Christina School District Assignment Board

Grade Level: 10th

Week 2: of April 13, 2020

		Day 1	Day 2	Day 3	Day 4
ELA		Read the article "What is Utopia." As you read, annotate words or phrases that give clues to help you understand what utopia is. Once done reading, look at the words you marked. Write your own definition of utopia. Write a brief paragraph describing your version of utopia.	Read the article "What is Dystopia." As you read, annotate words or phrases that give clues to help you understand what dystopia is. Once done reading, look at the words you marked. Write your own definition of dystopia. Write a brief paragraph comparing and contrasting utopia and dystopia. What message might an author attempt to convey by using either of the two genres. Note: There is no right or wrong answer. You will come back to this question during the week.	Think about a movie or book that you have read/seen. In 1-2 paragraphs summarize the movie/book and explain how it fits into the genre of either utopia or dystopia. What area of society is being highlighted and what lessons do you think the writer or film producer wanted the audience to take from the piece. If you cannot think of any, think about The Hunger Games, The Giver, A Handmaid's Tale, The Purge, The Good Place, The Lottery.	Your Perfect World. On a separate sheet of paper, answer the following questions: ● If you could live anywhere in the world, where would you live? ● Why? What about this place appeals to you? ● Describe your perfect life. Who would you want with you? What would you do every day? How would you make money? What kind of rules would you follow (or not)? Use these answers to complete the 'Create your Utopia' Assignment.
Math (IM2)		*Measuring Without Measuring*	Complete Trigonometric Ratios Worksheet 2 #1-11. (attached)	Complete L1 Inv2 #4 and Summarize the Mathematics a, b, and c.	Complete CC Standards Practice - Week 1 #1-3. (attached)

Christina School District Assignment Board

			Review Concept Summary: Trigonometric Ratios (attached), and complete Trigonometric Ratios Worksheet 1 #1-3. (attached)	Reference Concept Summary if needed.	(attached) Reference Concept Summary if needed.	Reference Concept Summary if needed.
Science			**What is DNA?:** Read article. Highlight, underline and/or annotate for understanding. Write at least one paragraph summarizing the central idea and key details.	**DNA Structure:** Read article. Highlight, underline and/or annotate for understanding. Write at least one paragraph summarizing the central idea and key details.	**Fitting Inside a Cell:** Read article. Highlight, underline and/or annotate for understanding. Write at least one paragraph summarizing the central idea and key details.	**DNA Replication:** Read article. Highlight, underline and/or annotate for understanding. Write at least one paragraph summarizing the central idea and key details.
Social Studies	**CIVICS**		Complete Activity 1 from the document titled, "Get the Party Started"	Complete Activity 2 from the document titled, "Get the Party Started"	Complete Activity 3 from the document titled, "Get the Party Started"	Complete Activity 4 from the document titled, "Get the Party Started"
	ECONOMICS		Complete Questions 1, 2, & 3 from the document titled, "The Economics of Subsidizing Sports Stadiums"	Complete Questions 4 & 5 from the document titled, "The Economics of Subsidizing Sports Stadiums"	Complete Questions 1, 2, & 3 from the document titled, "Would increasing the Minimum Wage Reduce Poverty?"	Complete Questions 4 & 5 from the document titled, "Would increasing the Minimum Wage Reduce Poverty?"

What Is Utopian Literature?

Last updated: Nov 8, 2019

Many twenty-first century readers are familiar with the genre of dystopian fiction, in which stories are set in bleak worlds where the future has gone off the rails. Fortunately, dystopian fiction has a far less bleak sibling in the broader world of speculative fiction, science fiction, and fantasy; this sibling genre is called utopian fiction. Utopian literature has existed for decades, spanning a range of cultures and philosophies.

What Is Utopian Literature?

Utopian fiction is a style of fiction that takes place in an idealized world. The author of a utopian novel sets their narrative in a world that aligns with their broader ethos and personal philosophy. This does not mean that utopian works are free from conflict.

The same core elements of fiction—compelling storytelling, a well-developed main character, and problems that must be solved—apply to utopian literature. The difference is that utopian novels are often set in a perfect society or ideal state. The injection of conflict into an ideal society may seem antithetical, but as utopian authors demonstrate, human beings have a knack for creating conflict if given enough time.

The History and Origins of Utopian Literature

The term “utopia” was invented by the English philosopher Sir Thomas More, recalling ancient Greek words meaning “good place” and “no place.” More’s book Utopia, published in 1516, describes an ideal utopian society, and his vision has ever since served as a touchstone for philosophers, public servants, and fiction writers alike. To this day, utopian studies is offered in philosophy departments at major universities.

Although More coined the term “utopia,” the examination of perfect societies predates him by many centuries. In roughly 370 BC, Plato published Republic which described attributes of an ideal state. Plato’s Republic inspired philosophers of other nationalities such as the Roman Plutarch to envision a best-case scenario future civilization.

Characteristics and Types of Utopia Fiction

Utopian literature typically isolates elements of present-day reality that need improvement, and it then conjures worlds that feature that improvement.

Ecological utopia stories present worlds where climate and natural resources no longer face the dire crises they do today.

Feminist utopias offer worlds where women and men are fully equal.

Technological utopias depict advancements in computing, robotics, and transportation that are mere dreams in the present world.

Utopian stories have endured for centuries and provide a reminder of the positive potential of humankind.

What is Dystopian Fiction?

Last updated: Oct 9, 2019

Dystopian fiction offers a vision of the future. Dystopias are societies in cataclysmic decline, with characters who battle environmental ruin, technological control, and government oppression. Dystopian novels can challenge readers to think differently about current social and political climates, and in some instances can even inspire action.

What Is Dystopian Fiction?

Dystopian literature is a form of speculative fiction that began as a response to utopian literature. A dystopia is an imagined community or society that is dehumanizing and frightening. A dystopia is an antonym of a utopia, which is a perfect society.

What Is the Significance of Dystopian Fiction?

Dystopian novels that have a moralistic message often explore themes like anarchism, oppression, and mass poverty. Margaret Atwood, one of literature's most celebrated authors of dystopian fiction, thinks about it like this: "If you're interested in writing speculative fiction, one way to generate a plot is to take an idea from current society and move it a little further down the road. Even if humans are short-term thinkers, fiction can anticipate and extrapolate into multiple versions of the future."

Here are other reasons why dystopian fiction is significant in literature:

Dystopian fiction can be a way to educate and warn humanity about the dangers of current social and political structures. Margaret Atwood's 1985 novel The Handmaid's Tale takes place in a futuristic United States, known as Gilead. It cautions against oppressive patriarchy.

Dystopian stories may convey an author's beliefs. For example, H.G. Wells' 1895 novel The Time Machine reflected Wells' socialist views. The story follows a Victorian England scientist who builds a time machine and witnesses the pitfalls of a capitalist society.

Dystopian stories require a greater suspension of disbelief and can be very imaginative. For example, George Orwell's allegory Animal Farm is about a group of pigs who stage a rebellion against their human farmer. The farm animals' rise to power is based on the Russian Revolution.

Dystopian novels can also be satirical critiques. For example, the 1962 novel A Clockwork Orange by Anthony Burgess is a social satire of behaviorism. It takes place in a futuristic society with a youth subculture of extreme violence. A totalitarian government protects society by prescribing good behavior and abolishing violent impulses.

Characteristics of Dystopian Fiction: Government Control

Government plays a big role in dystopian literature. Generally, there is either no government or an oppressive ruling body.

In George Orwell's 1984, the world is under complete government control. The fictional dictator Big Brother enforces omnipresent surveillance over the people living in the three inter-continental superstates remaining after a world war.

