

Steps to Success

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LESSON 10—Language Arts,
Science,
Social Studies

LESSON 9

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LESSON 5

LESSON 4

LESSON 3

LESSON 2

LESSON 1

**Tremendous
Journey—
YOU
MADE IT!**

LESSON 10

Science



The scientific method is a way to ask and answer scientific questions by making observations and doing experiments.

The steps of the scientific method are to:

- **Ask a Question**
- **Do Background Research**
- **Construct a Hypothesis**
- **Test Your Hypothesis by Doing an Experiment**
- **Analyze Your Data and Draw a Conclusion**
- **Communicate Your Results**

It is important for your experiment to be a fair test. A “fair test” occurs when you change only one factor (variable) and keep all other conditions the same.

While scientists study how nature works, engineers create new things, such as products, websites, environments, and experiences.

If your project involves creating or inventing something new, your project might better fit the steps of the Engineering Design Process.

Overview of the Scientific Method

The scientific method is a process for experimentation that is used to explore observations and answer questions. Scientists use the scientific method to search for **cause and effect** relationships in nature. In other words, they design an experiment so that changes to one item cause something else to vary in a predictable way.

ASSIGNMENT 1

DIRECTIONS

Use the table below to answer the question.

| | WEEK 1 | WEEK 2 | WEEK 3 | TOTALS |
|--|-----------|-----------|-----------|--------|
| Plants with water and sunlight | 2cm | 2cm | 2cm | 6cm |
| Plants with water, sunlight and 1 ounce of fertilizer | 4cm | 6cm | 2cm | 12cm |
| Plants with water, sunlight and 2 ounces of fertilizer | 7cm | 5cm | 6cm | 18cm |

1. A student wants to test the hypothesis that fertilizer improves the growth rate of grass seeds. To test this hypothesis, the student put the same amount of grass seed in 3 containers with the same type of soil. The student measured the growth at the end of the week. All plants received equal amounts of water and sunlight.

If you were asked to graph this data, what would you place on the x-axis?

- A. Fertilizer
- B. Water
- C. Plant growth
- D. One week

LESSON 10

Science



Science is the study of how and why things happen as they do. To answer questions about the natural world, scientists perform investigations. Based on their results, they may create an explanation. A good explanation has three parts—a claim, evidence, and scientific knowledge. The claim is a statement, or a conclusion, that has been reached based on the research. Evidence and knowledge are used to support this claim.

When reading an explanation, it is important to identify what the claim is. Sometimes it is clearly stated. Other times you must use clue words or statements that sum up the overall point of the passage. You may find that this idea is repeated throughout the passage and is also presented as the last sentence. Clue words such as *therefore*, *for that reason*, or *consequently* can help you identify the conclusion.

Vocabulary to Know

Skeletal and Muscular Systems—How the bones and muscles work together to help support your body and allow you to move

Digestive, Respiratory, Excretory, and Circulatory Systems—The organs that continually process nutrients, wastes, and gases

Nervous System and Endocrine Systems—These are responsible for the communications within the body. They control many things that happen in the body including the reproductive system

NOTE: If you need more information to help you understand what these systems are, let us know.

Organs—a group of tissues working together to perform a specific function, or work

Mutations—a change within the genetic information of cell

Cell—the smallest unit of structure in a living organism

Nucleus—this is one of the larger structures of the cell. It controls the activities of the cell

ASSIGNMENT 2

DIRECTIONS

Read the passage and answer the questions that follow.

A common cause of skin cancer is excess exposure to sunlight. The ultraviolet (UV) radiation in sunlight can lead to mutations, or changes to genes, in skin cells. Certain mutations cause cells to become cancerous, meaning they grow out of control. Skin cancer can be prevented by applying sunscreen. Sunscreen blocks harmful UV radiation.

1. **What conclusion can you draw from this passage?**
 - A. Ultraviolet (UV) radiation is a part of sunlight.
 - B. Most mutations cause cancer.
 - C. Sunscreen is a cure for cancer.
 - D. Skin cancer is preventable.
2. **Who is the most likely author of this passage?**
 - A. A doctor who studies skin cancer
 - B. A scientist who studies oceans and beaches
 - C. A physicist who studies UV radiation
 - D. The manager of a beach resort

LESSON 10

Science, Language Arts



DIRECTIONS

Questions 3 and 4 are based on the following passage.

