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Scholastic Guide

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Version 4.0
April 8, 2009

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Missing Materials:

I. Graphs and Diagrams (Math/Science) - 1) Including 2) Formatting; II. Research Guidelines; II. MLA Format; IIIA. Reader Responses; IIIA Vocabulary Sentences; IIID Research Papers; IIID Purpose and Conclusion Writings; IIID Pre-and-post Lab Questions; IIID Summaries; IIID Graphs; IIID Diagrams; IV. General Writing Rubric - 1) Purpose 2) Organization 3) Details/support 4) Usage; IV. ELA Regents Rubric

A. Headings



Charley Yin
English 2 Honors, pd. 5

April 15, 2008
Greek Gods Grid, p. 105

Writing name, date, title, period, and assignment

Why should one use a proper heading? Doing so makes it easier to organize assignments. A teacher will be able to properly give a student credit for the hard work that went into the assignment if the header contains necessary information. Students sometimes misplace assignments, and using the correct header

increases the likelihood that someone who finds your work will return it to you.

Students should include the following information at the top of every submitted assignment:

full name
date
course title
period
name or number of assignment
page where assignment can be found.

B. Proper Responses



Answer all parts of the question

Review a question before responding, and make a mental note of exactly what you are expected to produce. Some questions require students to provide multiple answers.

Use complete sentences

Avoid sentence fragments. Every sentence should contain a subject and a predicate. This makes a good impression on your teachers, and it trains you for the type of writing that will be expected in college and the professional world.



Reread answers

Proofreading is done by all effective writers. It is often necessary to produce multiple drafts in order to arrive at an impressive piece of writing. Check for spelling and grammatical mistakes. Also, make sure that you have fully answered the question. During proof-

reading, keep in mind that points that are irrelevant to your main argument should usually be eliminated.

C. Taking and Using Good Notes

Rationale: You will quite likely take notes throughout your life. You will also review them; otherwise, what would the point of taking them be? You will then use your notes to your advantage.

There are four steps to consider when taking and using effective notes:

Listening:

“Prepare to listen and keep [the assigned task] in mind...

Listen carefully...

Listen for the facts...

Listen for signals...

Listen for patterns of organization...

Listen for details...

Listen to directions...

Think about what is being said...

Put the lecture into your own words...

Listen for any special instructions” (Sebranek 390-91).

Formatting:

Structure your notes so that someone other than you could easily understand the main points of the lecture. Ask your teacher if he or she prefers a particular style of formatting for notes. If he or she does not, consider using the proven Cornell Notes system. This involves drawing a vertical line and a horizontal line on your page. Take notes in the right column, write a summary of the day’s notes below the line, and then write down the most important information in the left column when you get home. Consider the following:

“Do your assigned reading before you come to class... [Organize your notes by subjects, folders, separate notebooks, or separate sections of a binder.

Label and date your notes...

Write your notes as neatly as time will allow...

Begin taking notes immediately...

Use your own words...

Summarize the main ideas...

Condense information...

Use abbreviations, acronyms, and symbols...

Develop your own shorthand method...

Draw simple illustrations, charts, or diagrams.

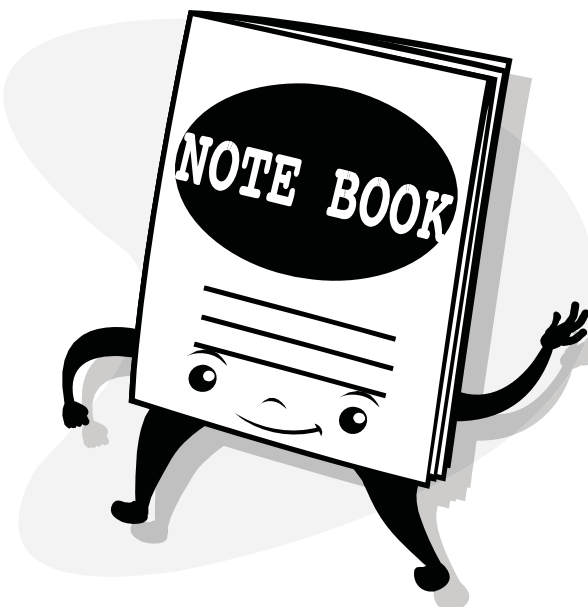
Revising:

Revisit your notes. Highlight and underline important ideas. If you are using Cornell Notes, be sure to write key ideas, vocabulary words, and questions in the left-most column. Also, be sure to write a summary at the bottom of the page.