Always Coming Home by Ursula K. Le Guin is a 1985 science-fiction novel that follows the Kesh community of people in a post-apocalyptic world. The Kesh repudiate a government system and are self-organized.

The Hunger Games, a young adult trilogy by Suzanne Collins beginning in 2008, takes place in the fictional world Panem, a future nation on the ruins of North America. Panem's totalitarian government called The Capitol holds most of the country's wealth and controls the citizens. Each year, children from Panem's 12 districts are selected to participate in a televised death match called the Hunger Games.

Characteristics of Dystopian Fiction: Technological Control

Advanced science and technology in dystopian works go beyond tools for improving everyday life—technology is often depicted as a controlling, omnipresent force and is often used as a fear-mongering tactic.

Brave New World by Aldous Huxley, written in 1932, explores the danger of technology. The ruling World State uses powerful conditioning technologies to control reproduction and citizens' actions.

Do Androids Dream of Electric Sheep? by Philip K. Dick takes place in a post-apocalyptic San Francisco after a nuclear global war in 1992. This 1968 novel was the basis for the film The Blade Runner and explores the dangers of advanced technology. There are android robots indistinguishable from humans, and mass extinction has led to artificial animals.

Feed by M.T. Anderson is a young adult dystopian novel written in 2002 about a near-future America controlled by Feednet, a computer network that is implanted into the brains of 73% of American citizens.

Characteristics of Dystopian Fiction: Environmental Disaster

Dystopian novels are often set in places that are inhabitable, have been destroyed, or are preparing for destruction.

The Road by Cormac McCarthy, written in 2006, is a post-apocalyptic story about a father and son venturing across the ruins of America after an extinction event.

The Maze Runner is a series by James Dashner chronicling the events of how the dystopian world had been destroyed by massive solar flares and coronal mass ejection. In the first book of the series, a group of teenage boys are stuck in an imaginary place called The Glade and have to find their way of out its ever-changing maze.

Characteristics of Dystopian Fiction: Survival

The oppressive powers and destruction in dystopian worlds often leave the inhabitants to fend for themselves.

The Running Man was written by Stephen King and first published under the pseudonym Richard Bachman in 1982. Taking place in 2025, the novel is about an impoverished man living under an oppressive government who competes on a life-threatening game show in order to earn money to care for his family.

Lord of the Flies by William Golding, written in 1954, is about a group of schoolboys who are abandoned on a tropical island after their plane is shot down during a fictional atomic war. Conflicts emerge between the boys as they struggle to build a civilization and fight for survival.

The City of Ember by Jeanne DuPrau is set in an underground world called Ember. The isolated city was constructed to thwart an impending disaster and follows a group of teenagers working to find their way out.

Characteristics of Dystopian Fiction: Loss of Individualism

How should the needs of society as a whole compare to individual needs? Many dystopian futures depict the dangers of conformity.

Fahrenheit 451 by Ray Bradbury, written in 1953, follows a fireman whose job is to burn books. Because of the censorship of books, this future society has increased interest in technology and entertainment—and an inability to think freely and creatively.

The Giver by Lois Lowry is a 1993 young adult novel about a society that has no pain because the community has all been converted to “Sameness.” The story follows a 12-year-old boy who is selected to be the society’s Receiver of Memory and will store the memories of the community before “Sameness” was enacted.

We by Yevgeny Zamyatin, written in 1920, follows a spacecraft engineer living in the future nation called One State. The citizens of One State wear uniforms and are referred to by number.

Unlike utopian literature, dystopian literature explores the dangerous effects of political and social structures on humanity’s future.

Create Your Utopia

On a separate sheet of paper, outline your utopia:

1. Name of Your Utopian Society
Choose a creative and appropriate name to represent your new society. Explain your choice in a way that makes the reasons for the name clear.

2. Declaration of Independence
Write a brief statement (1-2 paragraphs) describing the reasons for your formation of a utopian society. In other words, what specifically don't you like about current society? How has the current society broken trust with you? Why do you feel the need to form a "more perfect" society? You might refer to the U.S. Declaration of Independence for ideas.

3. Utopian Motto and Seal with Animal
Create a slogan or motto that inhabitants of your utopia will follow, and develop a utopian seal. Explain the meaning and significance of the motto and seal you choose. What animal would symbolize your utopia? Explain your choice.

4. List of Rules
Develop a list of at least ten rules that all community members will follow. Provide a rationale for each rule.

5. Governing Body
How will the government of this utopia be structured? Will you have a democracy, an anarchy, a monarchy, or a dictatorship? How will your utopia make decisions?

IM2 – Week of April 6th

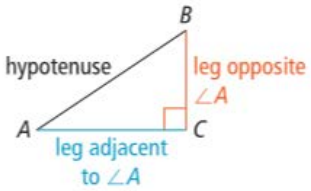
Measuring Without Measuring

Concept Summary Assess

CONCEPT SUMMARY Trigonometric Ratios

WORDS For a right triangle, **the trigonometric ratios sine, cosine,** and **tangent** relate the measure of an acute angle of the triangle to the lengths of the sides.

DIAGRAM Triangle ABC is a right triangle.



SYMBOLS

$$\sin A = \frac{\text{length of leg opposite } \angle A}{\text{length of hypotenuse}}$$

$$\cos A = \frac{\text{length of leg adjacent to } \angle A}{\text{length of hypotenuse}}$$

$$\tan A = \frac{\text{length of leg opposite } \angle A}{\text{length of leg adjacent to } \angle A}$$

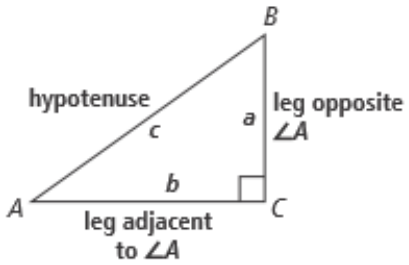
Trigonometric Ratios Worksheet 1

1. In a right triangle, the sine ratio of an acute angle is $\frac{\text{length of opposite leg}}{\text{length of hypotenuse}}$.

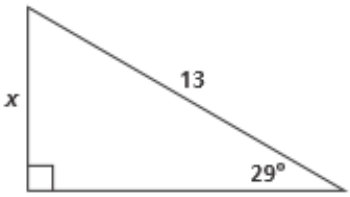
The cosine ratio is $\frac{\text{length of adjacent leg}}{\text{length of hypotenuse}}$. The tangent ratio is $\frac{\text{length of opposite leg}}{\text{length of adjacent leg}}$.

Draw a line to match each trigonometric ratio with the correct ratio of sides.

Trigonometric ratio:	$\sin A$	$\cos A$	$\tan A$
Ratio of sides:	$\frac{a}{c}$	$\frac{a}{b}$	$\frac{b}{c}$



2. What is Yuson's error in solving for the value for x? What is the correct value of x? Round to the nearest tenth.



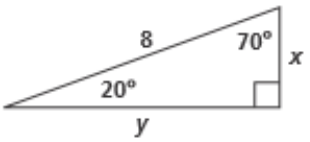
$\cos 29° = \frac{\text{opposite}}{\text{hypotenuse}}$

$\cos 29° = \frac{x}{13}$

$x = 13 (\cos 29°)$

$x \approx 11.4$

3. Find x and y in the triangle. Round to the nearest tenth.



Solve for x.

$\cos$ _____ $= \frac{\text{leg adjacent}}{\text{hypotenuse}}$

$\cos$ _____ $= \frac{x}{\_\_}$

$x =$ _____ $\cdot \cos$ _____

$\approx$ _____

Solve for y.