Organ donation is an opportunity to improve, or even save, the life of a fellow human being. Most organ donations involve the removal of organs and tissues from a person who has recently died. Sometimes living donors can donate because it is possible to live a normal life with only one of a pair of organs, or with a part of an organ. For example, people can donate one kidney or a part of a liver.

The first successful organ transplant occurred in 1954, when a man dying of kidney disease received a kidney from his sister. Doctors can now transplant kidneys, hearts, livers, lungs, intestinal organs, eyes, skin, and bone. Doctors can sometimes help up to fifty patients from one donor.

It is easy to become an organ donor. Anyone at any age can become an organ donor and give the gift of life.

3. Which condition makes it possible for a living person to donate a kidney?

- A. The donor is willing to use life-saving machines.
- B. The body can survive with only one kidney.
- C. Some people can survive without a kidney.
- D. Some people are born with an extra, nonfunctioning kidney.

4. What can be inferred about an organ donor who helped fifty patients?

- A. The donor died at an old age due to serious illness.
- B. The donor died suddenly, and had been in excellent health.
- C. The donor gave a variety of organs throughout his or her life.
- D. The donor gave a variety of organs just after death.

ASSIGNMENT 3

DIRECTIONS

Read the passage and answer the questions that follow.

Chronic Traumatic Encephalopathy

Concussions are brain injuries that occur when a person receives a blow to the head, face, or neck. Although most people who suffer a concussion experience initial bouts of dizziness, nausea, and drowsiness, these symptoms often disappear after a few days. The long-term effects of concussions, however, are less understood and far more severe. Recent studies suggest that people who suffer multiple concussions are at a significant risk for developing chronic traumatic encephalopathy (CTE), a degenerative brain disorder that causes a variety of dangerous mental and emotional problems to arise weeks, months, or even years after the initial injury. These psychological problems can include depression, anxiety, memory loss, inability to concentrate, and aggression. In extreme cases, people suffering from CTE have even committed suicide or homicide. The majority of people who develop these issues are athletes who participate in popular high-impact sports, especially football. Although both new sports regulations and improvements in helmet technology can help protect players, the sports media and fans alike bear some of the responsibility for reducing the incidence of these devastating injuries.

Improvements in diagnostic technology have provided substantial evidence to link severe—and often fatal—psychological disorders to the head injuries players receive while on the field. Recent autopsies performed on the brains of football players who have committed suicide have shown advanced cases of CTE in every single victim.

LESSON 10

Reasoning through Language Arts



In response to the growing understanding of this danger, the National Football League (NFL) has revised its safety regulations. Players who have suffered a head injury on the field must undergo a “concussion sideline assessment”—a series of mental and physical fitness tests—before being allowed back in the game. In an effort to diminish the amount of head and neck injuries on the field, NFL officials have begun enforcing stricter penalty calls for helmet-to-helmet contact, leading with the head, and hitting a defenseless player. Furthermore, as of 2010, if a player’s helmet is accidentally wrenched from his head during play, the ball is immediately whistled dead. There is hope that these new regulations, coupled with advances in helmet design, will reduce the number of concussions player endure, and thus curb the number of CTE cases.

Efforts by the NFL and other professional sports leagues are certainly laudable; indeed, we should commend every attempt to protect the mental and physical health of players. However, new regulations at the professional level cannot protect amateur players, especially young people. Fatal cases of CTE have been reported in victims as young as 21. With appropriate equipment and form, tackling need not be dangerous. Proper tackling form—using the arms and shoulders to aim for a player’s midsection rather than leading with the top of the head—should be taught at an early age. Youth, high school, and college leagues should also adopt safety rules even more stringent than the NFL’s. Furthermore, at an early age, athletes should be educated about the serious dangers of head injuries.

Perhaps the most important factor in reducing the number of traumatic brain injuries, however, lies not with the players, the coaches, or the administrators, but with the media and fans. Sports media producers have become accustomed to showcasing the most aggressive tackles and the most intense plays. NFL broadcasts often replay especially violent collisions, while the commenta-

tors marvel at the physical prowess of the players involved. Some sports programs even feature weekly countdowns of the hardest hits. When the media exalts such hazardous behavior, professionals are rewarded for injuring each other on the field, and amateurs become more likely to try to imitate their favorite NFL athletes. Announcers, commentators, television producers, and sportswriters should engage in a collective effort to cease glorifying brutal plays. In turn, fans should stop expecting their favorite players to put their lives on the line for the purposes of entertainment. Players must stop being encouraged to trade their careers, health, happiness, and their lives for the sake of a game.

