more fun, and authentic.

Name _____ ID#/Lunch# _____ School _____ Grade _____

	Day 1- Blog 1	Day 2- Blog 2	Day 3- Blog 3
What do you notice about the blog?			
What do you like?			
What do you dislike?			
What is the blogger's purpose in writing?			
Who is the audience?			
What did you learn about blogs by viewing the sample?			

Challenge: Create your own blog

Think about the following questions. Choose 1 of the styles form the blog samples and 1 of the prompts below to create your own blog. Most blogs have pictures- cut out magazines or draw pictures to compliment your blog.

- What hobbies do you have?
- Share a picture of any collections you have or tell your readers how you got interested in a hobby.
- What's the best book you've read lately? What did you like about it?
- Look in your phone choose a picture you've taken recently and tell about it.
- Describe your favorite meal to have for dinner.
- List all the ways you can think of to earn money around the house.
- Review a movie you've watched.
- Tell about your time being restricted by the stay-at-home order.

  - ❖ Be sure to include blog features.
  - ❖ Have someone in your home read your blog, ask them to write a comment to your blog.

IM2 – Week of June 1st

Permutations and Combinations

Which One Doesn't Belong? Why?

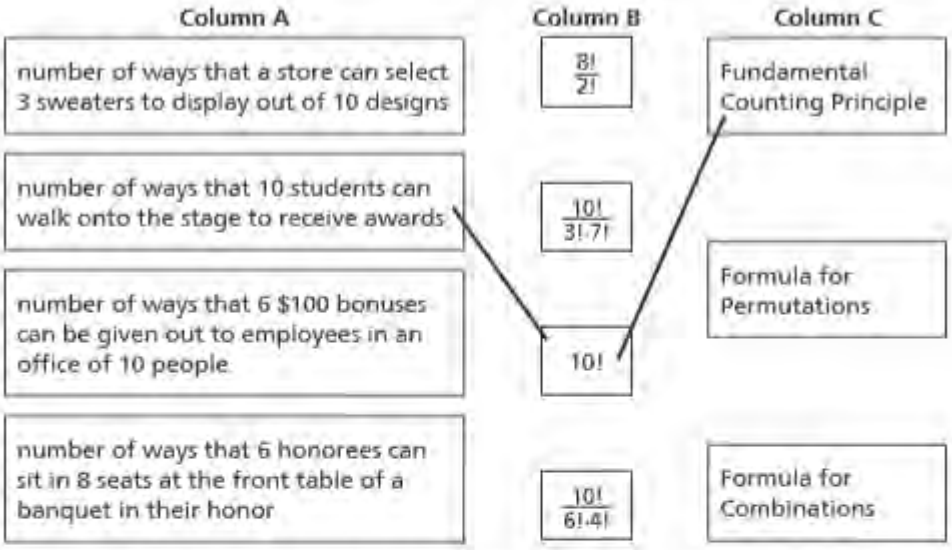
CONCEPT SUMMARY Permutations and Combinations

Concept Summary Assess

	Permutation	Combination
WORDS	A selection of items in which the order of the items is important ${}_nP_r$ represents the number of permutations of r objects taken from a set of n objects.	A selection of items in which the order of the items is not important ${}_nC_r$ represents the number of combinations of r objects taken from a set of n objects.
ALGEBRA	${}_nP_r = \frac{n!}{(n-r)!}$ for $0 \le r \le n$	${}_nC_r = \frac{n!}{r!(n-r)!}$ for $0 \le r \le n$
NUMBERS	The number of permutations of 3 objects taken from a set of 6 objects is ${}_6P_3 = \frac{6!}{3!} = \frac{6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}{3 \cdot 2 \cdot 1} = 120$	The number of combinations of 3 objects taken from a set of 6 objects is ${}_6C_3 = \frac{6!}{3!3!} = \frac{6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}{(3 \cdot 2 \cdot 1)(3 \cdot 2 \cdot 1)} = 20$

Permutations and Combinations Worksheet 1

1. For each situation in Column A, draw a line segment to the matching expression in Column B, and then another line segment to the name of the principle or formula in Column C that justifies the expression. Some items may be used more than once.



2. Identify the student's error and show what the student should do instead.

How many ways can 6 volleyball players be positioned at the start of a game if there are 8 team members in all?
${}_8P_6 = \frac{8!}{6!(8-6)!}$ $= \frac{8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}{(6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1)(2 \cdot 1)}$ $= \frac{8 \cdot 7}{2} = 28$

3. A runner has 8 pairs of running shoes. She will take 4 pairs to a meet. This is a (combination | permutation). There are _____ ways to choose the pairs.

Permutations and Combinations Worksheet 2

1. When randomly choosing two coins from a cup of coins that contains a penny, a nickel, a dime, and a quarter, what is the probability of choosing a penny and a nickel?

2. There are 5 runners in a race. If each runner has the same chance of winning and they wear shirts with the letters P, Q, R, S, and T, what is the probability that the runners finish the race in the order P, Q, R, S, T?

3. A basketball coach will choose 5 players from a group of 8 players to start the next game. How many different groups of starting players are possible?

4. A group of 9 business leaders meets each week. Members take turns being the note-taker, the facilitator, and the speaker. In how many different ways can these positions be chosen from the members?

5. Three cards are randomly chosen at the same time from a set numbered from 1 to 7. What is the probability that the chosen cards are numbered 1, 2, and 3? Round to the hundredths place.

6. A hiker has 2 pairs of hiking shoes, 3 shirts, and 2 pairs of shorts to choose from. How does the number of combinations of shoes, shirts, and shorts change as the hiker adds a new shirt to his collection? Explain.

7. You have a $1 bill, a $5 bill, a $10 bill, a $20 bill, a quarter, a dime, a nickel, and a penny. How many different total amounts of money can you make by choosing a combination of 6 of them? Explain.

Permutations and Combinations Worksheet 3

1. A chef randomly chooses 5 apples from a case of 24 apples. Which best represents the number of ways the chef can make the selection?

   Ⓐ ${}_5C_{19}$

   Ⓑ ${}_{24}C_5$

   Ⓒ ${}_5P_{24}$

   Ⓓ ${}_{19}P_5$

2. A game at the fair involves balls numbered 1 to 18. You can win a prize if you correctly chose the 5 numbers that are randomly drawn. What are your approximate chances of winning?

   Ⓐ 0.0001

   Ⓑ 0.056

   Ⓒ 0.078

   Ⓓ 0.278

3. Identify each as a permutation or a combination.

   Ⓐ 6 books are placed from left to right on a bookshelf. _____

   Ⓑ 4 goldfish are selected from a tank containing 8 goldfish. _____

   Ⓒ 3 class representatives are chosen from 25 students. _____

   Ⓓ Co-captains are named from a team of 16. _____

   Ⓔ Each number 1 to 5 is used to make a 5-number security code. _____

4. A bag contains 7 marbles: one each of red, orange, yellow, green, blue, violet, and white. A child randomly pulls 4 marbles from the bag. What is the probability that the marbles chosen are green, blue, red, and yellow? Round your answer to the nearest hundredth.

5. Serena has a playlist of 10 songs. She plays 2 songs. Complete each statement. The probability that she hears her 2 favorite songs can be found using a number of _____ and is _____. The probability that she hears her favorite song first and her next favorite second can be found using a number of _____ and is _____.

Permutations and Combinations Worksheet 4

Maya claims that, in a class of 30 students, there is a greater than 50% chance that at least 2 students have the same birthdate. Can this claim be true?

If $P(n) = P(n$ students have the same birthday), then $P(n) = P(1) + P(2) + P(3) + \ldots P(n)$. That would be a tedious calculation indeed! So, let $P(1) = P$(each student's birthdate is unique) and $P(n \geq 2) = P$(2 or more students have the same birthday) and find $P(1)$.

Complete Items 1–6 to see if you agree with Maya's claim.

1. How are $P(n \geq 2)$ and $P(1)$ are related? Complete the equation with the appropriate symbols.

   $P(n \geq 2)$ _____ 100% _____ $P(1)$

For Items 2–5, complete each expression. Then evaluate the expressions for Exercises 4–5, using a calculator. (You may need to rewrite the expression for your calculator.) Assume 365 days in the year.

	Question	Expression	Answer
2.	How many ways are there for 30 people to all have different birthdays?	${}_{365}P_{30} =$	
3.	How many possible sets of birthdates are there for 30 people?		
4.	What is $P(1)$, the approximate probability that each of the 30 birthdays is unique, to the nearest whole percent?	$\frac{\square}{\square}$	
5.	What is $P(n \geq 2)$, the approximate probability that 2 or more of the 30 students have the same birthdate, to the nearest whole percent? Refer to Item 1.	$\square - \frac{\square}{\square}$	

6. Do you agree with Maya? Explain.

7. Jesse asked 30 random people for their birthdate. He found that no 2 people in that group had the same birthday. Does this mean that Maya's claim is false? Explain.

Consume or be consumed: breaking down the structure of a food web

By National Geographic Society on 03.12.19
Word Count **2,068**
Level **MAX**

Many organisms make up a food web. Animals like zebras are herbivores, or consumers that eat only plants. Lions are carnivores, or animals that eat other consumers.

A food web consists of all the food chains in a single ecosystem. Each living thing in an ecosystem is part of multiple food chains. Each food chain is one possible path that energy and nutrients may take as they move through the ecosystem. All of the interconnected and overlapping food chains in an ecosystem make up a food web.