$\sin$ _____ $= \frac{\text{leg opposite}}{\text{hypotenuse}}$

$\sin$ _____ $= \frac{y}{\_\_}$

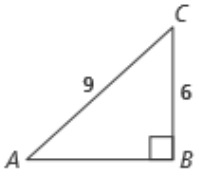
$y =$ _____ $\cdot \sin$ _____

$\approx$ _____

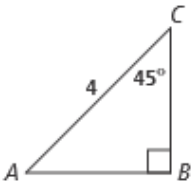
Trigonometric Ratios Worksheet 2

For Exercises 1–3, find sin *A*, cos *A*, and tan *A*.

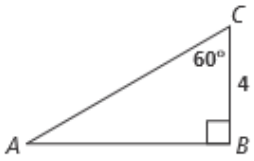
1.



2.

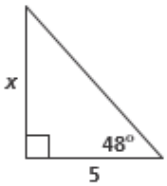


3.

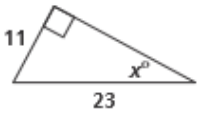


For Exercises 4–9, find the value of *x*. Round to the nearest tenth.

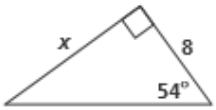
4.



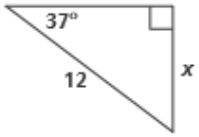
5.



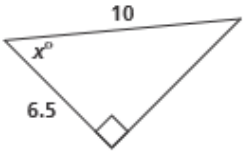
6.



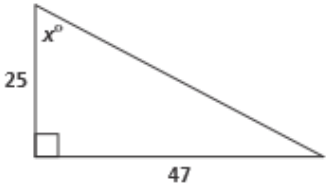
7.



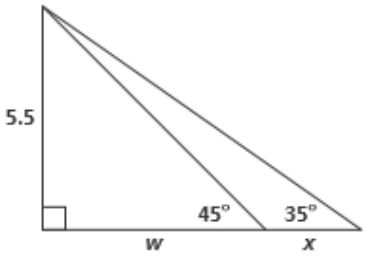
8.



9.



10. Skylar drew two triangles that share a side and labeled the two portions of the base *w* and *x*. Then he solved for *w* and *x* as shown. Are his calculations correct? Explain.



$$\sin 45° = \frac{5.5}{w}$$

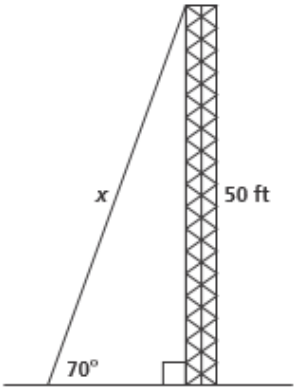
$$w = \frac{5.5}{\sin 45°} = 7.8$$

$$\sin 35° = \frac{5.5}{w + x}$$

$$w + x = \frac{5.5}{\sin 35°} \approx 9.6$$

$$x = 1.8$$

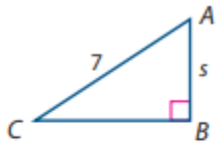
11. A wire makes a 70° angle with the ground and is attached to the top of a 50 ft antenna. How long is the wire? Round to the nearest foot.



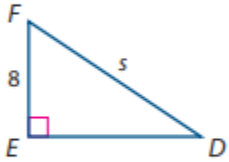
L1- Inv2

4. For each right triangle below, write two equations involving trigonometric functions of acute angles that include "s" and the indicated length. Then rewrite each equation in the form "s = … . "

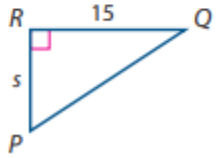
a.



b.

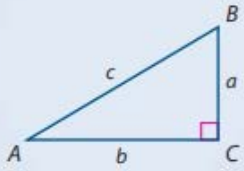


c.



Summarize the Mathematics

The trigonometric functions sine, cosine, and tangent are useful in calculating lengths in situations modeled with right triangles. Refer to the right triangle below in summarizing your thinking about how to use trigonometric functions in the situations described.



(a) If you knew b and the measure of $\angle A$, how would you use that information to find a? How could you find $m\angle B$? How could you find c?

(b) If you knew c and the measure of $\angle B$, how would you use that information to find a? How could you find $m\angle A$? How could you find b?

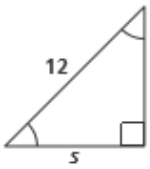
(c) If you knew a and the measure of $\angle A$, how would you use that information to find c?

Be prepared to explain your methods to the entire class.

CC Standards Practice Week 1

Selected Response

1. What is the value of s?



Ⓐ $3\sqrt{2}$

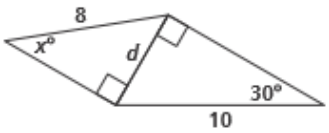
Ⓑ 6

Ⓒ $6\sqrt{2}$

Ⓓ 12

Constructed Response

2. Find the values of d and x to the nearest tenth.



Extended Response

3. A 9-ft ladder is leaning against a wall and makes a 55° angle with the ground.

a. Make and label a diagram to model this scenario.

b. How far up the wall is one end of the ladder? How far away from the wall is the other end? Round to the nearest tenth.

c. Verify your answers using the Pythagorean Theorem.

(Day 1) What is DNA?:

BY CRAIG FREUDENRICH, PH.D.

The double helix.
IMAGE COURTESY U.S. NATIONAL LIBRARY OF MEDICINE

Like the one ring of power in Tolkien's "Lord of the Rings," **deoxyribonucleic acid** (DNA) is the master molecule of every cell. It contains vital information that gets passed on to each successive generation. It coordinates the making of itself as well as other molecules (proteins). If it is changed slightly, serious consequences may result. If it is destroyed beyond repair, the cell dies.

Changes in the DNA of cells in multicellular organisms produce variations in the characteristics of a species. Over long periods of time, natural selection acts on these variations to evolve or change the species.

The presence or absence of DNA evidence at a crime scene could mean the difference between a guilty verdict and an acquittal. DNA is so important that the United States government has spent enormous amounts of money to unravel the sequence of DNA in the human genome in hopes of understanding and finding cures for many genetic diseases. Finally, from the DNA of one cell, we can clone an animal, a plant or perhaps even a human being.

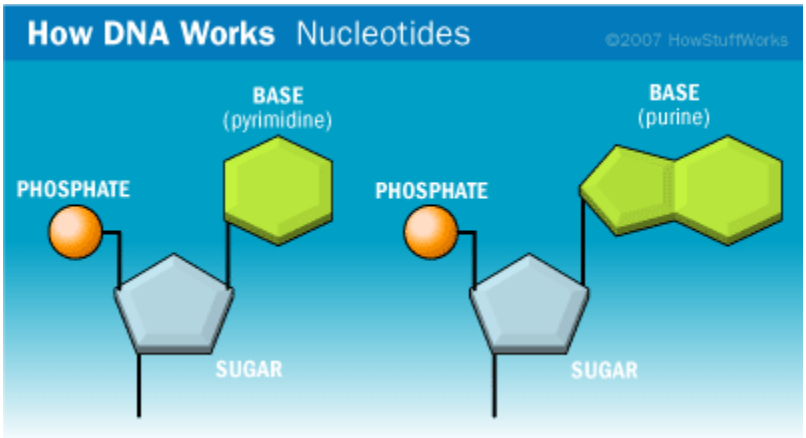
But what is DNA? Where is it found? What makes it so special? How does it work? In this article, we will look deep into the structure of DNA and explain how it makes itself and how it determines all of your traits. First, let's look at how DNA was discovered.