1. **The author apparently believes that**
 - A. NFL officials have not thoroughly implemented stricter safety regulations
 - B. doctors need to do more research about the potential long-term effects of CTE
 - C. amateur athletes suffer more serious long-term effects of CTE than professional athletes
 - D. fans share some of the blame for athletes’ injuries
 - E. young people should not be encouraged to play football due to CTE risks
2. **According to the author, each of the following statements are true EXCEPT which one?**
 - A. Tackling itself is not dangerous; however, players who use improper tackling form may suffer injury.
 - B. Scientists have established a link between players who shoot themselves and others and the onset of CTE.
 - C. NFL officials have done nothing to address the problem of CTE.
 - D. Athletes who are praised for exceptionally brutal hits are likely to continue engaging in such dangerous behavior.
 - E. Sports programs showcase exceptionally hard hits.

LESSON 10

Reasoning through Language Arts



3. According to the author, which of the following contribute(s) to an increase in incidences of CTE in amateur players?

- I. fewer safety regulations than professional players
- II. a lack of education geared to youth players about the dangers of head injuries
- III. a desire to emulate professionals

- A. I only
- B. II only
- C. I and II only
- D. II and III only
- E. I, II, and III

4. As used in paragraph 4, which is the best synonym for *laudable*?

- A. praiseworthy
- B. ineffective
- C. determined
- D. blameworthy
- E. satisfactory

5. The author's tone in the final paragraph can best be described as

- A. apologetic
- B. depressed
- C. confused
- D. solemn
- E. hopeless

6. As used in the final paragraph, which is the best antonym for *exalts*?

- A. ignores
- B. misrepresents
- C. praises
- D. reports
- E. criticizes

7. In the final paragraph, the author writes, "Players must stop being encouraged to trade their careers, health, happiness, and their lives for the sake of a game."

Which of the following literary devices is used in this quotation?

- A. Irony, characterized by the expression of something which is contrary to the intended meaning.
- B. Climax, characterized by the arrangement of words, phrases, or causes in an order of ascending power.
- C. Litotes, characterized by the expression of understatement used for intensification of a rhetorical purpose.
- D. Hyperbole, characterized by the use of exaggeration for emphasis or rhetorical effect.
- E. Apostrophe, characterized by a sudden turn from addressing the general audience to addressing a specific person, group, or personified abstraction.

DIRECTIONS

Answer the following questions with complete sentences. Use a separate sheet of paper for your answers.

8. Based on the information in the passage, explain CTE in your own words. What does it stand for? How does it occur? Whom does it normally affect? What are its effects?

9. What is your opinion of the NFL's new safety regulations? Do you think they are too strict, not strict enough, or just right? Why? What would change about the new rules, if anything? Explain.

LESSON 10

Language Arts, Social Studies



10. Because of the health risks associated with concussions, injuries, and CTE, many parents are starting to forbid their children from participating in high-risk sports such as football. What do you think of these parents' decisions, given what you have just read? Have your parents encouraged you not to participate in such sports? What decisions do you think you would make if your own children wanted to play football one day? Why?

11. What do you think is the most important factor in reducing brain injuries and CTE in sports? Do you think, as the author does, that sports culture needs to change? Are new safety rules sufficient? Why?

ASSIGNMENT 4

DIRECTIONS

Read the passage and answer the questions that follow.

Excerpt from Martin Luther King, Jr.'s Letter from the Birmingham City Jail

You may well ask, "Why direct action? Why sit-ins, marches, etc.? Isn't negotiation a better path?" You are exactly right in your call for negotiation. Indeed, this is the purpose of direct action. Nonviolent direct action seeks to create such a crisis and establish such creative tension that a community that has constantly refused to negotiate is forced to confront the issue. It seeks so to dramatize the issue that it can no longer be ignored. I just referred to the creation of tension as a part of the work of the nonviolent resister. This may sound rather shocking. But I must confess that I am not afraid of the word tension. I have earnestly worked and preached against violent tension, but there is a type of constructiveⁱ nonviolent tension that is necessary for growth. Just as Socrates felt that it was necessary to create a tension in the mind so that individuals could rise from the bondageⁱⁱ of myths and half-truths to the unfetteredⁱⁱⁱ realm of creative analysis and objective appraisal^{iv}, we must see the need of having nonviolent gadflies^v to create the kind of tension in society that will help men rise from the dark depths of prejudice and racism to the majestic heights of understanding and brotherhood. So the purpose of the direct action is to create a situation so crisis-packed that it will inevitably open the door to negotiation. We, therefore, concur with you in your call for negotiation. Too long has our beloved Southland been bogged down in the tragic attempt to live in monologue rather than dialogue...