Trophic Levels

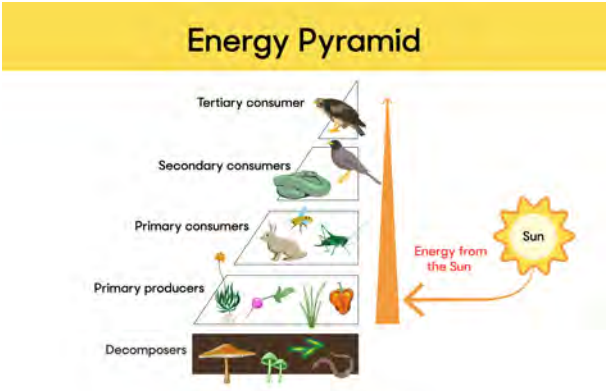
Organisms in food webs are grouped into categories called trophic levels. Roughly speaking, these levels are divided into producers (first trophic level), consumers and decomposers (last trophic level).

Producers

Producers make up the first trophic level. Producers, also known as autotrophs, make their own food and do not depend on any other organism for nutrition. Most autotrophs use a process called photosynthesis to create food (a nutrient called glucose) from sunlight, carbon dioxide and water.

Plants are the most familiar type of autotroph, but there are many other kinds. Algae, whose larger forms are known as seaweed, are autotrophic. Phytoplankton, tiny organisms that live in the ocean, are also autotrophs. Some types of bacteria are autotrophs. For example, bacteria living in active volcanoes use sulfur, not carbon dioxide, to produce their own food. This process is called chemosynthesis.

Consumers



The next trophic levels are made up of animals that eat producers. These organisms are called consumers.

Primary consumers are herbivores, who eat plants, algae and other producers. They are at the second trophic level. In a grassland ecosystem, deer, mice and even elephants are herbivores. They eat grasses, shrubs and trees. In a desert ecosystem, a mouse that eats seeds and fruits is a primary consumer. In an ocean ecosystem, many types of fish and turtles are herbivores that eat algae and seagrass. In kelp forests, seaweeds known as giant kelp provide shelter and food for an entire ecosystem. Sea urchins are powerful primary consumers in kelp forests. These small herbivores eat dozens of kilograms (pounds) of giant kelp every day.

Secondary consumers eat herbivores. They are at the third trophic level. In a desert ecosystem, a secondary consumer may be a snake that eats a mouse. In the kelp forest, sea otters are secondary consumers that hunt sea urchins as prey.

Tertiary consumers eat the secondary consumers and are at the fourth trophic level. In the desert ecosystem, an owl or eagle may prey on the snake.

There may be more levels of consumers before a chain finally reaches its top predator. Top predators, also called apex predators, eat other consumers. They may be at the fourth or fifth trophic level and have no natural enemies except people. Lions are apex predators in the grassland ecosystem. In the ocean, fish such as the great white shark are apex predators. In the desert, bobcats and mountain lions are top predators.

Consumers can be carnivores (animals that eat other animals) or omnivores (animals that eat both plants and animals). Omnivores, like people, consume many types of foods. People eat plants, such as vegetables and fruits. We also eat animals and animal products, such as meat, milk, and eggs. We eat fungi, such as mushrooms, and also algae, in edible seaweeds like nori (used to wrap sushi rolls) and sea lettuce (used in salads). Bears are omnivores, too, because they eat berries and mushrooms as well as animals such as salmon and deer.

Detritivores And Decomposers

Detritivores and decomposers make up the last part of food chains. Detritivores are organisms that eat nonliving plant and animal remains. For example, scavengers such as vultures eat dead animals while dung beetles eat animal feces.

Decomposers, like fungi and bacteria, complete the food chain by turning organic wastes, such as decaying plants, into inorganic materials, such as nutrient-rich soil. They complete the cycle of life, returning nutrients to the soil or oceans for use by autotrophs. This starts a whole new series of food chains.

Food Chains

Food webs connect many different food chains, and many different trophic levels. Food webs can support food chains that are either long and complicated or very short.

For example, grass in a forest clearing produces its own food through photosynthesis. A rabbit eats the grass, and then a fox eats the rabbit. When the fox dies, decomposers such as worms and mushrooms break down its body, returning it to the soil where it provides nutrients for plants like grass.

This short food chain is one part of the forests food web. Another food chain in the same ecosystem might involve completely different organisms. A caterpillar may eat the leaves of a tree in the forest. A bird such as a sparrow may eat the caterpillar, and a snake may then prey on the sparrow. An eagle, an apex predator, may prey on the snake. Yet another bird, a vulture, consumes the body of the dead eagle. Finally, bacteria in the soil decompose the remains. Algae and plankton are the main producers in marine ecosystems. Tiny shrimp called krill eat the microscopic plankton. The largest animal on Earth, the blue whale, preys on thousands of tons of krill every day. Apex predators such as orcas prey on blue whales. As the bodies of large animals such as whales sink to the seafloor, detritivores such as worms break down the material. The nutrients released by the decaying flesh provide chemicals for algae and plankton to start a new series of food chains.

Biomass

Food webs are defined by their biomass — the energy in living organisms. Autotrophs, the producers in a food web, convert the suns energy into biomass. Biomass decreases with each trophic level. There is always more biomass in lower trophic levels than in higher ones.

Because biomass decreases with each trophic level, there are always more autotrophs than herbivores in a healthy food web. There are more herbivores than carnivores. An ecosystem cannot support a large number of omnivores without supporting an even larger number of herbivores, and an even larger number of autotrophs.

A healthy food web has an abundance of autotrophs, many herbivores and few carnivores and omnivores. This balance helps the ecosystem maintain and recycle biomass.

Every link in a food web is connected to at least two others. The biomass of an ecosystem depends on how balanced and connected its food web is. When one link in the food web is threatened, some or all of the links are weakened or stressed, and the ecosystems biomass declines.

The loss of plant life usually leads to a decline in the herbivore population, for instance. Plant life can decline due to drought, disease or human activity. Forests are cut down to provide lumber for construction. Grasslands are paved over for shopping malls or parking lots.

The loss of biomass on the second or third trophic level can also put a food web out of balance. Consider what may happen if a salmon run — a river where salmon swim — is diverted. Salmon runs can be diverted by landslides and earthquakes, as well as the construction of dams and levees.

Biomass is lost as salmon are cut out of the rivers. Unable to eat salmon, omnivores like bears are forced to rely more heavily on other food sources, such as ants. The areas' ant population shrinks. Ants are usually scavengers and detritivores, so fewer nutrients are broken down in the soil. The soil is unable to support as many autotrophs, so biomass is lost. Salmon themselves are predators of insect larvae and smaller fish. Without salmon to keep their population in check, aquatic insects may devastate local plant communities. Fewer plants survive, and biomass is lost.

A loss of organisms on higher trophic levels, such as carnivores, can also disrupt a food chain. In the kelp forest, sea urchins are the primary consumer of kelp, and the sea otters prey on urchins. If the sea otter population shrinks due to disease or hunting, urchins devastate the kelp forest. Lacking a community of producers, biomass plummets. The entire kelp forest disappears. Such areas are called urchin barrens.

Human activity can reduce the number of predators. In 1986, officials in Venezuela dammed the Caroni River, creating an enormous lake about twice the size of Rhode Island. Hundreds of hilltops turned into islands in this lake. With their habitats reduced to tiny islands, many terrestrial predators weren't able to find enough food. As a result, prey animals like howler monkeys, leaf-cutter ants and iguanas flourished. The ants became so numerous that they destroyed the rain forest, killing all the trees and other plants. The food web surrounding the Caroni River was destroyed.

Bioaccumulation

Biomass declines as you move up through the trophic levels. However, some types of materials, especially toxic chemicals, increase with each trophic level in the food web, and usually collect in the fat of animals.

When an herbivore eats a plant or other autotroph that is covered in pesticides, for example, those pesticides are stored in the animal's fat. When a carnivore eats several of these herbivores, it takes in the pesticide chemicals stored in its prey. This process is called bioaccumulation.

Bioaccumulation happens in aquatic ecosystems, too. Runoff from urban areas or farms can be full of pollutants. Tiny producers such as algae, bacteria and seagrass absorb minute amounts of these pollutants. Primary consumers, such as sea turtles and fish, eat the seagrass. They use the energy and nutrients provided by the plants, but store the chemicals in their fatty tissue. Predators on the third trophic level, such as sharks or tuna, eat the fish. By the time the tuna is consumed by people, it may be storing a remarkable amount of bioaccumulated toxins.

Because of bioaccumulation, organisms in some polluted ecosystems are unsafe and not allowed to be harvested. Oysters in the harbor of New York City, for instance, are unsafe to eat. The pollutants in the harbor accumulate in oysters, a filter feeder.

In the 1940s and 1950s, a pesticide called DDT (dichloro-diphenyl-trichloroethane) was widely used to kill insects that spread diseases. During World War II, the Allies used DDT to eliminate typhus in Europe and control malaria in the South Pacific. Scientists believed they had discovered a miracle drug. DDT was largely responsible for eliminating malaria in places like Taiwan, the Caribbean and the Balkans. Sadly, DDT bioaccumulates in an ecosystem and causes damage to the environment. DDT accumulates in soil and water, and some forms of DDT decompose slowly. Worms, grasses, algae and fish accumulate DDT. Apex predators, such as eagles, had high amount of DDT in their bodies, accumulated from the fish and small mammals they prey on.

Birds with high amounts of DDT in their bodies lay eggs with extremely thin shells. These shells would often break before the baby birds were ready to hatch.