DNA is one of a class of molecules called **nucleic acids**. Nucleic acids were originally discovered in 1868 by Friedrich Meischer, a Swiss biologist, who isolated DNA from pus cells on bandages. Although Meischer suspected that nucleic acids might contain genetic information, he could not confirm it.

In 1943, Oswald Avery and colleagues at Rockefeller University showed that DNA taken from a bacterium, *Streptococcus pneumonia*, could make non-infectious bacteria become infectious. These results indicated that DNA was the information-containing molecule in the cell. The information role of DNA was further supported in 1952 when Alfred Hershey and Martha Chase demonstrated that to make new viruses, a **bacteriophage** virus injected DNA, not protein, into the host cell.

So scientists had theorized about the informational role of DNA for a long time, but nobody knew how this information was encoded and transmitted. Many scientists guessed that the structure of the molecule was important to this process. In 1953, James D. Watson and Francis Crick discovered the structure of DNA at Cambridge University. The story was described in James Watson's book "The Double Helix" and brought to the screen in the movie, "The Race for the Double Helix." Basically, Watson and Crick used molecular modeling techniques and data from other investigators (including Maurice Wilkins, Rosalind Franklin, Erwin Chargaff and Linus Pauling) to solve the structure of DNA. Watson, Crick and Wilkins received the Nobel Prize in Medicine for the discovery of DNA's structure (Franklin, who was Wilkins' collaborator and provided a key piece of data that revealed the structure to Watson and Crick, died before the prize was awarded).

(Day 2): DNA Structure:



The nucleotide is the basic building block of nucleic acids.

DNA is one of the **nucleic acids**, information-containing molecules in the cell (**ribonucleic acid**, or RNA, is the other nucleic acid). DNA is found in the nucleus of every human cell. (See the sidebar at the bottom of the page for more about RNA and different types of cells). The information in DNA:

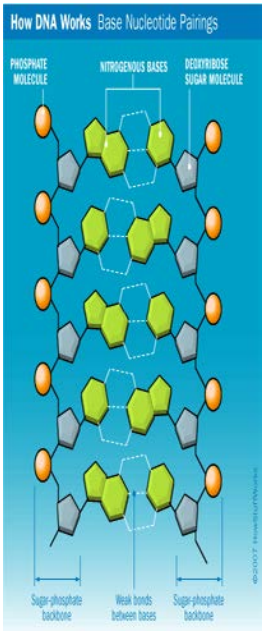
- guides the cell (along with RNA) in making new proteins that determine all of our biological traits
- gets passed (copied) from one generation to the next

The key to all of these functions is found in the molecular structure of DNA, as described by Watson and Crick.

Although it may look complicated, the DNA in a cell is really just a pattern made up of four different parts called **nucleotides**. Imagine a set of blocks that has only four shapes, or an alphabet that has only four letters. DNA is a long string of these blocks or letters. Each nucleotide consists of a sugar (**deoxyribose**) bound on one side to a **phosphate group** and bound on the other side to a **nitrogenous base**.

There are two classes of nitrogen bases called **purines** (double-ringed structures) and **pyrimidines** (single-ringed structures). The four bases in DNA's alphabet are:

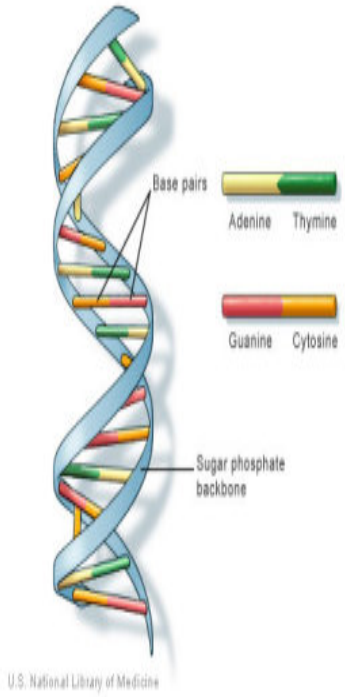
- **adenine (A)** - a purine
- **cytosine(C)** - a pyrimidine
- **guanine (G)** - a purine
- **thymine (T)** - a pyrimidine



Strands of DNA are made of the sugar and phosphate portions of the nucleotides, while the middle parts are made of the nitrogenous bases. The nitrogenous bases on the two strands of DNA pair up, purine with pyrimidine (A with T, G with C), and are held together by weak hydrogen bonds.

Watson and Crick discovered that DNA had two sides, or strands, and that these strands were twisted together like a twisted ladder -- the **double helix**. The sides of the ladder comprise the sugar-phosphate portions of adjacent nucleotides bonded together. The phosphate of one nucleotide is **covalently bound** (a bond in which one or more pairs of electrons are shared by two atoms) to the sugar of the next nucleotide. The hydrogen bonds between phosphates cause the DNA strand to twist. The nitrogenous bases point

inward on the ladder and form pairs with bases on the other side, like rungs. Each base pair is formed from two complementary nucleotides (purine with pyrimidine) bound together by hydrogen bonds. The base pairs in DNA are **adenine with thymine** and **cytosine with guanine**.



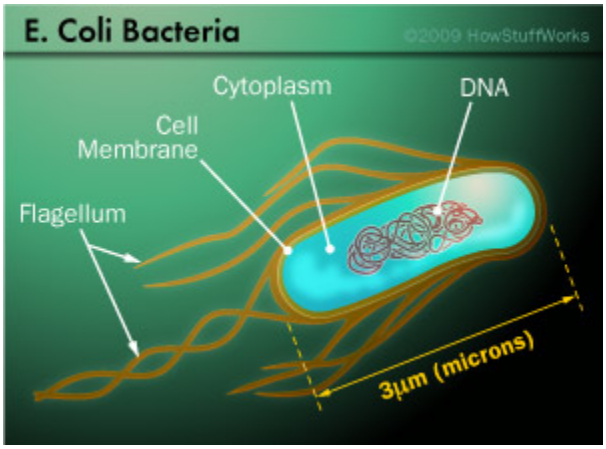
DNA has a spiral staircase-like structure. The steps are formed by the nitrogen bases of the nucleotides where adenine pairs with thymine and cytosine with guanine. PHOTO COURTESY **U.S. NATIONAL LIBRARY OF MEDICINE**

In the next section we'll find out how long DNA strands fit inside a tiny cell.

HYDROGEN BOND

A hydrogen bond is a **weak chemical bond** that occurs between hydrogen atoms and more electronegative atoms, like oxygen, nitrogen and fluorine. The participating atoms can be located on the same molecule (adjacent nucleotides) or on different molecules (adjacent nucleotides on different DNA strands). Hydrogen bonds do not involve the exchange or sharing of electrons like covalent and ionic bonds. The weak attraction is like that between the opposite poles of a magnet. Hydrogen bonds occur over short distances and can be easily formed and broken. They can also stabilize a molecule.