Using:

“Don’t let your notes sit until it is time to review for a test. Read over the notes you have taken within 24 hours and recopy, add details, highlight, or summarize as necessary.” (Sebranek 392-93).

Sebranek, Patrick, Dave Kemper, and Verne Meyer. *Writers INC: A Student Handbook for Writing and Learning*. Wilmington, Massachusetts: Great Source Education Group, 2001.



D. Using the Book

Taking notes from a text can be just as challenging – and helpful – as taking notes from a lecture. Consider using Post-It Notes, writing on a separate paper, or writing directly in the margins of the book

if it is yours. Jot down key points, vocabulary words, and questions as you progress.

E. Online Databases

The LaGuardia High School community has free remote access to the following databases you can read full text articles from newspapers and magazines from your home.

BRITANNICA ONLINE: complete print encyclopedia with additional links to Internet resources, ANNALS

OF AMERICAN HISTORY ONLINE: documents in US history from 1493 to modern times and WORLD

DATA ANALYST ONLINE: statistical portraits of the countries of the world

BRITANNICA ONLINE: Web address: <http://search.eb.com>

ANNALS OF AMERICAN HISTORY ONLINE: Web address <http://america.eb.com>

WORLD DATA ANALYST ONLINE: Web address <http://world.eb.com>

Username: laguardia

Password: Highschool

EBSCO HOST: magazine index with many full text articles

Web address: <http://search.epnet.com/login.aspx?authtype=ip.uid&group=empire&custid=s8707912>

User ID#: laguardiahs

Password: laguardiah

GROVE DICTIONARY OF ART ONLINE: covers all aspects of visual art

Web address: <http://www.groveart.com>

Username: lhsart

Password: art

INFOTRAC: TWAYNE AUTHOR SERIES, HEALTH REFERENCE CENTER, BUSINESS AND COMPANY RESOURCE CENTER

Web address: http://infotrac.galegroup.com/itweb/nysl_me_71_lhs

Username: empirelink

Location ID: nysl_me_71_lhs

LITERARY REFERENCE CENTER

Web address: <http://search.ebscohost.com/login.aspx?authtype=ip,uid&group=empire&custid=s8707912>

Username: laguardiahs

Password: laguardiahs

NEW GROVE DICTIONARY OF MUSIC AND MUSICIANS II ONLINE

Username: lhsmusic

Password: music

PRO QUEST DIRECT: The New York Times since it began publishing in 1851

Web address: <http://proquestk12.com>

User ID#: 53-5151REMOTE (from home) (in school 53-5151)

Password: bigchalk

SIRS (Social Issue Resource Series): RENAISSANCE: text on humanities and social issues

Web address: <http://proquestk12.com>

Customer#: NY9285

Password: 10023

(Please note that user names and passwords are all case sensitive.)

This list was revised in November of 2006



A. How to Write an Outline

An outline organizes information from a reading, lecture, or notes. Information is organized first into main topics or headings, then into subtopics of each main topic, and then into details.

Main Topic
 Subtopic 1
 Detail related to subtopic 1
 Detail related to subtopic 1
 Subtopic 2
 Detail related to subtopic 2
 Detail related to subtopic 2

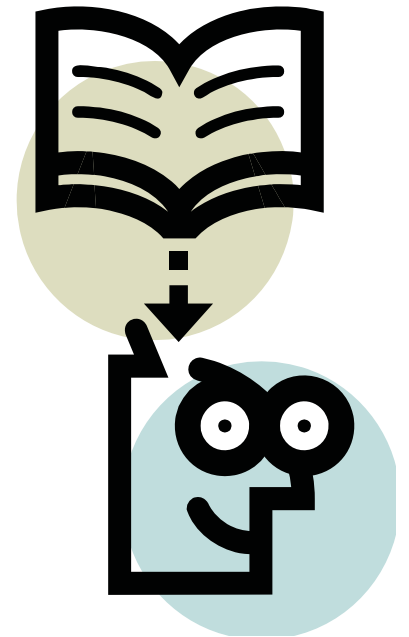
All subtopics are single word nouns – they are parallel.

Early Life
 Birth

January 12, 1965
 New York City
 Family
 Mother – Agnes Davidson
 Father – Alexander Patterson
 Brother – Alexander Patterson, Jr.
 Education
 Paterson Elementary School
 Washington Middle School

Indenting – note that each subtopic is indented to the same level – one tab in from the topic.