DDT was a major reason for the decline of the bald eagle, an apex predator that feeds primarily on fish and small rodents. Today, the use of DDT has been restricted. The food webs of which it is a part have recovered in most parts of the country.

Fast Facts:

Lost Energy

Biomass shrinks with each trophic level due to the fact that 80 to 90 percent of an organism's energy, or biomass, is lost as heat or waste. A predator consumes only the remaining biomass.

A Million To One

Marine food webs are usually longer than terrestrial food webs. Scientists estimate that if there are a million producers, such as algae, phytoplankton and sea grass, in a food web, there may only be 10,000 herbivores. Such a food web may support 100 secondary consumers, such as tuna. All these organisms support only one apex predator, such as a person.

Out For Blood

One of the earliest descriptions of food webs was given by the scientist Al-Jahiz, working in Baghdad, Iraq, in the early 800s. Al-Jahiz wrote about mosquitoes preying on the blood of elephants and hippos. Al-Jahiz understood that although mosquitoes preyed on other animals, they were also prey to animals such as flies and small birds.

What is an ecosystem?

By Encyclopaedia Britannica on 04.12.17
Word Count **708**
Level **MAX**

A tropical rainforest is an example of an ecosystem. Photo from: Pixabay.

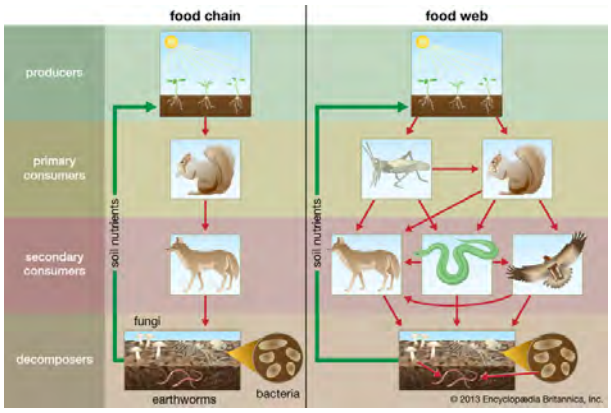
An ecosystem is made up of all of the living and nonliving things in an area. This includes all of the plants, animals and other living things that make up the communities of life in an area. An ecosystem also includes nonliving materials — for example, water, rocks, soil and sand. A swamp, a prairie, an ocean and a forest are examples of ecosystems.

An ecosystem usually contains many different kinds of life. A grassland, for example, is an ecosystem that contains more than just grass. It includes other plants, mammals, insects, earthworms and many tiny living things in the soil.

Three Roles

Each living thing in an ecosystem has a role to play — as a producer, a consumer or a decomposer. Green plants are producers. They make their own food through a process called photosynthesis. Animals, including humans, are consumers. They eat, or consume, plants or other animals. Bacteria and other living things that cause decay are decomposers. Decomposers break down the waste products and dead tissue of plants and animals. They return nutrients to the soil, where new

plants grow. The way that producers, consumers and decomposers provide nutrients for one another is called a food chain.



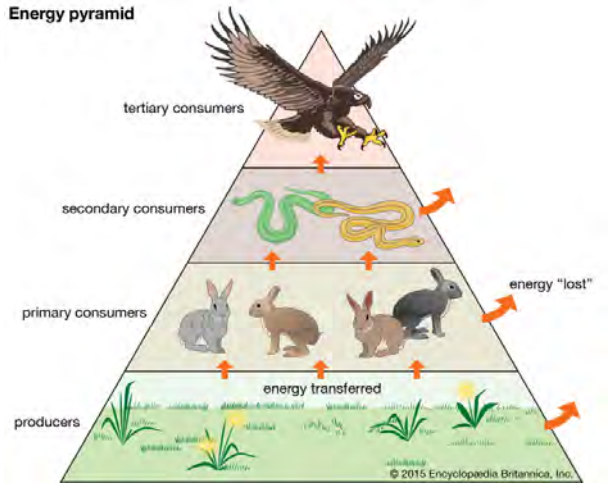
Feeding Levels

A food chain describes the sequence in which matter and energy move through the feeding levels of an ecosystem. The levels of a food chain are essentially the same across all ecosystems. The first level is the producers. After that is the consumers. Sometimes consumers are further divided into primary consumers, secondary consumers and tertiary consumers. The final link in all food chains is the decomposers, which break down dead organisms and natural waste.

The consumers at the top feeding level of a food chain are called top predators. They have no predators. Instead, their population size is controlled through competition.

Energy Flow

The main source of energy in almost all ecosystems is the sun's energy. As energy moves through the ecosystem, much of it is lost at each feeding level as heat. This is the main reason why few food chains have more than five feeding levels. Diagrams called energy pyramids are used to depict the flow of energy from one feeding level to the next in a food chain. Most ecosystems have more than one food chain. Food chains overlap and connect to form a food web.



Recycling Nutrients

Water, carbon, nitrogen and other elements constantly circulate through an ecosystem. Carbon and oxygen from carbon dioxide as well as nutrients from soil enter into plant tissues. When consumers eat the plants, the nutrients enter the consumers' tissues. Consumers that are eaten transfer the nutrients on to the predator at the next feeding level. Consumers that are not eaten die and transfer nutrients in their decaying tissues to the decomposers that feed on them. The decomposers recycle these nutrients back into the ecosystem. They transfer the nutrients back into the soil and air, where the nutrients become available to producers.

A Delicate Balance

An ecosystem's health depends on a delicate balance among all its members and the environment. If something disturbs the balance, the ecosystem and all its members might suffer. Natural things that can disturb ecosystems include a changing climate and natural disasters. Human activities that can disturb ecosystems include polluting and clearing land for farms or buildings.

Humans also are responsible for many invasive species. An invasive species is a living thing that spreads through an ecosystem where it did not exist before. Invasive species can threaten the

plants and animals that originally made up the ecosystem. For example, Burmese pythons were brought to Florida as pets. Some pythons escaped and began reproducing in the wild. Their skill at hunting has decreased the number of wood rats and storks in the area.

Benchmark Standard	Civics 3a: Students will understand that citizens are individually responsible for keeping themselves informed about public policy issues on the local, state, and federal levels; participating in the civic process; and upholding the laws of the land.
Grade Band	9-12
Vocabulary / Key Concepts	First Amendment; Fourth Amendment; search; seizure; privacy; reasonable

~This lesson is from the National Constitution Center – modified by CSD for use at home~
https://constitutioncenter.org/media/const-files/The_4th_Amendment_Lesson_Plan_342020.pdf

ACTIVITY 1: Anticipation Guide – Before Reading:
Number a sheet of paper, 1-12, label the section on your paper "Anticipation Guide-Before Reading." Read each statement below (1-12) and decide if the statement is True or False. If you have no idea take a guess based on the knowledge you have.
Which law case and which part of the First Amendment were they arguing? If false, fix it.

1. TRUE or FALSE – The NAACP was ordered by a circuit court to stop doing business in a state.
2. TRUE or FALSE – A court subpoenaed the NAACP for records including the NAACP's membership list.
3. TRUE or FALSE – 187 African American students marched from Zion Baptist Church to South Carolina State House, where the students were arrested and convicted of breaching the peace.
4. TRUE or FALSE – In the same year, the Supreme Court ruled that a Ten Commandments monument was constitutional in one state, but in a different state, two large framed copies of the Ten Commandments violated the First Amendment.
5. TRUE or FALSE – The Supreme Court did not allow a state to reimburse Catholic schools for the salaries of teachers who taught in those schools.
6. TRUE or FALSE – A textile mill switched from a five-day to a six-day workweek. A textile mill worker was fired from her job after she refused to work on Saturdays.
7. TRUE or FALSE – Orthodox Jews argued that the law requiring stores to close on Sundays was unfair to them since their religion required them to close their stores on Saturdays as well.
8. TRUE or FALSE – Despite their beliefs, it is against the law for men and/or women to have more than one wife or husband.
9. TRUE or FALSE – The government is allowed to censor top – secret documents that mislead the public.
10. TRUE or FALSE – People in the United States are not allowed to burn the American flag.
11. TRUE or FALSE – The government is allowed to limit freedom of speech.

ACTIVITY 2: Anticipation Guide – After Reading:
On the same sheet of paper, label the section "Anticipation Guide – After Reading." Now that you have read the statements and decided if each statement was TRUE or FALSE, read the article, *First Amendment*. Then read the Anticipation Guide statements again. Based on the reading change any answers that need changed. In addition, for each statement, which law case and which part of the First Amendment were they arguing? If the statement is false (according to the article *First Amendment)*, fix it to make it true.

~First Amendment~ https://www.history.com/topics/united-states-constitution/first-amendment

The First Amendment to the U.S. Constitution protects the freedom of speech, religion and the press. It also protects the right to peaceful protest and to petition the government. The amendment was adopted in 1791 along with nine other amendments that make up the Bill of Rights – a written document protecting civil liberties under U.S. law. The meaning of the First Amendment has been the subject of continuing interpretation and dispute over the years. Landmark Supreme Court cases have dealt with the right of citizens to protest U.S. involvement in foreign wars, flag burning and the publication of classified government documents.

Bill Of Rights

During the summer of 1787, a group of politicians, including James Madison and Alexander Hamilton, gathered in Philadelphia to draft a new U.S. Constitution.

Antifederalists, led by the first governor of Virginia, Patrick Henry, opposed the ratification of the Constitution. They felt the new constitution gave the federal government too much power at the expense of the states. They further argued that the Constitution lacked protections for people's individual rights.