(Day 3) Fitting Inside a Cell:



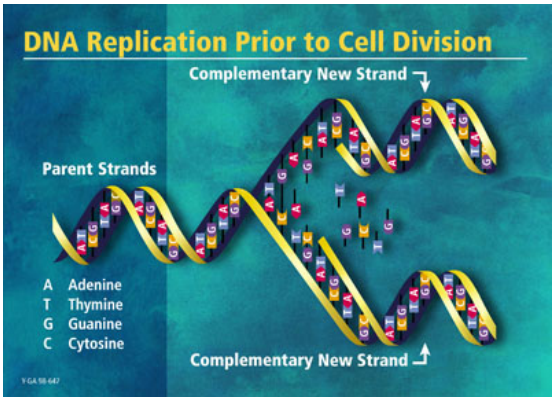
A typical E. coli bacterium is 3 microns long, but its DNA is more than 300 times longer. So, the DNA is tightly coiled and twisted to fit inside.
2009 HOWSTUFFWORKS

DNA is a long molecule. For example, a typical bacterium, like *E. coli*, has one DNA molecule with about 3,000 genes (A gene is a specific sequence of DNA nucleotides that codes for a protein. We'll talk about this later). If drawn out, this DNA molecule would be about 1 millimeter long. However, a typical *E. coli* is only 3 microns long (3 one-thousandths of a millimeter).So to fit inside the cell, the DNA is highly coiled and twisted into one circular chromosome.

Complex organisms, like plants and animals, have 50,000 to 100,000 genes on many different chromosomes (humans have 46 chromosomes). In the cells of these organisms, the DNA is twisted around bead-like proteins called **histones**. The histones are also coiled tightly to form chromosomes, which are located in the nucleus of the cell. When a cell reproduces, the chromosomes (DNA) get copied and distributed to each offspring, or daughter, cell. Non-sex cells have two copies of each chromosome that get copied and each daughter cell receives two copies (**mitosis**). During meiosis, precursor cells have two copies of each chromosome that gets copied and distributed equally to four sex cells. The sex cells (sperm and egg) have only one copy of each chromosome. When sperm and egg unite in fertilization, the offspring have two copies of each chromosome.

In the next section we'll look at how the DNA replication process works.

(Day 4): DNA Replication:



The double helix of DNA unwinds and each side serves as a pattern to make a new molecule.
IMAGE COURTESY **U.S. DEPARTMENT OF ENERGY HUMAN GENOME PROGRAM**

DNA carries the information for making all of the cell's proteins. These proteins implement all of the functions of a living organism and determine the organism's characteristics. When the cell reproduces, it has to pass all of this information on to the daughter cells.

Before a cell can reproduce, it must first **replicate**, or make a copy of, its DNA. Where DNA replication occurs depends upon whether the cells is a prokaryote or a eukaryote (see the RNA sidebar on the previous page for more about the types of cells). DNA replication occurs in the cytoplasm of prokaryotes and in the nucleus of eukaryotes. Regardless of where DNA replication occurs, the basic process is the same.

The structure of DNA lends itself easily to DNA replication. Each side of the double helix runs in opposite (**anti-parallel**) directions. The beauty of this structure is that it can unzip down the middle and each side can serve as a pattern or template for the other side (called **semi-conservative replication**). However, DNA does not unzip entirely. It unzips in a small area called a **replication fork**, which then moves down the entire length of the molecule.

Let's look at the details:

1. An enzyme called **DNA gyrase** makes a nick in the double helix and each side separates
2. An enzyme called **helicase** unwinds the double-stranded DNA
3. Several small proteins called **single strand binding proteins** (SSB) temporarily bind to each side and keep them separated
4. An enzyme complex called **DNA polymerase** "walks" down the DNA strands and adds new nucleotides to each strand. The nucleotides pair with the complementary nucleotides on the existing stand (A with T, G with C).
5. A subunit of the DNA polymerase **proofreads** the new DNA
6. An enzyme called **DNA ligase** seals up the fragments into one long continuous strand
7. The new copies **automatically wind up again**

Different types of cells replicated their DNA at different rates. Some cells constantly divide, like those in your hair and fingernails and bone marrow cells. Other cells go through several rounds of cell division and stop (including specialized cells, like those in your brain, muscle and heart). Finally, some cells stop dividing, but can be induced to divide to repair injury (such as skin cells and liver cells). In cells that do not constantly divide, the cues for DNA replication/cell division come in the form of chemicals. These chemicals can come from other parts of the body (hormones) or from the environment.

ANIMAL VS. PLANT DNA

The DNA of all living organisms has the same structure and code, although some viruses use RNA as the information carrier instead of DNA. Most animals have two copies of each chromosome. In contrast, plants may have more than two copies of several chromosomes, which usually arise from errors in the distribution of the chromosomes during cell reproduction. In animals, this type of error usually causes genetic diseases that are usually fatal. For some unknown reasons, this type of error is not as devastating to plants.

Get the Party Started

By Fran O'Malley
Democracy Project
Institute for Public Administration, University of Delaware

Part of the Delaware Recommended Curriculum – Modified by CSD for Home

Benchmark Standard	Civics 1a: Students will examine and analyze the extra-Constitutional role that political parties play in American politics.
Grade:	10
Vocabulary / Key Concepts:	Majority – a number greater than half of a total Lobbying - the act of trying to persuade governments to make decisions or support something

Essential Questions Addressed:

1. Why might political parties be necessary in a democracy?
2. Under what conditions might political parties evolve?

Enduring Understanding [from Delaware Civics Clarification Document]: "The competition for power in a democracy needs to be organized or it would be utterly chaotic and unworkable. Constantly emerging and evolving conflicts between infinite numbers of competing interests might atomize or splinter society without the unifying functions that political parties provide by encouraging compromise, blunting tensions, and marginalizing extremism. This helps to explain why political parties developed in every democracy, despite a lack of a constitutional basis for their involvement and an often-active distrust of their inherent partisanship."

ACTIVITY 1:

Scenario: Imagine that the state legislature just announced a program designed to encourage young citizens to participate politically. The state has invited students to propose and lobby for one item to be the official state snack. Numerous companies are offering $1,000 plus a lifetime supply of their product (not really ;) to the one student who manages to get his or her product embraced by the class as the official snack for the State. The state legislature is inviting students from around the state to propose a State Snack. The state has a state bug, a state flower, a state bird etc. But, it does not have a state snack.

Role: A company has agreed to give you $1,000 and a lifetime supply of their product if you can convince the students in your class to lobby the state legislature to make their product the "State Snack." Therefore, you each want to win the $1000 and the lifetime supply of the product.

Pretzel Sticks	Corn Chips	Carrot Slices
Kit Kats	Ice Cream	Three Musketeers Bars
Pop Corn	Apple Slices	Granola Bars
Reese Cups	Oreo Cookies	Twix Bars
Potato Chips	Peanut Butter Crackers	Crunchy Cheese Curls
Jolly Ranchers	Skittles	Peppermint Patties
Doritos	Graham Crackers	Soft Pretzels
Gummy Bears	Donuts	Chewing Gum
Milky Way Bars	Sunflower Seeds	Fruit Roll-Ups
Peanuts	M & Ms	Dark Chocolate Hershey Bars
Snickers Bars	Life Savers	Cheese-It Crackers

1. Pick the snack that you think should be the State Snack. Imagine there are 32 other classmates who each decided on a different snack that they think should be the state snack so that they can win the money and lifetime supply.

2. What do you think would happen if you tried to "lobby" the other students to agree with making your snack of choice the official state snack (remember there is $1000 and a lifetime supply of the product on the line)? (If you are having a hard time imaging this, ask family members to participate. Assign each member a different snack and then "lobby" each other to make their snack the official state snack. Is anyone giving in (probably not ☺) – Describe the problem?

Information: This exercise simulates what it would be like to live in a democracy where majorities rule but everyone acts individually in pursuit of their individual interests. Realizing this, people who live in democracies gravitate towards pursuing similar (not necessarily identical) interests in groups so that they can advance interests that are reasonably aligned to their own. In other words, political parties in which people of similar interests work to control government and advance their interests emerge naturally.

ACTIVITY 2:

3. Continue to imagine that there are 32 other students each with a different snack, now organize the snacks in categories (or similar types of snacks) - (for example, sweet snacks, healthy snacks, chocolate snacks, etc.).