Each detail is also indented to the same level – two tabs in from the topic



Outlining: Categorize and Prioritize

Information in an outline moves from most general to most specific. Determine the topic headings (big ideas) and then the subtopics within each topic. Finally determine the details within each subtopic.

Information should be organized as follows: designate topics with Roman Numerals (I, II, III); the next most specific level of subheadings will be marked with capital letters (A, B, C); follow with regular numerals for details within subtopics (1, 2, 3); and finally include lower case letters (a, b, c) for extra information about

details. Always alternate numbers and then letters. (See example)

Outlining: Divide

Each level of the outline should be divided into two or more headings. There is no A without B or 1 without 2.

There is no reason to have only one detail or subtopic. If the topic is important enough to discuss, it should be big enough to have two parts within it.

Outlining: Coordinate

All of the information at the same level should have the same significance or size.

Outlining: Match and Make Parallel

Each topic and subtopic must have parallel structure. For example if your first topic is a noun, ALL topics must be nouns.

Outlining: Format

Make sure each level is indented consistently. The broadest items (the topics) should be closest to the margin. The next level (the subtopics) should be indented one tab in. The details should be one tab in from there.

Make sure any information that runs over to a second line is indented underneath the start of the first line.

B. How to Write an Article

It is thrilling to write an excellent news article and see your name in print. Writing an outstanding piece is a challenge, however. The writer must interest the reader and convey meaningful information. Follow the four steps below when writing an article:

Find a newsworthy topic. This is something that interests people. Consider exploring a topic that affects a large number of people, is unusual, or relates to another idea that is

currently being explored by the news media. **Gather information.** Interview subjects who know about your topic. Use polling data. Review records. Do your research, and you will earn the respect and trust of your reader.

Organize your materials. Use the inverted pyramid format: the most important information should be placed at the top of your article, and the ideas get less important as the article progresses. Place

the engaging first sentence, or lead, at the top. The lead is meant to convey to the reader what is most newsworthy about this story. Also include crucial information near the top of your article that answers the following questions: “who?”, “what?”, “where?”, “when?”, “why?”, and “how?”

Use news writing style. Write an article that con-

tains “graphs” that are between one and three sentences. Sentences should be short and clear. Do not state opinions. All statements that are not already widely agreed on should be backed up by a quotation from an interviewer or a verifiable statistic. Include the quotation first and then the speaker attribution.



C. Open-ended Questions

Respond in complete sentences using the conventions of standard written English.

Identify all sources correctly: major works underlined (novel, play, memoir, newspaper, etc.) and shorter works in quotations (article, poem, short story, song, etc.).

Rephrase the question and incorporate it into your response:

Sample Question 1: Discuss how John Proctor changes in Miller’s play, *The Crucible*?

Sample Response 1: John Proctor changes throughout the play from _____ to _____.

Sample Question 2: Contrast the views of the North and South on the issue of state’s rights.

Sample Response 2: The views of the North and South differ in the following ways: _____, _____, and _____.

Incorporate specific examples that support your response.

Indicate any words taken directly from the source by using quotation marks.

Introduce each specific quotation or reference by locating the example within the source (establishing

context).

Take note of key words in the question and determine what the question is asking.

Describe = explain how something looks, acts – give a general impression of the person, item or idea.

Discuss = talk about a topic from all sides in an organized fashion.

Evaluate - to make a value judgment, to give the pluses and minuses with facts, figures, instances, etc. **Explain** =- to make clear, to analyze, to show a process. Similar to discuss, but to explain puts more emphasis on cause and effect relationships and step-by-step sequences.

Explore = talk about a topic from all sides in an organized fashion.

Compare = give examples to show how things are similar.

Contrast = give examples to show how things are different.

Make sure that you have addressed all parts of the question. Example. How has John Proctor changed throughout *The Crucible*, and can he be considered a hero?

D. How to Summarize a Text

“Writing a summary is an excellent way to understand and remember what you have read. Follow the guidelines below. **Skim the selection first** to get the overall meaning.

Read the selection carefully, paying particular attention to key words and phrases. (Check the meaning of any words you’re unsure of.) List the main ideas on your own paper – without looking at the selection! **Review the selection** a final time so that you have the overall meaning clearly in mind as you begin to write.