The debate over whether to ratify the Constitution in several states hinged on the adoption of a Bill of Rights that would safeguard basic civil rights under the law. Fearing defeat, pro-constitution politicians, called Federalists, promised a concession to the antifederalists – a Bill of Rights.

James Madison drafted most of the Bill of Rights. Madison was a Virginia representative who would later become the fourth president of the United States. He created the Bill of Rights during the 1st United States Congress, which met from 1789 to 1791 – the first two years that President George Washington was in office.

The Bill of Rights, which was introduced to Congress in 1789 and adopted on December 15, 1791, includes the first ten amendments to the U.S. Constitution.

First Amendment Text - The First Amendment text reads:

"Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech, or of the press; or the right of the people peaceably to assemble, and to petition the Government for a redress of grievances."

While the First Amendment protected freedoms of speech, religion, press, assembly and petition, subsequent amendments under the Bill of Rights dealt with the protection of other American values including the Second Amendment right to bear arms and the Sixth Amendment right to a trial by jury.

Freedom Of Speech

The First Amendment guarantees freedom of speech. Freedom of speech gives Americans the right to express themselves without having to worry about government interference. It's the most basic component of freedom of expression.

The U.S. Supreme Court often has struggled to determine what types of speech is protected. Legally, material labeled as obscene has historically been excluded from First Amendment protection, for example, but deciding what qualifies as obscene has been problematic. Speech provoking actions that would harm others—true incitement and/or threats—is also not protected, but again determining what words have qualified as true incitement has been decided on a case-by-case basis.

Freedom Of The Press

This freedom is similar to freedom of speech, in that it allows people to express themselves through publication.

There are certain limits to freedom of the press. False or defamatory statements – called libel – aren't protected under the First Amendment.

Freedom Of Religion

The First Amendment, in guaranteeing freedom of religion, prohibits the government from establishing a "state" religion and from favoring one religion over any other.

While not explicitly stated, this amendment establishes the long-established separation of church and state.

Right To Assemble, Right To Petition

The First Amendment protects the freedom to peacefully assemble or gather together or associate with a group of people for social, economic, political or religious purposes. It also protects the right to protest the government.

The right to petition can mean signing a petition or even filing a lawsuit against the government.

First Amendment Court Cases - Here are landmark Supreme Court decisions related to the First Amendment.

Free Speech:

Schenck v. United States, 1919: In this case, the Supreme Court upheld the conviction of Socialist Party activist Charles Schenck after he distributed fliers urging young men to dodge the draft during World War I.

The *Schenck* decision helped define limits of freedom of speech, creating the "clear and present danger" standard, explaining when the government is allowed to limit free speech. In this case, the Supreme Court viewed draft resistance as dangerous to national security.

Texas v. Johnson, 1990: Gregory Lee Johnson, a youth communist, burned a flag during the 1984 Republican National Convention in Dallas, Texas to protest the administration of President Ronald Reagan.

The Supreme Court reversed a Texas court's decision that Johnson broke the law by desecrating the flag. This Supreme Court Case invalidated statutes in Texas and 47 other states prohibiting flag-burning.

Freedom of the Press:

New York Times Co. v. United States, 1971: This landmark Supreme Court case made it possible for *The New York Times* and *Washington Post* newspapers to publish the contents of the Pentagon Papers without risk of government censorship.

The Pentagon Papers were a top-secret Department of Defense study of U.S. political and military involvement in Vietnam from 1945 to 1967. Published portions of the Pentagon Papers revealed that the presidential administrations of Harry Truman, Dwight D. Eisenhower, John F. Kennedy and Lyndon B. Johnson had all misled the public about the degree of U.S. involvement in Vietnam.

Freedom of Religion:

Reynolds v. United States (1878): This Supreme Court case upheld a federal law banning polygamy, testing the limits of religious liberty in America. The Supreme Court ruled that the First Amendment forbids government from regulating belief but not from actions such as marriage.

Braunfeld v. Brown (1961): The Supreme Court upheld a Pennsylvania law requiring stores to close on Sundays, even though Orthodox Jews argued the law was unfair to them since their religion required them to close their stores on Saturdays as well.

Sherbert v. Verner (1963): The Supreme Court ruled that states could not require a person to abandon their religious beliefs in order to receive benefits. In this case, Adell Sherbert, a Seventh-day Adventist, worked in a textile mill. When her employer switched from a five-day to six-day workweek, she was fired for refusing to work on Saturdays. When she applied for unemployment compensation, a South Carolina court denied her claim.

Lemon v. Kurtzman (1971): This Supreme Court decision struck down a Pennsylvania law allowing the state to reimburse Catholic schools for the salaries of teachers who taught in those schools. This Supreme Court case established the "Lemon Test" for determining when a state or federal law violates the Establishment Clause—that's the part of the First Amendment that prohibits the government from declaring or financially supporting a state religion.

Ten Commandments Cases (2005): In 2005, the Supreme Court came to seemingly contradictory decisions in two cases involving the display of the Ten Commandments on public property. In the first case, *Van Orden v. Perry*, the Supreme Court ruled that the display of a six-foot Ten Commandments monument at the Texas State Capital was constitutional. In *McCreary County v. ACLU*, the U.S. Supreme Court ruled that two large, framed copies of the Ten Commandments in Kentucky courthouses violated the First Amendment.

Right to Assemble & Right to Petition:

NAACP v. Alabama (1958): When Alabama Circuit Court ordered the NAACP to stop doing business in the state and subpoenaed the NAACP for records including their membership list, the NAACP brought the matter to the Supreme Court. The Court ruled in favor of the NAACP, which Justice John Marshall Harlan II writing: "This Court has recognized the vital relationship between freedom to associate and privacy in one's associations."

Edwards v. South Carolina (1962): On March 2, 1961, 187 black students marched from Zion Baptist Church to the South Carolina State House, where they were arrested and convicted of breaching the peace. The Supreme Court ruled in an 8-1 decision to reverse the convictions, arguing that the state infringed on the free speech, free assembly, and freedom to petition of the students.

ACTIVITY 3: Are the following in violation of the First Amendment? If so, what is the violation?

1. Because ISIS is responsible for the terrorist attacks, the US government bans the practice of Islamic extremism.
2. We should make it mandatory to say a Christian prayer before every major event.
3. The President of the United States orders consequences for news organizations who publish criticism about the President.
4. The President of the United States orders consequences to anyone who complains about the government.
5. Because of the freedom of speech, people are allowed to walk into a crowded movie theatre and yell "Fire" or "Therer's a bomb," (even though there isn't a fire or a bomb).
6. Because of the freedom of speech, a person can walk up to a random stranger on the street and tell the stranger that he is going to knock the stranger out.

ACTIVITY 4: Complete the following:

1. Privacy
    a. What is it?
    b. Where do we have it?
    c. Why is it important?

ACTIVITY 5: A Reasonable Expectation of Privacy?

DIRECTIONS: Prior to reading *The Fourth Amendment* by Friedman and Kerr, evaluate the scenarios below. What level of privacy or protection from government searches do you think you should have in each of the scenarios below? Use the following scale to rate each scenario. On your piece of paper, write L for Low, M for Medium, or H for High. Note that it is possible to answer with more than one category – for example, differences in time and place might change the expectation of privacy:

LOW: The government should be able to search or seize for any reason; neither the individual nor society generally would recognize an expectation of privacy

MEDIUM: The government needs a good and fairly specific reason to search; there might be an individual expectation of privacy, but not one recognized broadly by society as reasonable

HIGH: The government must have an actual reason based on real and specific information to search in that moment; there is both an individual and society expectation of privacy

1. L - M - H Inside your home or apartment
2. L - M - H The contents of your luggage at an airport prior to boarding the plane.
3. L - M - H A package you receive through the U.S. mail or FedEx/UPS.
4. L - M - H The location data transmitted by your cell phone that shows where you have traveled.
5. L - M - H Inside your car as you travel on a public roadway.
6. L - M - H The contents of your coat pockets and backpack as you walk along the sidewalk.
7. L - M - H The contents of your garbage can when you put in out on the street for collection.
8. L - M - H The text messages and pictures on your cell phone.
9. L - M - H Inside a vehicle that is parked outside of your garage, next to your home.
10. Which of the preceding examples did you feel most strongly about? Provide an explanation for your answer.
11. After completing the Ranking activity, create a 1-2 sentence statement about what you believe about what would qualify as a "reasonable expectation of privacy."

ACTIVITY 6: Review your answers for the scenarios and complete the following:

- Did any stick out in your mind?
- Is there a rationale for involving the police in any of the scenarios?

- Either for you personally or for the public?
- Are there any that stick out for why we would want privacy for ourselves and others in the particular situation?
- Would your answer change on any of them if you knew specific things about the person? (age, occupation, gender, criminal background, etc.)?
- For any of the scenarios, what facts would be necessary to change your answer from High to Low?
- What generalizations can you make about where we ought to have privacy and where we may not?

ACTIVITY 7: Read *The Fourth Amendment* and complete the "Discussion Questions" following the article.

~The Fourth Amendment~ by Barry Friedman and Orin Kerr

https://constitutioncenter.org/interactive-constitution/interpretation/amendment-iv/interps/121

Imagine you're driving a car, and a police officer spots you and pulls you over for speeding. He orders you out of the car. Maybe he wants to place you under arrest. Or maybe he wants to search your car for evidence of a crime. Can the officer do that?

The Fourth Amendment is the part of the Constitution that gives the answer. According to the Fourth Amendment, the people have a right "to be secure in their persons, houses, papers and effects, against unreasonable searches and seizures." This right limits the power of the police to seize and search people, their property, and their homes.