ACTIVITY 3:

4. Now, try to rally a ***majority*** behind **one** snack (reasons for rallying behind ONE particular snack need to make sense).

5. Based on the activities you just completed, how can getting a majority to rally behind one snack simulate the development of a political party?

ACTIVITY 4:

Look at the big picture:

6. Why might political parties be necessary in a democracy? Explain.
7. Under what conditions might political parties evolve or collapse? Explain.

The Economics of Subsidizing Sports Stadiums

Benchmark Standard	**Economics 1a**: Students will demonstrate how economic choices are made in a market economy in which markets and the actions of the government influence the production and distribution of goods and services.
Grade	10
Vocabulary / Key Concepts	**Investment**: The purchase of physical capital goods (e.g., buildings, tools, and equipment) that are used to produce goods and services. **Standard of living**: A measure of the goods and services available to each person in a country; a measure of economic wellbeing. Also known as per capita real GDP (gross domestic product). **Gross domestic product** (GDP): The total market value, expressed in dollars, of all final goods and services produced in an economy in a given year. **Productivity:** The ratio of output per worker per unit of time. **Subsidy**: A payment made by government to support a business or market. No good or service is provided in return for the payment.

DIRECETIONS: Read the article then answer the questions that follow.

Article:

THE ECONOMICS OF SUBSIDIZING SPORTS STADIUMS:

--Scott A. Wolla, Ph.D., Senior Economic Education Specialist

> "The idea that sports is a catalyst for economic development just doesn't hold water."
> ---Robert Baade, sports economist

Professional sports give people pride and a sense of community. But who should pay for the stadiums? From 2008 to 2010, three NFL stadiums were built: the $710 million Lucas Oil Stadium for the Indianapolis Colts, the $1.1 billion AT&T Stadium for the Dallas Cowboys, and the $1.6 billion MetLife Stadium for the New York Jets and Giants.1 The newest NFL stadium is the $1.1 billion U.S. Bank Stadium for the Minnesota Vikings (2016), of which $498 million was paid for by the state and city governments.2 Of course, the controversy rests on the fact that any government **subsidy** for building a new stadium is funded by taxpayers.

It's All About Spending

Proponents say that subsidizing sports stadiums is justified because of the economic impact it will have on the community. First, sports stadiums are huge construction projects. In fact, they are often compared to the medieval cathedral in their attempt to dominate the skyline and inspire civic pride.3 And, like the cathedrals of old, they are expensive, massive building projects that require years of intensive labor. Proponents of a new stadium often laud the project's ability to generate new construction jobs. For example, the proposed stadium for the Los Angeles Rams in Inglewood, California, was predicted to cost $3 billion and add 22,000 construction jobs to the economy of Los Angeles, California.4

Although construction jobs eventually disappear once a stadium is built, once the games begin, so does consumer spending. For example, more than 3.5 million people5 saw the St. Louis Cardinals play at Busch Stadium in 2015 (the second-highest home game attendance in Major League Baseball that year).6 Baseball fans who attend games also pay for parking, eat in restaurants, and buy food and drink at the ballpark. All that spending generates revenue and jobs for the local community. And, as those parking attendants, restaurant workers, and stadium workers spend their earnings, the money circulates again through the economy. Economists call this the multiplier effect, whereby one dollar of spending (by consumers, businesses, or government) creates more than one dollar in economic activity. The estimated economic impact of those millions of people who attended St. Louis Cardinals home games in 2015 was $343.9 million.7

A potential new stadium also holds the promise of new development taking root nearby. Such development might include new restaurants and bars as well as condominium and office space. As interest in the area grows, the value of existing commercial and residential property is likely to improve. In a similar vein, stadium construction can be proposed as an economic-development initiative by choosing to build in a blighted or underdeveloped area. The hope is that the new economic activity and increased traffic will lead to revitalization of that area. In addition, all the extra spending and income gets taxed when it is spent and earned and respent again. The tax revenue then offsets at least some of the cost of the subsidy. Finally, proponents often suggest that professional sports and new stadiums help build civic pride and can be beneficial marketing tools for the city's image as people around the country (and the world) watch games televised from the new stadium. In fact, many consider the presence of a professional sports team to be a status symbol and essential to being considered a first-tier city.

The Economist's View

In spite of all of these economic arguments, economists generally oppose subsidizing professional sports stadiums. When surveyed, 86 percent of economists agreed that "local and state governments in the U.S. should eliminate subsidies to professional sports franchises."8 Perhaps economists just do not like sports? Actually, many economists love professional sports—including former Federal Reserve Chair Ben Bernanke, an ardent Washington Nationals fan.9 Rather, it is the provision of taxpayer money in the form of subsidies that economists generally oppose. In a 2017 poll, 83 percent of the economists surveyed agreed that "Providing state and local subsidies to build stadiums for professional sports teams is likely to cost the relevant taxpayers more than any local economic benefits that are generated."10 In their book, *Sports, Jobs, and Taxes*, Roger Noll and Andrew Zimbalist present a comprehensive review of stadium investments. In all cases, they find a new sports facility to have extremely small (or negative) effects on overall economic activity and employment. Furthermore, they were unable to find any facilities that had a reasonable return on investment.11 Sports economist Michael Leeds suggests that professional sports have very little economic impact, noting that a baseball team (with 81 regular-season home games per year) "has about the same impact on a community as a midsize department store." His research suggests that if every professional sports team in Chicago (including the Cubs, White Sox, Bears, Bulls, and Blackhawks) were to suddenly disappear, the economic impact on Chicago would be a fraction of 1 percent.12

Consider the Opportunity Costs

In their critique, most economists highlight an important pitfall when considering the economic impact of stadiums: the failure to include opportunity costs. The opportunity cost is the value of the next-best alternative when a decision is made; it is what is given up. In the case of sports stadiums, both "seen" and "unseen" economic activity should be considered. The unseen spending, however, tends to be overlooked. Consumer spending at a sports stadium is easy to see—it is obvious and measurable. What is unseen, however, is how consumers would spend their dollars otherwise. If they were not spending on sporting events, they would instead spend on museums, movies, concerts, theater, restaurants, and so on. Because consumers tend to have limited entertainment budgets, dollars spent at a new stadium would not be new spending but rather diverted spending.

Taxpayer money to subsidize a stadium also has opportunity costs. An economist might ask, "Of all the things my city could do with $500 million, is a sports stadium subsidy my best option?" Government can choose to spend taxpayer money on a variety of things: roads, bridges, airports, police, education, environmental improvements, parks, and walking paths, just to name a few—all of which have benefits for society. Economists often suggest options that increase **productivity** and see this spending as **investment**. For example, government spending on infrastructure (e.g., airports, highways, and bridges) could increase productivity because it reduces the cost (in time and money) of transporting goods and people from one place to another.13 Second, spending on education is seen as a form of human capital investment. Human capital is the knowledge and skills that people obtain through education, experience, and training. The education that students receive in school and college (and further training and work experience) increases their

productivity. Economists prefer these types of investment because increased productivity has the potential to increase the rate of economic growth and increase the **standard of living**.

Conclusion

Building sports stadiums has an impact on local economies. For that reason, many people support the use of government subsidies to help pay for stadiums. However, economists generally oppose such subsidies. They often stress that estimations of the economic impact of sports stadiums are exaggerated because they fail to recognize opportunity costs. Consumers who spend money on sporting events would likely spend the money on other forms of entertainment, which has a similar economic impact. Rather than subsidizing sports stadiums, governments could finance other projects such as infrastructure or education that have the potential to increase productivity and promote economic growth.