LESSON 10

Social Studies



We must use time creatively, and forever realize that the time is always ripe to do right. Now is the time to make real the promise of democracy, and transform our pending^{vi} national elegy^{vii} into a creative psalm^{viii} of brotherhood. Now is the time to lift our national policy from the quicksand of racial injustice to the solid rock of human dignity.

- i **constructive**—serving a useful purpose
- ii **bondage**—slavery
- iii **unfettered**—not limited or restrained by anyone or anything
- iv **appraisal**—a careful assessment and consideration of something
- v **gadfly**—an annoying person, especially one who provokes others into action by criticism; a fly that bites other animals
- vi **pending**—waiting to be decided or dealt with
- vii **elegy**—a sad funeral song or poem for the dead
- viii **psalm**—a sacred song or hymn

1. As explained by Martin Luther King Jr., what is the purpose of nonviolent direct action?

- A. It creates an environment of tension in which no one is willing to negotiate.
- B. It prevents negotiations from taking place.
- C. It dramatizes an issue so that it can no longer be ignored.
- D. It delays negotiation until people are ready to confront an issue.

"If you can't fly, then run; if you can't run, then walk; if you can't walk, then crawl; but whatever you do, you have to keep moving forward."

~Martin Luther King Jr.

2. Communities in the South refused to address the problems of inequality and racism. What solution did Martin Luther King Jr. propose?

- A. take violent direct action so that people are forced to pay attention
- B. take nonviolent direct action so that the problem cannot be ignored
- C. wait for community leaders to agree to peaceful negotiations
- D. work and preach against violent tension within communities

3. Thinkers and leaders other than Martin Luther King Jr. have created tension to bring about change. What evidence from the passage supports this statement?

- A. "Just as Socrates felt that it was necessary to create a tension in the mind so that individuals could rise from the bondage of myths..."
- B. "You may well ask, Why direct action? Why sit-ins, marches, etc.? Isn't negotiation a better path? You are exactly right in your call for negotiation."
- C. "I just referred to the creation of tension as a part of the work of the nonviolent resister. This may sound rather shocking. But I must confess that I am not afraid of the word tension."
- D. "Too long has our beloved Southland been bogged down in the tragic attempt to live in monologue rather than dialogue..."

4. Which audience did Martin Luther King Jr. most likely target when writing this letter?

- A. people who supported his work
- B. people who lived in the North
- C. people who fought for civil rights
- D. people who questioned his methods

LESSON 10

Social Studies



5. What is the main idea of this excerpt from King's letter?

- A. Without violent tension and fighting, change would be too slow.
- B. Nonviolent direct action is needed to bring about change.
- C. Negotiation is a better method than direct action to cause change.
- D. Socrates also used nonviolent tension to bring about change.

6. Read the following sentences: "Nonviolent direct action seeks to create such a crisis and establish such creative tension that a community that has constantly refused to negotiate is forced to confront the issue. It seeks so to dramatize the issue that it can no longer be ignored."

As used in this sentence, what does the word "dramatize" mean?

- A. make a situation seem more important or serious
- B. make a situation seem funny and less important
- C. pay no attention to a situation, problem, or issue
- D. write a play or a musical about a situation

7. Choose the answer that best completes the sentence below.

Martin Luther King Jr. preached against violent tension, _____ believed strongly in nonviolent tension.

- A. then
- B. so
- C. but
- D. like

DIRECTIONS

Answer the following questions using complete sentences. Use a separate sheet of paper to complete the assignment.

DO NOT SKIP THESE QUESTIONS!

- 8. According to Martin Luther King Jr., why do we need nonviolent gadflies in society?**
- 9. Explain why Martin Luther King Jr. mentioned the ancient Greek philosopher Socrates in his letter. Support your answer using information from the letter.**
- 10. How did Martin Luther King Jr. view the state of the nation when he was writing this letter? Refer to the second paragraph to support your answer.**

LESSON 10

Sample Test Questions—Social Studies



SAMPLE TEST QUESTIONS SOCIAL STUDIES

This passage was adapted from a variety of general sources and is considered an excellent World History topic because it is fundamental to both U.S. and Canadian high school curriculum and experience, and examines events and concepts that relate to many peoples all over the world.

Questions 1 to 5 are based on the following interpretation of history.