The Fourth Amendment has been debated frequently during the last several years, as police and intelligence agencies in the United States have engaged in a number of controversial activities. The federal government has conducted bulk collection of Americans' telephone and Internet connections as part of the War on Terror. Many municipal police forces have engaged in aggressive use of "stop and frisk." There have been a number of highly-publicized police-citizen encounters in which the police ended up shooting a civilian. There is also concern about the use of aerial surveillance, whether by piloted aircraft or drones.

The application of the Fourth Amendment to all these activities would have surprised those who drafted it, and not only because they could not imagine the modern technologies like the Internet and drones. They also were not familiar with organized police forces like we have today. Policing in the eighteenth and early nineteenth centuries was a responsibility of the citizenry, which participated in "night watches." Other than that, there was only a loose collection of sheriffs and constables, who lacked the tools to maintain order as the police do today.

The primary concerns of the generation that ratified the Fourth Amendment were "general warrants" and "writs of assistance." Famous incidents on both sides of the Atlantic gave rise to placing the Fourth Amendment in the Constitution. In Britain, the Crown employed "general warrants" to go after political enemies, leading to the famous decisions in Wilkes v. Wood (1763) and Entick v. Carrington (1765). General warrants allowed the Crown's messengers to search without any cause to believe someone had committed an offense. In those cases the judges decided that such warrants violated English common law. In the colonies the Crown used the writs of assistance—like general warrants, but often unbounded by time restraints—to search for goods on which taxes had not been paid. James Otis challenged the writs in a Boston court; though he lost, some such as John Adams attribute this legal battle as the spark that led to the Revolution. Both controversies led to the famous notion that a person's home is their castle, not easily invaded by the government.

Today the Fourth Amendment is understood as placing restraints on the government any time it detains (seizes) or searches a person or property. The Fourth Amendment also provides that "no warrants shall issue, but upon probable cause, supported by oath or affirmation, and particularly describing the place to be searched and the persons or things to be seized." The idea is that to avoid the evils of general warrants, each search or seizure should be cleared in advance by a judge, and that to get a warrant the government must show "probable cause"—a certain level of suspicion of criminal activity—to justify the search or seizure.

To the extent that a warrant is required in theory before police can search, there are so many exceptions that in practice warrants rarely are obtained. Police can search automobiles without warrants, they can detain people on the street without them, and they can always search or seize in an emergency without going to a judge.

The way that the Fourth Amendment most commonly is put into practice is in criminal proceedings. The Supreme Court decided in the mid-twentieth century that if the police seize evidence as part of an illegal search, the evidence cannot be admitted into court. This is called the "exclusionary rule." It is controversial because in most cases evidence is being tossed out even though it shows the person is guilty and, as a result of the police conduct, they might avoid conviction. "The criminal is to go free because the constable has blundered," declared Benjamin Cardozo (a famous judge and ultimately Supreme Court justice). But, responded another Supreme Court justice, Louis Brandeis, "If the government becomes the lawbreaker, it breeds contempt for the law."

One of the difficult questions today is what constitutes a "search"? If the police standing in Times Square in New York watched a person planting a bomb in plain daylight, we would not think they needed a warrant or any cause. But what about installing closed circuit TV cameras on poles, or flying drones over backyards, or gathering evidence that you have given to a third party such as an Internet provider or a banker?

Another hard question is when a search is acceptable when the government has no suspicion that a person has done something wrong. Lest the answer seem to be "never," think of airport security. Surely it is okay for the government to screen people getting on airplanes, yet the idea is as much to deter people from bringing weapons as it is to catch them—there is no "cause," probable or otherwise, to think anyone has done anything wrong. This is the same sort of issue with bulk data collection, and possibly with gathering biometric information.

What should be clear by now is that advancing technology and the many threats that face society add up to a brew in which the Fourth Amendment will continue to play a central role.

ACTIVITY 7 (continued) DISCUSSION QUESTIONS:

1. What are "General Warrants" and "Writs of Assistance" and why did they concern the colonists (particularly James Otis)?
2. According to the authors, what makes the Fourth Amendment fundamentally different from other rights in the Constitution?
3. What is the general rule that the government must follow if they would like to conduct searches or seizures? Is this rule always followed?
4. What is the "Exclusionary Rule" and what purpose does it serve?

ACTIVITY 8: Read the article, *The Fourth Amendment and New Technologies* and answer the discussion question after the article.

~THE FOURTH AMENDMENT AND NEW TECHNOLOGIES~

https://www.heritage.org/report/the-fourth-amendment-and-new-technologies

Law is the formal embodiment of rules that legislators, regulators, and judges etch into statute books, administrative manuals, and judicial decisions. It is unavoidable and desirable to see the law change as technology becomes increasingly sophisticated.

Before there were automobiles and aircraft, there was no need for a law prohibiting their theft.[1] Similarly, before there were telecommunications systems, there was no need for a law to protect the integrity of the conversations of subscribers.[2] And before there were electronic devices such as satellites, digital cameras, and Cray computers, there was no reason to be concerned with the government's use of those tools to find, identify, acquire, analyze, and store significant amounts of information about Americans.

Today, however, these new technologies are a reality and society must decide how to regulate their use—particularly with regard to government surveillance. The use of those devices for law enforcement offers potential benefits and costs, and society ought to debate the pros and cons of the trade-off between efficiency and efficacy of law enforcement techniques and the privacy rights of citizens the government may wish to monitor.

The opportunity for such a debate arises because of the public nature of criminal trials and the constitutional evidentiary rules governing the government's use of evidence acquired by modern surveillance technology. If the government seeks to prove a defendant's guilt by using evidence derived from its reliance on advanced technologies, defendants can demand that the courts review the legality of the government's conduct, and judges will be forced to bless or condemn the use of whatever evidence the government seeks to introduce. Those decisions then define what the Fourth Amendment means.

The Relationship Between the Fourth Amendment and Technology

The Fourth Amendment provides as follows:

The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no Warrants shall issue, but upon probable cause, supported by Oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized.

The amendment prohibits the government from conducting unreasonable "searches" and "seizures." The exclusionary rule enforces the amendment by prohibiting federal, state, or local judges from admitting in the government's case-in-chief evidence obtained in violation of the Fourth Amendment.[3] Parties injured by an unlawful search or seizure can also bring a damages action against the officers involved, but the exclusionary rule has made criminal trials the most likely forum for a public airing of competing versions of what the Fourth Amendment should protect.

Yet, even though the Fourth Amendment has been a fundamental part of American jurisprudence for nearly 225 years—and the exclusionary rule a constitutionally required remedy for nearly a century[4]—the question of whether reliance on sensory-enhancing technology can render a search or seizure unreasonable is a relatively new one. No one seems to have challenged a sheriff's use of spectacles or torches to improve his day or night vision,[5] although it is certain that one or more constables or local residents called out as part of a "hue and cry" or Old West posse must have used them. Perhaps, glasses and torches were so widely used and seemed so reasonable that no one thought to question them, or perhaps they were used, not to acquire proof of a suspect's guilt, but just to find him. Whatever the reason, it seems that it was not until society harnessed electricity and invented telephones that anyone thought to challenge law enforcement's use of sensory-enhancement technology.

The Supreme Court first addressed the issue in 1927. Specifically, in *United States v. Lee*,[6] the Court held that shining a deck-mounted spotlight onto the open deck of a vessel used for rum running did not constitute a "search" for purposes of the Fourth Amendment.[7] Rather than treat the defendant's claim as raising a novel Fourth Amendment issue, the Court gave it the back of the hand.[8]

The following year, the Court held in *Olmstead v. United States*[9] that the interception of telephone communications not requiring a physical trespass onto a person's property—colloquially known as "bugging"—also did not constitute a search or seizure. The officers listened in on Olmstead's phone conversation, not by entering his home, but by attaching intercept equipment to phone lines found elsewhere. Because that form of eavesdropping did not involve a trespass, the Court ruled that a search had not occurred.

That is where the law stood for the next four decades,[10] until 1967, when the Supreme Court decided *Katz v. United States*.[11]

The issues raised in Katz stem from the following fact pattern: Charles Katz was using a public outdoor telephone booth to engage in an activity familiar to all March Madness fans: gambling on sporting events. Unbeknownst to Katz, the FBI had attached an electronic listening and recording device to the outside of the phone booth, and the government used the content of his recorded communications against Katz at a trial for violating the federal gambling laws. Breaking new ground, the Supreme Court reversed, ruling that the government had unlawfully violated Katz's privacy interest in the content of his conversations.

The Court started by noting that "the correct solution of Fourth Amendment problems is not necessarily promoted by incantation of the phrase 'constitutionally protected area'" and that "the Fourth Amendment cannot be translated into a general constitutional 'right to privacy.'"[12] As

the Court reasoned, the Fourth Amendment "protects individual privacy against certain kinds of governmental intrusion, but its protections go further, and often have nothing to do with privacy at all."[13]

Eschewing its prior use of the term "constitutionally protected area" to define the scope of the Fourth Amendment,[14] the Court wrote that asking whether an outdoor public phone booth was "a constitutionally protected area" was a mistake,[15] because "the Fourth Amendment protects people, not places."[16] On the one hand, the Court reasoned, "[w]hat a person knowingly exposes to the public, even in his own home or office, is not a subject of Fourth Amendment protection," while, on the other hand, "what he seeks to preserve as private, even in an area accessible to the public, may be constitutionally protected."[17]

The fact that Katz was visible when he used the telephone was irrelevant, the Court noted, because what Katz could justifiably seek protection from was not "the intruding eye," but "the uninvited ear."[18] Concluding that "searches conducted outside the judicial process, without prior approval by judge or magistrate, are per se unreasonable under the Fourth Amendment subject only to a few specifically established and well-delineated exceptions,"[19] none of which was applicable there, the Court ruled that the government's conduct violated the Fourth Amendment.