Write a summary of the major ideas, using your own words except for those ‘few’ words in the original that cannot be changed. Keep the fol-

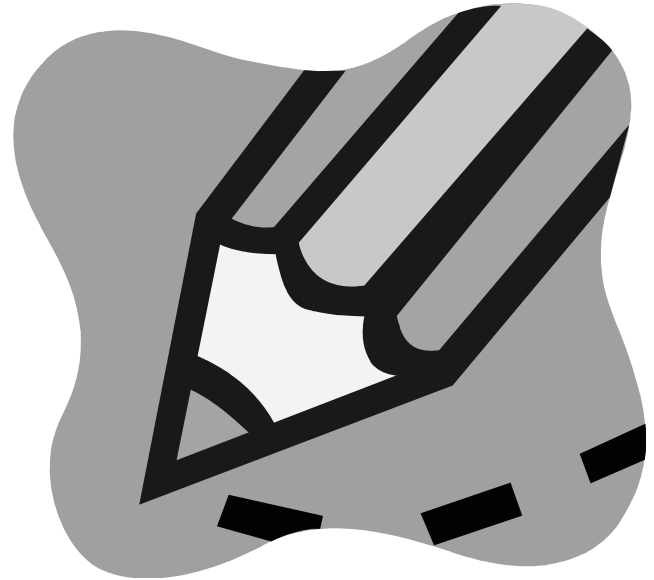
lowing points in mind as you write:

- * Your opening (topic) sentence should be a clear statement of the main idea of the original selection.
- * Stick to the essential information. Names, dates, times, places, and similar facts are usually essential; examples, descriptive details, and adjectives are usually not needed.
- * Try to state each important idea in one clear sentence.
- * Use a concluding sentence that ties all of your thoughts together and brings the summary to an effective end.

Check your summary for accuracy and conciseness. Ask yourself the following questions:

- * Have I included all of the main ideas?

*



Have I cut or combined most of the descriptive details? (Your summary should be about one-half the length of the original.)

- * Will another person understand the main points simply by reading my summary?” (Sebranek 403).

Sebranek, Patrick, Dave Kemper, and Verne Meyer. *Writers INC: A Student Handbook for Writing and Learning*. Wilmington, Massachusetts: Great Source Education Group, 2001.

E. How to Analyze a Text

“When you compare and contrast, rank things in order of importance, or give reasons, you are analyzing information” (Sebranek 442).

A textual analysis is different from a summary. Your analysis is written in your own words and takes the text apart bit by bit. It contains many references to information in the text. An analysis often involves proving a thesis or answering a question. You want to explain in detail what the text says about the idea of interest.

The following are some of the approaches that one can take when analyzing a text:

- * Analyze the text as a work of art.

- * Analyze the structure of the text.
 - * Analyze the text as a product of the author's mind.
 - * Analyze the text in a social or historical context.
 - * Analyze the text from a psychological viewpoint.
- Avoid the following in a textual analysis:
- * Vague generalities
 - * The inclusion of irrelevant details
 - * The discussion of your personal relationship with the text

Sebranek, Patrick, Dave Kemper, and Verne Meyer. *Writers INC: A Student Handbook for Writing and Learning*. Wilmington, Massachusetts: Great Source Education Group, 2001.

F. How to Avoid Plagiarism

How to Avoid Plagiarism

“You owe it to your sources and your readers to give credit for anyone else’s ideas or words that you use in your [assignment]. If you don’t, you may be guilty of plagiarism – the act of presenting someone else’s ideas as your own. The guidelines that follow will help you avoid plagiarism:

- * When using a writer’s idea, credit the author by name and also cite the work in which you found the idea.

[Use the guidelines for MLA Citation that can be found in this style guide.]

- * Give a new citation even when using additional information from a previously cited source.

- * When summarizing or paraphrasing, remember to use quotation marks around key words or phrases taken directly from the source.

- * Cite everything you borrow unless you’re sure that the information is common knowledge” (Sebranek 256).

Plagiarism - Examples

- * Presenting another person’s creative work or ideas as one’s own in essays, poems, music, art, computer programs, or other projects

- * Failing to cite with quotation marks the written words or symbols of a source or author

- * Copying or paraphrasing words and ideas from any source including literary criticism or study aids, without acknowledgment

- * Failing to cite the source of words, ideas, etc., which are quoted, paraphrased, or summarized in your oral or written work

Plagiarism – Penalties

- * LaGuardia: A plagiarizing student will receive a 0 on the assignment with no opportunity to make it up. The individual will be placed on a departmental list of plagiarizers that all teachers will have access to. In addition, teachers may contact parents or a dean for further disciplinary action.

- * College: A student who plagiarizes may be expelled from the institution and prevented from reapplying.

Sebranek, Patrick, Dave Kemper, and Verne Meyer. *Writers INC: A Student Handbook for Writing and Learning*. Wilmington, Massachusetts: Great Source Education Group, 2001.