The history of the world is filled with stories of people migrating. Migration is the movement of people from one place to another as they seek a new home. People who migrate are called immigrants. Immigrants decide to leave their homes because of “push” and “pull” forces. Famine, over population, few resources, war, and religious and political persecution “push” immigrants to move to another country. Hopes for employment and a better life “pull” immigrants to new places.

Millions of people have migrated to North America since the 1600s. The Spanish, French, English, and Dutch were the first European settlers to establish colonies. They settled in lands originally populated by native people from Asia. These Europeans came to North America in search of gold, religious converts, and new places to live and practice their beliefs. A large number of people from Africa were driven from their homes, at this time, to be enslaved to work in colonies in North America.

Throughout the 19th century, immigrants looking for employment came to North America from Japan, China, and southeastern Europe. In the 1970s and 1980s, Southeast Asians, Latin Americans, and Caribbeans migrated to North America. Many of these immigrants fled from war-torn countries, political persecution, and economic difficulties.

1. Which of the following observations about migration to North America is made in the presented interpretation?
 - A. Immigrants no longer come to North America.
 - B. Most immigrants were forced to migrate.
 - C. Migration was not worth the trouble.
 - D. Most immigrants came from similar cultures.
 - E. Immigrants came from many countries.
2. The government of a country may restrict the number of immigrants allowed to enter that country. These restrictions on immigration are most likely based on what belief?
 - A. An economy can support unlimited numbers of people.
 - B. The “push” factors justify most immigration.
 - C. Immigrants enrich the culture of a country.
 - D. A country has a limited number of jobs and services.
 - E. A government should not interfere with the migration of people.
3. Which is an opinion rather than a fact about immigrants to North America related to the passage?

Immigrants

 - A. traveled long distances to find a better life
 - B. migrated to find employment
 - C. learned to live in a foreign culture
 - D. escaped from political persecution
 - E. found a better life

LESSON 10

Sample Test Questions–Social Studies



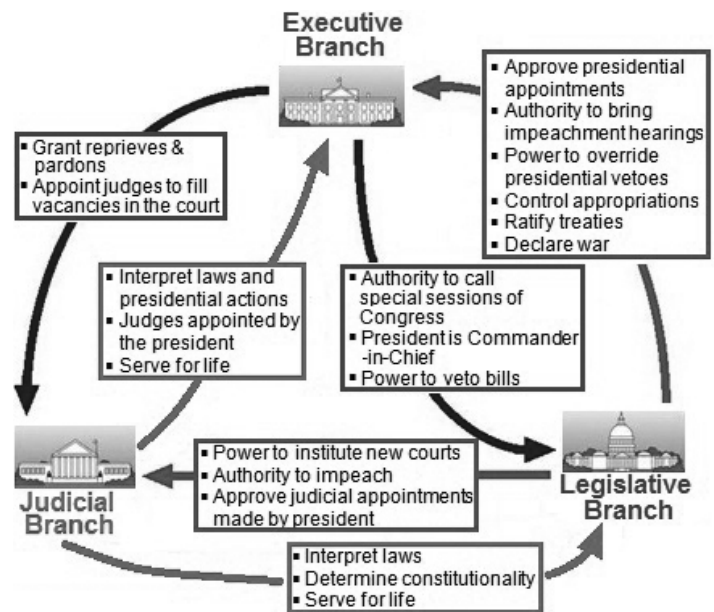
4. Why did most Southeast Asian immigrants to North America during the 1970s and 1980s leave their countries?

Because they were

- A. refugees fleeing from war in their countries
- B. people escaping from natural disasters
- C. wealthy business owners looking for new markets
- D. members of religious groups hoping to spread their beliefs
- E. people happy with conditions in their countries

5. Does the information in the interpretation presented support the fact that the “push-pull” theory of immigration describes why many groups of people immigrated to North America?

- A. No. Some groups forced Native Americans to give up their lands in North America.
- B. Yes. Asians, Europeans, and Africans were attracted to North America or forced to settle there.
- C. No. Famine and war caused many Europeans to emigrate from North America or forced to settle there.
- D. Yes. Many groups decided to return to their homelands after traveling to North America.
- E. No. The theory applies to a few immigrant groups, not most who settled in North America.



6. The chart best illustrates which of the following principles?

- A. Federalism
- B. Popular Sovereignty
- C. Judicial Review
- D. Checks and Balances

7. Which branch of government approves new judges to serve on the Supreme Court?

- A. Judicial
- B. Legislative
- C. Executive
- D. Voters

References

www.englishforeveryone.com

www.readworks.org