Katz seemed to be a watershed decision in Fourth Amendment law. The Court rejected the proposition that common law trespass law defined the scope of the Fourth Amendment[20] and appeared to endorse the two-pronged test, articulated by Justice Harlan in his concurring opinion: the Fourth Amendment safeguards privacy interests that an individual and society deem reasonable.[21] Katz signaled that the Supreme Court might rethink its entire approach to Fourth Amendment coverage by using privacy rather than property concepts. Some applauded that prospect; others feared it. As it turned out, however, the Court did not go very far down the road that supporters and critics anticipated.

Post-Katz Case Law

The Court often has reiterated the two-pronged inquiry that Justice Harlan articulated in Katz as a means of defining a "search."[22] At the same time, however, the Court has not eschewed reliance on property rules to define the contours of searches and seizures, and, on occasion, has specifically relied on such rules in determining whether a search or seizure has occurred. For example, the Court in Katz ruled that a person who enters a phone booth does not assume the risk of being overheard. By contrast, in *United States v. White*,[23] the Court held that a person who invites someone into his or her home assumes the risk, not only of being betrayed, but also of being recorded. Katz rejected reliance on arcane rules of property law to define the scope of the Fourth Amendment. By contrast, *Oliver v. United States*[24] reaffirmed the proposition that the Fourth Amendment does not apply to the "open fields" because the crown could enter upon them at common law.[25] The Court in Katz endorsed a privacy-based approach to the Fourth Amendment. By contrast, the Court in *United States v. Miller*[26] and *Smith v. Maryland*[27] concluded that once a person allows someone else access to personal information, any privacy interest in that information is gone forever.[28] And recently in *United States v. Jones*,[29] the Court held that the physical placement of a GPS tracking device on a person's vehicle and subsequent monitoring of its movements constituted a search for Fourth Amendment purposes, because the placement constituted a trespass under the common law.

As a result of these decisions, parties who had hoped for a revolution in Fourth Amendment law have been disappointed—not only by the results of the Supreme Court's post-Katz case law, but also by what they see as the Court's abandonment of its promised concern for individual privacy. As Professor Anthony Amsterdam once wrote: "I can conceive of no rational system of concerns and values that restricts the government's power to rifle my drawers or tap my telephone but not its power to infiltrate my home or my life with a legion of spies."[30]

For privacy advocates, however, all is not lost. In recent Supreme Court case law there have been stirrings of a renewed interest in a privacy-based analysis of the Fourth Amendment. A few decisions have given privacy advocates hope that perhaps the Court is concerned after all about the use of new technologies to intrude on Americans' "persons, houses, places, and effects." For example, in *Kyllo v. United States*,[31] the Court held that use of thermal-imaging technology—a device that measures heat emissions from within a structure—to learn what is transpiring within a home did, in fact, constitute a search. Similarly, in *Florida v. Jardines*,[32] the Court found that a new use for an old technology—i.e., a dog's exceptional ability to sniff out items such as drugs—can amount to an invasion of privacy if the dog is in a place that man's best friend is not entitled to be.[33] And, in *Maryland v. King*,[34] a closely divided Court upheld the use of suspicionless buccal swabbing (a relatively non-invasive way of collecting cells from the inside of one's cheek) for the purpose of performing a DNA analysis of an arrestee only in limited circumstances (i.e., the arrest was for a serious crime, and the DNA analysis did not disclose genetic or medical information) and so long as the information gleaned was not recorded in a database compiling genetic or medical information.[35] Indeed, privacy advocates are particularly encouraged by the fact that the Court's newfound interest in privacy protection seems to extend across the conservative-liberal divide.[36]

How Will the Supreme Court Apply the Fourth Amendment to New Technologies?

The Kyllo, Jones, and King cases offer excellent examples of technologies that did not exist when the Supreme Court decided Katz. And there are a host of other information gathering, analyzing, and recording devices that raise the same types of concerns that motivated the Court in Katz to focus on a person's privacy—rather than property rights—as the locus of Fourth Amendment concern.

Consider the Global Positioning Satellite (GPS) system.[37] The GPS system identifies a specific person's cell phone location within meters.[38] Cell phone manufacturers and telecommunications companies installed GPS software in cell phones in order to make it easier for law enforcement and emergency medical services teams to respond to 911 calls.[39] Now, however, the same tool allows law enforcement to track a person's movements as long as he or she is carrying an operational cell phone.[40] There will be considerable litigation over the circumstances in which law enforcement can obtain GPS tracking information.[41]

Predicting where the Supreme Court will take Fourth Amendment law in connection with new technologies based on the few and vague suggestions set forth in the majority, concurring, and dissenting opinions in cases such as Kyllo, Jones, Jardines, and King is a more hazardous undertaking than Joseph's analysis of the Pharaoh's dreams.[42] Nonetheless, there are a few predictions that can be made with a tolerable degree of certainty.

First, like a military Explosives Ordinance Disposal technician attempting to clear a minefield, the Court is likely to address new technologies deliberately, and incrementally, using the old-fashioned common law, case-by-case approach to decision making—rather than attempt to devise broad rules that would decide a large category of cases not presently before the Court.[43] Indeed, the Court has expressed a reluctance to decide more than what is necessary to resolve the particular case before it, partially because judges are not in a position to fully understand contemporary technology (let alone to anticipate future developments) or society's likely reaction to them.[44]

In that process the Court might be willing to reconsider old doctrines. Some parties have urged the Court to reconsider its precedents in light of new technologies and changed attitudes.[45] Justice Sotomayor, for one, has signaled her willingness to reconsider the so-called third-party doctrine under which a person has no reasonable expectation of privacy in information voluntarily disclosed to a third party.[46] On the other hand, Justice Alito, joined by Justices Ginsburg, Breyer, and Kagan, has indicated an unwillingness to abandon the "reasonable expectation of privacy" test adopted in Katz and to return Fourth Amendment law to a property rights–based approach.[47] Whether the Court goes forward, backward, or nowhere remains to be seen.

Second, the Court, in construing the Constitution, may recognize that a haunting presence—9/11—compels the Congress and the President to obtain information necessary for the defense of the nation against the type of assaults suffered on that day. The Court may come to see that the need to prevent certain potential catastrophic terrorist actions (e.g., detonation of a "dirty" bomb in a major metropolitan area) is far weightier than the need to solve a common law crime (e.g., burglary) and tips the balance in the government's favor.

The idea that the government's need for information ranges from the essential to the trivial is not a new one. Justice Robert Jackson once suggested that the Court should interpret the Fourth Amendment differently in cases involving child kidnapping and bootlegging.[48] For the most part, the Court has not accepted his suggestion,[49] and the Court has not calibrated Fourth Amendment protections according to the seriousness of the offense being investigated. The best example of that approach is the Court's 2001 decision in City of Lago Vista, which rejected the argument that the Fourth Amendment prohibited a warrantless custodial arrest for misdemeanors not amounting to a "breach of the peace," such as not wearing a seatbelt.[50] Perhaps the Court has been unwilling to distinguish between misdemeanors and felonies, and even among the various types of crimes denominated felonies, for Fourth Amendment purposes because the Court sees that function as a legislative one. Whatever the reason, the Court has accepted an "in for a dollar, in for a dime" approach to Fourth Amendment decision making. That may change. The Supreme Court may determine that it needs to give more weight to the government's need for intelligence information in order to protect the nation against a repeat of 9/11.

And in cases involving foreign threats to national security,[51] the Court has left itself room to do just that. For example, the Court has approved certain types of warrantless and suspicionless searches that are performed not to obtain evidence for use in a criminal prosecution, but to secure information for use in other, very different contexts.[52] Recently, the Court went out of its way to limit its approval of certain government practices—DNA testing of arrestees—to parties taken into custody for "serious" offenses.[53] In coming years, the Court may find itself confronting cases involving presidential power to collect foreign intelligence.

Third, if the Court grants the federal government such unrestricted authority to obtain private information for counterterrorism uses, the Court may also decide that it needs to modify the exclusionary rule in order to limit the government's use of that evidence for only intelligence or antiterrorism purposes. That is, the Court could decide that the government may use sophisticated electronic information acquisition and analysis technology in order to protect the nation against terrorist threats, but may not use that information in an ordinary criminal prosecution unrelated to the need that justified the original search or seizure. The Court will have to sort out competing constitutional values involving both law enforcement, military, and foreign intelligence needs and the privacy of Americans.

Fourth, the Court may postpone addressing many aspects of the relationship between the Fourth Amendment and new technologies in order to see if Congress will tackle the problem by adopting a new regulatory scheme balancing information gathering needs and privacy considerations. Four justices already have made that point.[54]

On the other hand, reluctant to anger any sizeable portion of the electorate, especially one that tends to make its opinions known in the print or electronic media, Members of Congress may decide to let the federal courts make the trade-off, at least in the first instance, in order to gauge the public's response before taking a position of their own. Congress therefore might try to wait until the Supreme Court decides the Fourth Amendment issues before swooping in to shoot the survivors.

Conclusion

The Fourth Amendment was not designed to serve as a static protection against government abuse. No provision of the Bill of Rights—particularly one outlawing "unreasonable" searches and seizures—could or should be cabined to the specific historical incidents that gave it birth. That construction would render the amendment a safeguard for the peculiar historical incidents that troubled late eighteenth century Americans rather than a guarantee that law enforcement officers act reasonably today and tomorrow.