A1. English: How to Write an Essay

In-class essay on ancient love myths: “Ceyx & Alcyone,” “Pygmalion & Galatea,” “Orpheus & Eurydice” (myth and poem), and “Baucis & Philemon.”

Question: How do ancient love myths offer the twenty-first century reader lessons about love?

Introductory Paragraph – components to include:
Topic or Subject of essay (lesson(s) that ancient Greek & Roman love myths teach 21st century readers about love)

Background of subject, or Context of literary work (myths, love)

Title of literary work (titles of love myths: “Orpheus & Eurydice,” Rilke’s poem “Orpheus, Eurydice, Hermes,” “Baucis & Philemon,” “Ceyx & Alycone,” and “Pygmalion & Galatea.”)

Genre of literary work (novel, play, “poem,” “short story,” “essay,” “myth”)

Author/Storyteller of literary work (Ovid, Rilke, or Virgil)

Thesis Statement- idea(s) that the essay will explore,

prove, or discuss, along with THREE reasons to be developed

Sample Thesis 1: Ancient love myths teach twenty-first century readers a lesson that love is _____ in the myths “_____,” “_____,” and “_____.”

Sample Thesis 2: Ancient love myths teach a variety of lessons about love to twenty-first century readers, including _____ in “_____,” _____ in “_____,” and _____ in “_____.”

3 Developing Paragraphs – each must include:
Statement – topic of paragraph clearly stated (connects to reason #1 in thesis statement)
Proof – specific examples from text to support reason – quotations are desirable but not required
Analysis – discussion of textual examples that make connections to the reason (topic of paragraph) that you are trying to support

Conclusion – Summarize position, restate thesis (same or revised from intro)

A2. How to Summarize

A summary for an English class is similar to one for any other class, but there are some key differences:
Identify the major characters.
Foreground the setting (when and where the story takes place).
Offer a review of the major plot developments.



A3. English: Journal Entries

Journal Responses in an English Class:

When you are asked to respond to the literature based on your own reading, consider the following questions:

What interests you in the reading and why?

How do you connect to a suggested situation or topic and why?

What connection can you make between yourself and a character in the text and why?

What is the writer's purpose and how is he/she successful?

What literary devices is the writer using to communicate his/her story or message?

How have your thoughts about the characters, themes, or other literary elements changed as you've continued to read?

How can you have a dialogue with the writer?

How can you question/consider things you do not understand and what they might mean?

What do you think about a particular situation, line, character, or relationship?

How might you anticipate what may happen next?

Has my response avoided being merely a summary?

When you are asked to respond to a teacher's prompt about the reading, incorporate the following:

Rephrase the question in your response.

Provide specific examples that directly address the question.

Explain or interpret the examples that you have provided and how they relate to the topic.

Identify direct quotations where appropriate and cite the page for reference.

When you are responding to a question that asks for your personal view or opinion, you need to respond with the following in mind:

What is the question asking you to consider (i.e. compare, contrast, examine, describe, discuss, give examples, explain how something works)?

Keep in mind that you may be asked to share your response and it must be appropriate for class consumption. Work to develop your response and to explore why you think/feel as you do about the topic.

There is no "right" answer other than a thoughtful, fully developed one. Provide examples to make your response clear.

Look for connections in the course ideas and other readings with the topic being discussed. **DISCUSS, DO NOT SUMMARIZE** the reading. Make appropriate references to the text to begin developing your analytical skills (brief description of what you are specifically or generally responding to in the literature).



B1. Social Studies: Global Hist. & Geog. Non-Content Vocab.

adapt – v- to adjust to fit different conditions

advocate – (v) to speak, plead, or argue in favor of something; (n) a person who pleads for a cause

affect – v – to have an influence on; to bring about a change in

agriculture –n – the science and business of farming

ample – adjective - Large in degree, kind, or quantity; more than enough

annex – (v) – to add something to something else; (n) an addition that extends a main building

cede –v – to give up or hand over

chronological –adjective – arranged according to time

collective – n – large farm owned and operated by workers as a group (collectivization)

dependent – adjective – relying on someone or something else

discontent – adjective – not happy or satisfied (opposite of content)

diverse – adjective – of several or many kinds; different (noun – diversity)

dominant – adjective – the most important or powerful

efficient – adjective – able to produce good results without wasting time, materials or effort

foster – verb – to help grow or develop

hierarchy – n - the classification of a group of people according to ability or to economic, social, or professional standing; the group so classified