Notes

1 Hare, Erik. "Stadium Frenzy Ignores Economics." MintPress News, May 8, 2014; http://www.mintpressnews.com/stadium-frenzy-ignores-economics/190351/.

2 Roper, Eric. "Taxes to Pay for Now-Open U.S. Bank Stadium Rebound, Thanks to Gamblers." Star Tribune, July 22, 2016; http://www.startribune.com/taxes-to-pay-for-u-s-bank-stadium-rebound/387999002/.

3 Schalter, Ty. "Why NFL Stadiums Are the Modern Day Cathedral." Bleacher Report, April 26, 2012. http://bleacherreport.com/articles/1159057-why-nfl-stadiums-are-the-modern-day-cathedral. See also the following: Geisendorfer-Lindgren, Peter. "Stadiums, Cathedrals: Marks of Their Eras." Star Tribune, September 2, 2016; http://www.startribune.com/stadiums-cathedrals-marks-of-their-eras/392207411/. McKenzie, Sheena. "Sports Stadium Architecture: Welcome the New Temples of Pleasure." CNN, January 20, 2015. http://www.cnn.com/2014/12/15/sport/ sport-stadium-architecture/index.html?hpt=hp_c5.

4 Slowey, Kim. "Inglewood Mayor: Near-$3B Rams Stadium to Add 22K New Construction Jobs." Construction Drive, January 15, 2016; http://www.constructiondive.com/news/inglewood-mayor-near-3b-rams-stadiumto-add-22k-new-construction-jobs/412203/.

5 Cumulative attendance.

6 Kirn, Jacob. "Cardinals Playoff Games to Have Big Impact on Economy." St. Louis Business Journal, October 5, 2015. http://www.bizjournals.com/stlouis/ blog/2015/10/cardinals-playoff-games-to-have-big-impact-on.html.

7 See footnote 6.

8 Whaples, Robert. "Do Economists Agree on Anything? Yes!" Economists' Voice, 2006, 3(9), pp. 1-6.

9 Steinberg, Dan. "Ben Bernanke Is a Huge Nats Fan." Washington Post, September 27, 2012; https://www.washingtonpost.com/blogs/dc-sports-bog/ post/ben-bernanke-is-a-huge-nats-fan/2012/09/27/964d483c-08ba-11e2-9eea333857f6a7bd_blog.html?utm_term=.3c929678c51d.

10 Responses are weighted by each expert's confidence. See IGM Forum. "Sports Stadiums." January 31, 2017; http://www.igmchicago.org/surveys/sports-stadiums.

11 Noll, Roger G. and Zimbalist, Andrew, eds. Sports, Jobs, and Taxes: The Economic Impact of Sports Teams and Stadiums. Brookings Institution Press, 1997.

12 Bergman, Ben. "The NFL in L.A.? Get Ready for Near Zero Economic Impact." KQED News, February 27, 2015; https://ww2.kqed.org/news/2015/02/27/newnfl-team-unlikely-to-have-big-economic-impact-in-southern-california/.

13 Miller, Matt and Bullard, James. "Bullard: Infrastructure Plan Could Boost Productivity" (video). Bloomberg.com, November 18, 2016; http://www.bloomberg.com/news/videos/2016-11-18/bullard-infrastructure-plan-could-boost-productivity

After reading the article, complete the following questions on a separate sheet of paper:

1. Explain how the multiplier effect increases the total level of spending.
2. Why do most economists oppose subsidizing sports stadiums? Explain.
3. Most of us overlook the things that fail to happen. Explain why consumer spending would not necessarily just disappear in the absence of a stadium and professional sports.
4. Explain the opportunity cost of government subsidy of a stadium.
5. What options do economists often see as a more beneficial use of government funding? Explain why.

Would Increasing the Minimum Wage Reduce Poverty?

Benchmark Standard:	**Economics 1a**: Students will demonstrate how economic choices are made in a market economy in which markets and the actions of the government influence the production and distribution of goods and services.
Grade	10
Vocabulary / Key Concepts:	**Earned income tax credit**: A refundable federal tax credit for low-income working people designed to reduce poverty and encourage labor force participation. **Equilibrium price**: The price at which the quantity supplied and quantity demanded are equal. **Equilibrium wage**: The wage at which the quantity of labor supplied and quantity of labor demanded are equal. **Labor market**: The market in which workers compete for jobs and employers compete for workers. **Minimum wage**: The lowest wage that employers may legally pay for an hour of labor. **Poverty threshold**: The dollar amount the Census Bureau uses to determine a family's or person's poverty status. **Price floor**: A government-mandated minimum price that must be paid for a good or service. Unintended consequences: The unexpected and unplanned results of a decision or action.

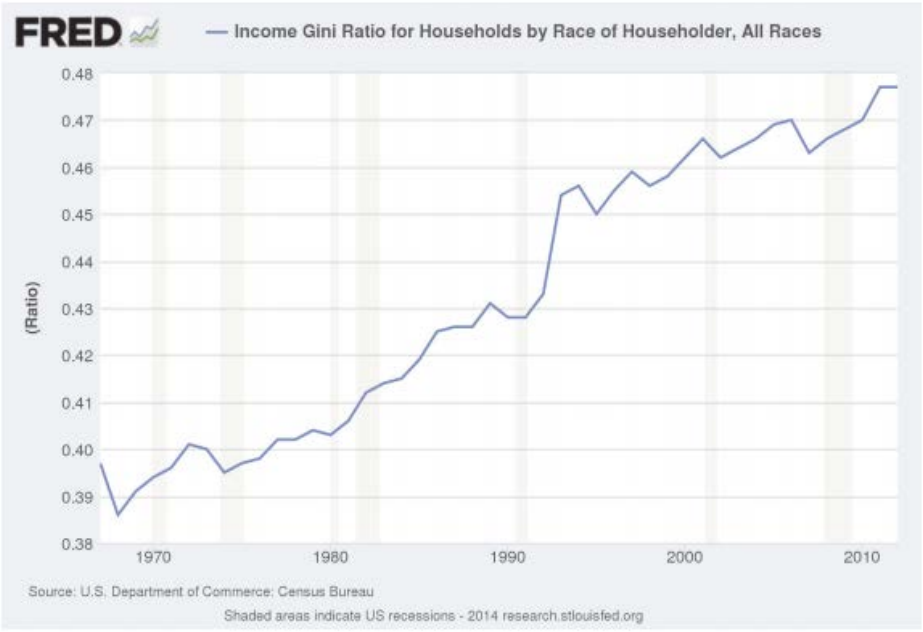
DIRECTIONS: Read the article then answer the questions that follow:

Article:

WOULD INCREASING THE MINIMUM WAGE REDUCE POVERTY?

Scott A. Wolla, *Senior Economic Education Specialist*

"A family with two kids that earns the minimum wage still lives below the poverty line. That's wrong… Tonight, let's declare that in the wealthiest nation on Earth, no one who works full time should have to live in poverty."
—President Barack Obama, State of the Union Address (February 12, 2013)



NOTE: The Gini coefficient (also known as the Gini ratio or index) is a common measure of income inequality within a nation. It gauges income disparity on a scale from 0 to 1, with higher numbers indicating higher levels of inequality. The lowest value for the United States was 0.386 in 1968 and the highest value in 2011 and 2012 at 0.477.

SOURCE: Federal Reserve Bank of St. Louis FRED; http://research.stlouisfed.org/fred2/graph/?g=s2w&dbeta=1.