At the same time, the Framers knew that foreign nations like England possessed superior military strength and could inflict considerable damage on the new nation on land or at sea. They likely would not have found unimaginable the need to make a trade-off between liberty and security, or to reassess that trade-off as times change. Today, hostile private organizations such as al-Qaeda possess the organizational infrastructure, financial strength, and communications abilities that nations could not have imagined in the eighteenth century, and weapons of mass destruction offer terrorist cells the ability to inflict far greater damage on this country than England's Royal Army and Navy could have inflicted on us two centuries ago. Such risks should count for something when the issue is whether the government has acted "reasonably."

How will the Supreme Court make that trade-off with regard to technologies unheard of two decades ago, to say nothing of two centuries ago? Nothing is certain. We will learn the answer only as specific cases push the Court to balance the still critical needs for security and liberty.

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ACTIVITY 8 (continued): DISCUSSION QUESTION:

1. How does modern technology make Fourth Amendment issues more complicated? Provide an example of a scenario that may be changed by modern technology.

ACTIVITY 9: DEFINITION QUESTIONS:

Based on the knowledge you have developed from the preceding resources, form a definition of each of the following terms:

1. Search
2. Seizure
3. Privacy
4. Reasonable

ACTIVITY 10: AMENDMENT COMPARISON:

In this lesson, you have explored the First Amendment and the Fourth Amendment. Compare how our understanding of the Fourth Amendment has changed over time in relation to other rights (as in the First Amendment).

Questions to consider for the comparison:

- Compared to rights like Freedom of Speech and Freedom of the Press, has our understanding of our Fourth Amendment rights changed more or less than those?
- How has technology changed how we communicate with other people and how has our understanding of privacy changed?
- Looking at the Bill of Rights, what, if any, other rights have changed as drastically as the Fourth? Are there any rights that have changed very little since America's founding? Why might this be?

The Great Inflation:
A Historical Overview and Lessons Learned

Benchmark Standard	Economics 2a: Students will develop an understanding of how economies function as a whole, including the causes and effects of inflation, unemployment, business cycles, and monetary and fiscal policies.
Grade	10
Vocabulary	See the list below

This lesson if from PAGE ONE Economics, October 2012

David A. Lopez, Senior Research Associate

"Once an independent central bank does not simply tolerate a low level of inflation as consistent with 'stability,' but invokes inflation as a policy, it becomes very difficult to eliminate."
—Former Federal Reserve Chairman Paul Volcker, September 18, 2011

GLOSSARY

- **Liquidity**: The quality that makes an asset easily convertible into cash with relatively little loss of value in the conversion process.
- **Natural rate of unemployment**: The unemployment rate that stems from economic factors unrelated to changes in aggregate demand.
- **Potential output**: The level of full gross domestic product that the economy would produce if all prices, including nominal wages, were fully flexible.
- **Price stability**: A low and stable rate of inflation maintained over an extended period of time.
- **Quantitative easing**: A monetary policy in which a central bank makes large-scale asset purchases designed to bolster financial market conditions.

The recent expansion in the **monetary base** (currency in circulation and bank deposits), brought about by the Federal Reserve's **quantitative easing** measures, has stoked fears of high inflation. Critics argue that by flooding the economy with massive amounts of **liquidity**—by expanding its balance sheet—the Fed may have set the stage for a possible surge in the future price level. Fears of high inflation are grounded in **memories of the Great Inflation**, which remain fresh in the minds of many. Soaring inflation battered the U.S. economy in the 1970s, ending only after the Fed, under **Chairman Paul Volcker**, applied **contractionary (tight) monetary policy** to rein in inflation. Though initially painful, this bold step eventually returned the inflation rate and expectations of future inflation to low and stable levels. In addition, the Fed reestablished its credibility for fighting high inflation.

Inflation is a rise in the general price level for goods and services. That is, inflation occurs when there is a sustained increase in prices across the board and not simply an increase in the price of one particular good or service. The Bureau of Labor Statistics (BLS) measures inflation by creating a weighted price index from a representative sample of goods and services consumed by households. The inflation rate is then determined by observing the yearly changes in that price index.1

Low and stable levels of inflation—usually around **2 percent**—are consistent with what economists consider **price stability**. 2 Ever-increasing (or unexpected) bursts of inflation, however, can have some detrimental **consequences**. For instance, creditors may charge higher interest rates to protect themselves from the costs of high inflation (i.e., being repaid in less-valuable dollars), which can hurt borrowers and curb lending. In addition, prolonged inflation can raise the public's expectations for future inflation. Consumers who expect higher inflation in the future may demand higher wages now. In response, firms may charge higher prices, leading to a vicious cycle where expectations of higher inflation lead to further increases in the general price level.3

In the past century, inflation in the United States was particularly high during World Wars I and II and the Korean War. The most recent spike in inflation occurred during the Great Inflation. The Great Inflation, which started in the mid-1960s, lasted for almost two decades and only began to dissipate in the early 1980s. During that time, the inflation rate soared from a mere 1.6 percent in 1965 to 13.5 percent in 1980 (see top chart). Inflation has been relatively tame since

its rapid decline in the early 1980s; the highest rate observed was only 5.5 percent during the commodity price boom in July 2008.

Certain economists attribute the Great Inflation primarily to monetary policy mistakes rather than other purported causes, such as high oil prices and defense spending during the Vietnam War. In the 1960s, Fed officials—and prominent economists—generally believed expansionary monetary policy could propel the economy toward full employment. In other words, they believed that elevated levels of inflation brought about by expansionary monetary policy would be tolerable as long as the policy spurred economic growth and brought unemployment down to its **natural rate**. Underlying this policy was the **Phillips curve**, which suggests that a trade-off exists between inflation and unemployment. Because some policymakers believed unemployment was above its natural rate at that time, they were more inclined to allow inflation to rise and move the economy toward its **potential output**. However, the natural rate was often underestimated: Economist Athanasios Orphanides (2002) found that the Fed may have overcommitted to its expansionary monetary policy stance because it was constantly aiming for—but never able to achieve—an "optimal" 4 percent unemployment rate.

Inflation ticked up throughout the 1970s until the Fed, under Chairman Volcker, took **drastic measures** to promote greater price stability. A special **Federal Open Market Committee** (FOMC) meeting on October 6, 1979, put in motion unique policy actions to combat the persistent surge in inflation. The Committee decided to target (i.e., reduce) specifically the growth rate of the money stock in the economy. Consequently, the **federal funds rate** soared from 10 percent at the start of 1979 to 19 percent by the middle of 1981, signaling the effects of tightening monetary policy designed to reduce inflation.

The Volcker disinflation, along with other factors, severely weakened the U.S. economy and resulted in two recessions in the early 1980s. Real (or inflation-adjusted) output remained stagnant from 1979 to 1982, and unemployment rose to more than 10 percent (see bottom chart). In addition, businesses failed in large numbers as access to capital became constrained due to higher interest rates. Specifically, almost 25,000 businesses failed in 1982—a postwar high that climbed to over 52,000 failures by 1984 (Samuelson, 2008). Credit-dependent sectors of the economy felt an even stronger pinch; sales of homes and cars suffered dramatically. Volcker's medicine was a tough pill to swallow at first, but it eventually had the desired effect.4 By the mid-1980s, inflation started to dip below 5 percent and has remained relatively stable ever since.

Two key **lessons** from the Great Inflation era remain relevant for the Federal Reserve today.5 First, **price stability is paramount** for a strong and growing economy. The Great Inflation showed that tolerating high levels of inflation in an effort to stimulate the economy would ultimately prove detrimental.6 Second, the public must be confident in the Fed's ability to lessen inflationary pressures—both now and in the future. In the 1970s, tepid policy responses by the Fed caused the public to lose faith in the Fed's ability to keep inflation in check. It was only after Chairman Volcker and the FOMC maintained a difficult policy stance that people began (slowly) to expect lower and less volatile inflation in the future—that is, price stability. With such hardwon trust, central bankers have been able to use monetary policy aggressively to stabilize economic conditions during the recent financial crisis. Low and stable inflation expectations continue to be evident; as long as this persists, we can infer that confidence remains strong in the Fed's ability to keep inflation at an appropriate level for the future. ■

NOTES

1 Other measures of the inflation rate can be obtained by using the personal consumption expenditure or gross domestic product deflator price indexes. Month-to-month changes in those indexes can also be used in place of year-over-year changes to provide additional indications of short-term price changes.

2 See Bernanke (2010) for the Fed Chairman's rationale for having moderately positive levels of inflation.

3 Other downsides of skyrocketing inflation include shoe-leather costs (i.e., the costs associated with more frequent cash withdrawals) and menu costs (i.e., the costs associated with constantly changing the prices of items during inflation, akin to printing a food menu multiple times); see Krugman and Wells (2009).

4 There exist some ethical issues on whether the benefits of Volcker's policies outweighed the social and economic costs of two recessions; see Avent (2010).

5 See Bullard (2009).

6 Bartlett (2012) discusses one view of inflation and growth in the current environment, while Rajan (2011) presents another.