hinder – v – to make difficult or slow

impact – n - the force of impression of one thing on another : a significant or major effect

implement – v – carry out; accomplish

impose –v – to establish or assign something that is a burden

inefficient – adjective - not efficient; not producing the effect intended or desired

inhabitants –n – a person or animal that lives in a particular place

interdependence –n - dependence of people or nations on each other; idea that what one does affects others

isolate – v – to keep or set apart from others

justify – v – to show or prove to be fair, right or reasonable

migration – n – movement to another place to live or stay

per capita – adj – per person

perspective – n – point of view

promote –v- to encourage or support

relative – adjective – considered or existing in comparison with something else

severe – adjective – strict; harsh; causing great pain or hardship

stability – n - the quality, state, or degree of being stable; the strength to stand or endure

standard of living –n – measure of the level of existence that a particular group of people enjoys

subsistence – adjective - barest existence

surplus –n- an amount or quantity that is greater than is needed or used

transmit –v – to send from one person, place, or thing to another

trend –n – a direction or course that is being followed; change over time

tyrant – n – a ruler who has unlimited power, especially one who used power unjustly or cruelly (from Ancient Greece, ruler who gained power by force)

unify – v – to bring together or join so as to form a whole; make one (unite)

unique – adjective – being the only one of its kind

valid – adjective – supported by facts or evidence; true

vast – adjective – very great in area, size or amount

Note: Some words here, depending on their usage, can be used as verbs, nouns, adjectives (annex, relative). The definitions given are for the word form most frequently used on the New York State Regents.

B2.Social Studies: U.S. Hist.&Gov. Non-Content Vocab.

affect – v – to have an influence on; to bring about a change in

agriculture –n – the science and business of farming

annex – v – to add something to something else

cede –v – to give up or hand over

common – adjective – belonging to all

controversy – n – argument; disagreement

dependent – adjective – relying on someone or something else

derive –v – to get or receive from a source

détente – n – relaxation of strained relations or tensions

diplomacy – n- the practice of conducting relations between countries using negotiation, not force (diplomat)

discontent – adjective – not happy or satisfied (opposite of content)

diverse – adjective – of several or many kinds; different (noun – diversity)

efficient – adjective – able to produce good results without wasting time, materials or effort

eliminate – v – to get rid of; leave out or remove

foster – verb – to help grow or develop

hinder – v – to make difficult or slow

impact – n - the force of impression of one thing on another : a significant or major effect

implement – v – carry out; accomplish

impose –v – to establish or assign something that is a burden

inefficient – adjective - not efficient; not producing the effect desired

isolate – v – to keep or set apart from others (isolationism)

intervene – intransitive verb - to interfere usually by force or threat of force in another nation's internal affairs especially to compel or prevent an action

judicial – adjective – of or ordered by judges or courts

justify – v – to show or prove to be fair, right or reasonable

limit – n – a point or line beyond which one cannot go; boundary; -v- to place a limit on

migration – n – movement to another place to live or stay

oppose – v – to be against

per capita – per person

perspective – n – point of view

promote –v- to encourage or support

provide – v – to give what is needed or useful

severe – adjective – strict; harsh; causing great pain or hardship

speculation – n – taking extreme risks in business or investing in hopes of earning large profits

standard of living –n – measure of the level of existence that a particular group of people enjoys

stimulate – v - to excite to activity or growth or to greater activity

suffrage –n – the right to vote

surplus –n- an amount or quantity that is greater than is needed or used

trend –n – a direction or course that is being followed; change over time

unique – adjective – being the only one of its kind

valid – adjective – supported by facts or evidence; true

Note: Some words here, depending on their usage, can be used as verbs, nouns, adjectives (relative). The definitions given are for the word form most frequently used on the New York State Regents.

B3. Social Studies: Global Hist. Thematic Regents Essay

Throughout history, events have changed the world that came after. Some of these events were political, meaning they dealt with the government. The Cuban Missile Crisis and the Chinese Cultural Revolution have both affected the world as it is today. Therefore, political events of the twentieth century have had positive and negative effects on global history.