Since its inception, the federal **minimum wage** has been used as one way to help alleviate poverty and promote a sense of economic fairness. The federal minimum wage was first enacted in 1938 as part of the Fair Labor Standards Act and set minimum hourly wages at 25 cents per hour, but the law excluded large segments of the labor force. The current federal minimum wage is $7.25 per hour, which means a full-time minimum wage worker earns $15,800 per year. At this level of income, a three-person household that includes at least one child (for example, a couple with one child or a single parent with two children) falls below the poverty threshold (approximately $18,500).1 Many argue that a full-time worker should earn a wage that supports a household—especially in the United States, a wealthy nation. This seems especially relevant given the recent increase in income inequality (see the chart on the previous page).

The Economics of the Minimum Wage

Labor markets, like other markets, have a supply side (workers supply labor) and a demand side (employers demand labor), and their interactions result in an **equilibrium price**—in this case, the price paid per unit of labor is an **equilibrium wage**. The minimum wage acts as a **price floor** for low-skilled labor. When the government (federal or state) increases the legal minimum wage (labeled Wm in the diagram) above the equilibrium wage that the market would determine (We in the diagram), predictable outcomes occur: The higher wage (Wm) increases the quantity of workers willing to work at the higher wage (Qs, quantity supplied, in the diagram), but the higher wage also decreases the quantity of workers that firms wish to employ (Qd, quantity demanded, in the diagram). The result is a surplus of workers (Surplus in the diagram), where more workers seek employment than there are jobs available at the mandated minimum wage— and the workers who fail to find employment are unemployed.

To economists, a wage is a labor market outcome. As such, economists avoid making value judgments regarding the "fairness" of a wage. Rather, in assessing minimum wage policy, they measure the economic costs and benefits of the policy and estimate how effectively it achieves its intended goals. As with any policy discussion, there are two sides to this story, and economists are split on the issue. A 2013 poll of leading academic economists found the profession nearly evenly split; 34 percent agreed with the statement that "Raising the minimum wage to $9 per hour would make it noticeably harder for low-skill workers to find employment," while 32 percent disagreed (the rest were uncertain or had no opinion).2

In many cases, economists who support a higher minimum wage acknowledge that the policy might reduce employment, but they argue that the employment effects are likely to be very small and the benefits to wage earners are certainly large.3 So, many workers would have higher wages, which would boost their family income, and a smaller group would be jobless, which would reduce their family income. In short, the benefits of the higher wage outweigh the costs in terms of lost jobs.

Economists who oppose such policies argue that increasing the minimum wage does significantly reduce low-skilled jobs.4 For example, a recent study by the Congressional Budget Office (CBO) estimated that raising the minimum wage to $10.10 would reduce total employment by 500,000 workers.5 Economists also warn of **unintended consequences** of the policy that might disproportionately hurt those whom the policy was meant to help. For example, since the policy reduces the number of jobs available to low-skilled workers, it restricts access to entry-level positions that the youngest and least-skilled workers need to gain valuable skills and work experience. In addition, too often the working poor do not benefit from the higher wage; rather, the working poor bear a disproportionate share of the jobs lost.

Better Options?

As previously stated, advocates propose increasing the minimum wage to help alleviate poverty among the working poor. However, it would be a mistake to equate minimum wage workers with the working poor. The CBO report estimates raising the minimum wage to $10.10 would result in an additional $31 billion in earnings for low-wage workers. However, only 19 percent of the higher earnings would go to families below the poverty threshold. Stated differently, 81 percent of the higher earnings would benefit families who are not poor; in fact, 29 percent of the higher earnings would go to families earning over three times the poverty threshold. Teen agers likely make up a sizable part of this group. In fact, the Bureau of Labor Statistics estimates that 24 percent of minimum wage workers in 2012 were teens.6 The CBO projections highlight the difficult trade-off presented by increasing the minimum wage: A $10.10 minimum wage could potentially reduce the number of people (currently 45 million) who live below the poverty threshold by 900,000, but in the process, total employment could potentially be reduced by 500,000—a severe consequence for those workers who might transition from low-wage employment to unemployment. Many argue there are more effective ways to help alleviate poverty. For example, food stamps and other welfare programs are specifically targeted to help low-income households.

Economists also favor the **earned income tax credit**, which provides an income subsidy (in the form of a tax credit) to low-income working families. The tax credit benefits are phased out slowly so that workers are not penalized as they earn more income. This policy has proven effective in raising the incomes of the working poor while minimizing the unintended consequences associated with some other anti-poverty programs.

Conclusion Low-wage jobs provide a key opportunity for inexperienced workers to develop valuable skills and work experience, a crucial rung on the ladder of success. However, the income earned is not likely to be sufficient to support a household. While raising the wages of workers seems like it might be a good solution, the proposal makes the mistake of equating minimum wage workers with the working poor. Rather, if the objective is to reduce poverty, it seems that using a more-targeted approach, such as the earned income tax credit, might be the most effective way to accomplish the task. ■

NOTES

1 See U.S. Census Bureau. "Poverty Thresholds." Various years; http://www.census.gov/hhes/www/poverty/data/threshld/.

2 See IGM Forum. "Minimum Wage." Initiative on Global Markets, February 26, 2013; http://www.igmchicago.org/igm-economic-experts-panel/poll-results?SurveyID=SV_br0IEq5a9E77NMV.

3 Two often-cited articles are those by Card, David. "Do Minimum Wages Reduce Employment? A Case Study of California, 1987-89." Industrial and Labor Relations Review, October 1992, 46(1), pp. 38-54; and Card, David and Krueger, Alan. "A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania." American Economic Review, September 1994, 84(4), pp. 773-93.

4 See Neumark, David and Wascher, William L. Minimum Wages. Cambridge, MA: MIT Press, 2008; and Neumark, David; Salas, J.M. Ian and Wascher, William. "Revisiting the Minimum Wage-Employment Debate: Throwing Out the Baby with the Bathwater?" NBER Working Paper No. 18681, National Bureau of Economic Research, January 2013; http://www.nber.org/papers/w18681.pdf?new_window=1.

5 See Congressional Budget Office. "The Effects of a Minimum-Wage Increase on Employment and Family Income." February 18, 2014; http://www.cbo.gov/sites/default/files/cbofiles/attachments/44995-MinimumWage.pdf.

6 See Bureau of Labor Statistics. "Labor Force Statistics from the Current Population Survey, Characteristics of Minimum Wage Workers: 2012." February 26, 2013; http://www.bls.gov/cps/minwage2012tbls.htm#1.

ADDITIONAL RESOURCES

Grossman, Jonathan. "Fair Labor Standards Act of 1938: Maximum Struggle for a Minimum Wage." U.S. Department of

Labor; June 1978; http://www.dol.gov/oasam/programs/history/flsa1938.htm.

Hernández-Murillo, Rubén. "Local Income Inequality." Federal Reserve Bank of St. Louis Economic Synopses, 2008, No. 31; http://research.stlouisfed.org/publications/es/08/ES0831.pdf.

Lopez, David A. "Gini in a Bottle: Some Facts on Income Inequality." Federal Reserve Bank of St. Louis Page One Economics Newsletter, March 2012; http://research.stlouisfed.org/pageone-economics/uploads/newsletter/2012/PageOne0312_Income_Inequality.pdf.

After reading the article, answer the following questions on a separate sheet of paper.

1. How does raising the minimum wage above the market wage create s surplus of workers?
2. Summarize the reasons some economists support a higher minimum wage.
3. Summarize the reasons some economists oppose a higher minimum wage.
4. Why might the minimum wage be an inefficient approach to reducing poverty?
5. What types of programs might be more efficient in reducing poverty?

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