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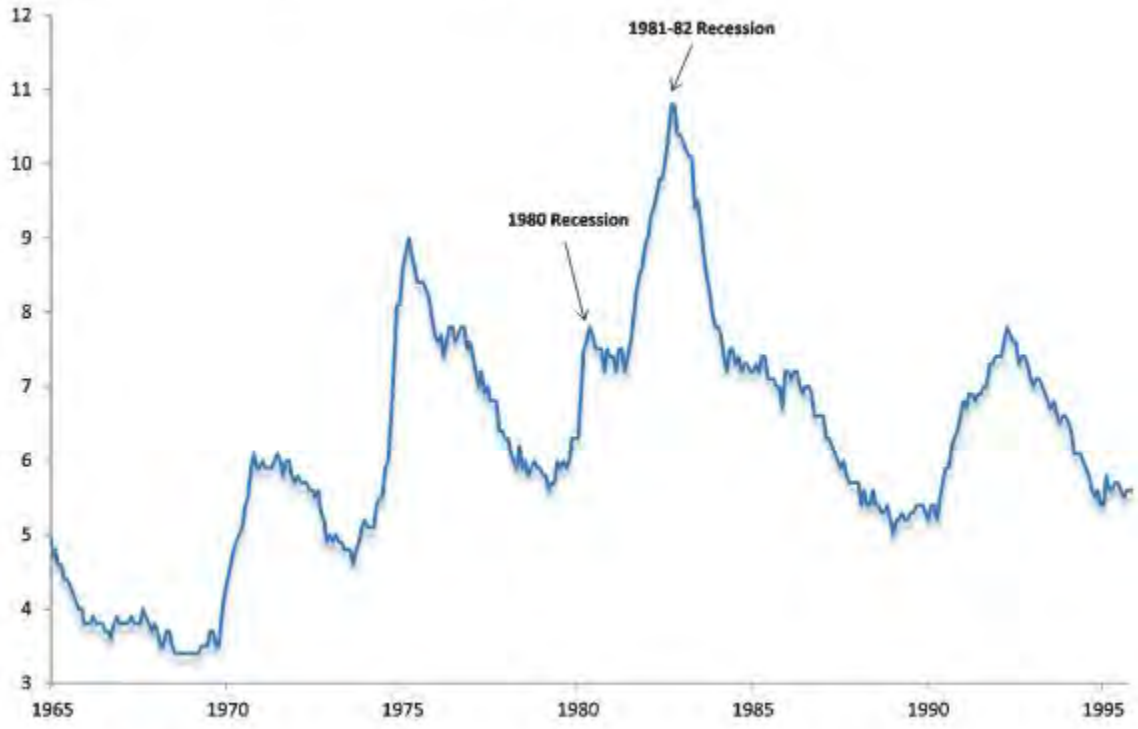
Inflation and Federal Funds Rates During and After the Great Inflation

SOURCE: BLS; Board of Governors of the Federal Reserve System; and Federal Reserve Economic Data (FRED), Series ID = CPIAUCLS & FEDFUNDS.

Unemployment Rate During and After the Great Inflation



SOURCE: BLS and FRED, Series ID = UNRATE.

ACTIVITY 1: After reading the article, answer the following questions:

1. Inflation Basics:
    a. What is inflation?
    b. How is inflation measured?
    c. What is the inflation rate?
    d. What level of inflation is consistent with price stability?
2. How did the inflation rate change between 1965 and 1980?
3. How do many economists explain the increase in the inflation rate during the Great Inflation?
4. Describe the drastic measures used by Chairman Paul Volcker and the FOMC to promote price stability. What is inflation? How is inflation measured? What is the inflation rate? What level of inflation is consistent with price stability?
5. What effects did the Volcker disinflation have on the economy?
6. What two key lessons remain relevant for the Federal Reserve today?

ACTIVITY 2:

For Further Discussion

Read the following, then use the visual to answer the questions based on the importance of central bank independence.

Governments borrow money for similar reasons that people do—they want goods and services now but are unable to pay the full amount immediately. Just as households might borrow to buy a house and pay for it over time, a government might borrow to build a bridge and pay for it over a number of years. The United States has accumulated vast amounts of debt over the decades, including debt added in recent years as the country has dealt with the aftermath of the financial crisis and the most recent recession.

1. How should governments pay for debt? Explain.

Imagine you could print your own money. Governments have that ability. There might be very legitimate temptations for governments to print money, for example, to feed the hungry, house the homeless, build a strong national defense, or simply to pay the bills or pay off debt from past spending. Even though it may sound like an easy solution, printing money can wreak havoc on an economy.

Germany in the early 1920s, Hungary in mid-1940s, and more recently Zimbabwe in the late 2000s all chose to print money to pay debt. In each case, the resulting episode of hyperinflation—an extremely high rate of inflation—caused severe damage to the economy and wiped out people's savings in the process. Hyperinflation usually ends with the government abandoning the old currency (making it worthless) and introducing a new currency.

The Federal Reserve System has successfully managed the money supply and inflation for most of its history because it was designed to be both accountable to the people of the United States and independent. Economists agree that an inflation rate that is low and stable creates the best conditions for economic growth and prosperity. So, why is independence important? When the central bank of a country is too closely aligned to the political process, the temptation to abuse the money supply—print money—can become too great. As a result, most governments have chosen to tie their own hands when it comes to monetary policy. They have delegated the task of managing the money supply to a nonelected group of individuals—a central bank. In fact, research has consistently shown a strong correlation between the degree of independence a central bank has and its ability to produce a low and stable inflation rate for its country.

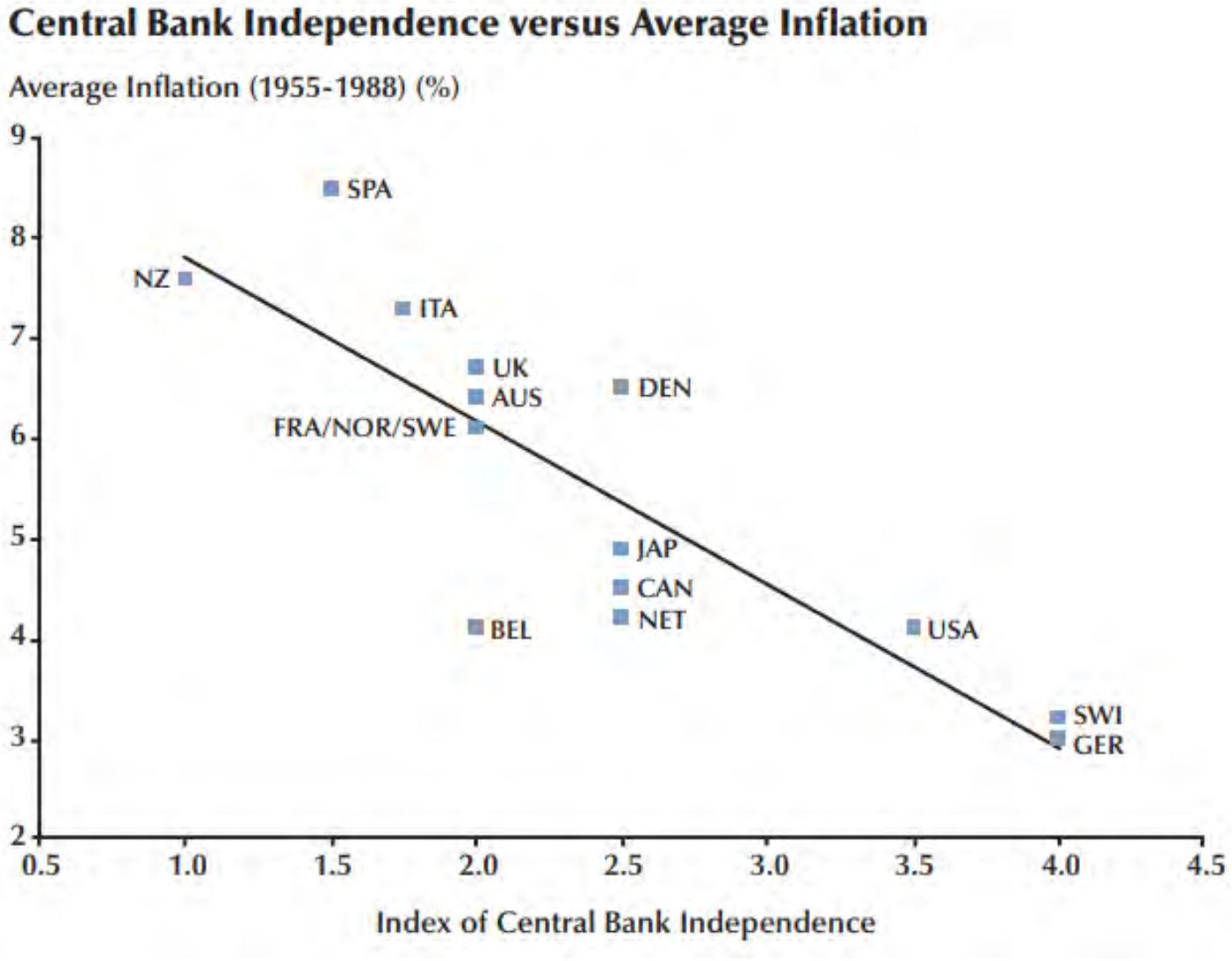
VISUAL QUESTIONS: Use the visual (on page 5) to help answer the questions on the relationship between central bank independence and inflation.

1. What variable is on the horizontal axis?
2. What variable is on the vertical axis?
3. What is the relationship between central bank independence and the inflation rate?

"The key point to remember is that giving the central bank independence is the best method for governments to tie their own hands and prevent them from misusing monetary policy for short-term political reasons."

---- *Christopher Waller, Research Director at the Federal Reserve Bank of St. Louis*

Visual 1



SOURCE: Http://research.stlouisfed.org/publications/review/11/09/293-302Waller.pdf