The Cuban Missile Crisis affected global history positively. This happened in 1962 between the Soviet Union and the United States. The Soviet Union put nuclear missiles in Cuba, which is 90 miles south of Florida, and pointed them toward the United States. Khrushchev, the leader of the U.S.S.R., was concerned about the American missiles in Turkey that were pointed toward the Soviet Union as part of the Cold War policies of containment. He also hoped to get the U.S. to promise not to interfere in Cuba. U.S. President John F. Kennedy then set up a naval blockade around Cuba. This prevented anything from coming in or going out. Khrushchev finally agreed to withdraw his missiles. In return, Kennedy promised not to invade Cuba, which was communist. This had a positive effect on history because it alerted the world to just how bad tensions were. The world had come to the brink of nuclear war. Because of this, many countries chose to use diplomacy before going to war as much as possible. In the past, the world had been ready to jump into war to solve conflicts. Now that weapons of mass destruction had been made, diplomacy was chosen more often. All in all, the Cuban Missile Crisis, though dangerous, had a positive effect on history.

The Chinese Cultural Revolution of 1966-76 had a negative effect on global history. Mao Zedong was the leader of a communist China at that time. He noticed a rift growing between the radical communists, led by Mao, and the pragmatists. To pull the communist party back together, Mao initiated his own “cult of personality” and the Cultural Revolution. He used the Red Guard as police. These were young adults who carried the “Little Red Book” of Mao’s sayings and used violence against the dissenters of Mao’s regime. This time of chaos lasted ten years and had a negative effect on China’s development. Thousands of people died and many more lost jobs as businesses shut down or slowed productivity.

Afterward, communism had a tight reign on China. The communist party has denied many human rights to the citizens of China, and communist countries, such as North Korea under Kim Jong Il, have followed Mao’s teachings and oppressive policies. In short, China’s Cultural Revolution had a negative effect in global history.

Thus, positive and negative effects have resulted from 20th-century political events. The Cuban Missile Crisis led to more attempts at diplomacy throughout the world during the Cold War. The Chinese Cultural Revolution, led by Mao Zedong, has led to increased human rights abuses in some communist countries. The world has been greatly changed by events of the past, and continues to change from events in the present.

B4. Social Studies: U.S. Hist. & Gov. DBQ Regents Essay

“Throughout history, conquerors have brought many changes to conquered areas.” Two examples of conquests that totally altered the political, economic, and social systems of the nations they conquered were France and Spain. Although the means in which both nations acquired control of other nations may be considered brutal, their policies and values would have a lasting effect on the nations they conquered.

In the early 16th century, the Nation of Spain began to expand over seas after Columbus and others successfully explored new lands as well as new water routes to old trading centers. One Spanish explorer, Hernan Cortes became one of the first conquistadors to gain land in present day Mexico when he conquered the Aztecs. Soon after Spain began to colonise their expanding conquered territory. For the Natives of these areas Spanish culture was a radical change from the native way of life. Even though the natives were familiar with the concept of absolutism because of the Aztec and Incan nations, Spain introduced a totally new form of absolutism. The leaders of Spain appointed a temporary monarch in the newly colonized areas (known as New Spain). Like the King of Spain the temporary monarch of New Spain lived lavishly and enjoyed many of the same powers as the King of Spain (document 5). Under this political government a new societal system began to arise. Although social classes had existed to a degree in the late Aztec and Incan nations Spanish rule introduced a totally new form of the social system. Unfortunately, Natives weren't considered as equals and were at the very bottom of the class system, below slaves (document 6). The reasons for the inferior view of the Natives by the Spanish were infinite; for one, native culture was very different from Spanish culture. However, religion played a major role in the treatment of Natives. From the beginning the Spanish missionaries tried to convert natives to Christianity (document 4). Eventually, Spain would gain success but not without resistance. Ultimately, Spain would later lose control of their Mexican and South American colonies when Bolivar, San Martin, and others led movements for independence. But Spanish culture still has a major influence in the areas Spain once conquered. The Spanish language and Catholicism still dominate Latin America, art and architecture blend Spanish and native styles, and evidence of the class system still remains. Much of the land and many businesses are still controlled by a few at the top, even though groups of native Americans like the Zapatistas are demanding more rights.

In the late 18th and early 19th centuries Napoleon was at the height of his power (document 7). Napoleon was and still is considered to be one of the greatest rulers of all time. Even though his military brilliance allowed him to conquer other nations, it was his political brilliance that allowed him to gain the loyalty of his soldiers and establish firm control of the lands he conquered: Once Napoleon had gained control of France in the late 18th century he began his conquest of all of Europe. Despite his immense military success except with Great Britain and Russia, the areas which he conquered did not always respect his authority. Some of the changes Napoleon created in France were also adopted in the lands he conquered and in other European countries such as Italy when it united. The Napoleonic Code was a series of laws that promoted equality in the conquered lands (document 8). Although Napoleon saw the success of his code, he couldn't realize just how long the code would survive. Unlike the Spanish Nation, which Napoleon would later gain control of, Napoleon didn't use his conquest to enhance religious influence. By the mid 19th century the reign of Napoleon would come to an end and a new power, the British Empire would dominate.

As seen, France and Spain influenced the nations they conquered in many ways. Even though their reigns came to an end their influence is still present even today.

C1. Mathematics: Overview

Mathematics Department Standards

In your mathematics classes, you will rarely write long essays or papers; however, if you do, you should follow the English Department's standards.

There are four major types of mathematics assignments, and you will need to follow the writing standards explained in this section for each. They follow:

Paragraph Proofs

Projects

Open-ended Question Explanations

Beginning / End of Lesson Summaries

In each of these types of assignments, the expectations are the same: to write in complete sentences. More details on each separate assignment are explained below.

Geometry Definitions, Postulates, Theorems, and Methods



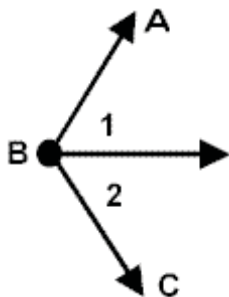
acute angle less than 90°

acute angle: An acute angle is an angle whose measure is greater than 0° and less than 90° .



acute triangle

acute triangle: An acute triangle is a triangle that has three acute angles.



angle 1 and angle 2 are adjacent.

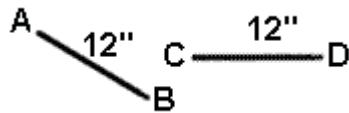
Adjacent angles: Angles that share a common vertex, a common side and no common interior points (they do not overlap).



altitude for an obtuse triangle

Altitude for an obtuse triangle: The altitude of a triangle is a line segment extending from any vertex of a triangle perpendicular to the line containing the opposite side.

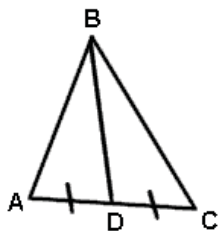
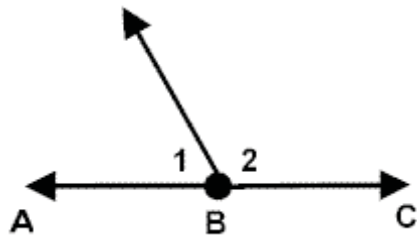
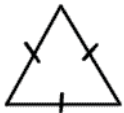
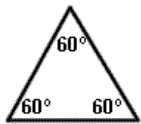
C1. Mathematics: Overview (Continued)



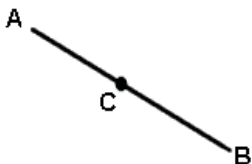
$\overline{AB} \cong \overline{CD}$ and $AB = CD$



congruent triangles



\overline{BD} is a median of $\triangle ABC$ and



C is the midpoint of \overline{AB} and $\overline{AC} \cong \overline{CB}$
 D is the midpoint of \overline{AC}

congruent segments: Congruent segments are segments of the same length (measure).

congruent triangles: Congruent triangles are triangles whose corresponding angles and sides are congruent. (They are exactly the same size and shape.)

equiangular triangle: An equiangular triangle is a triangle which has three congruent angles.

equilateral triangle: An equilateral triangle is a triangle with three congruent sides.

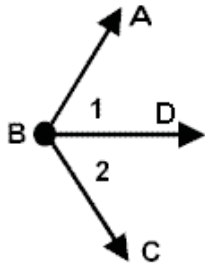
isosceles triangle: An isosceles triangle is a triangle with two congruent sides.

linear pair: A linear pair of angles are adjacent angles whose non-common sides are opposite rays (form a straight line). The sum of the measures of the angles in a linear pair is 180° . Unlike supplementary angles, a linear pair **MUST** be two adjacent angles.

median: The median of a triangle is a line segment extending from any vertex of a triangle to the midpoint of the opposite side.

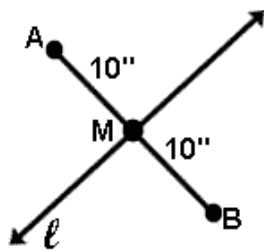
midpoint: The midpoint of a line segment is the point on that line segment that divides the segment two congruent segments.

C1. Mathematics: Overview (Continued)



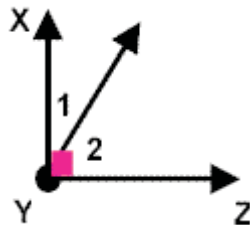
\overline{BD} bisects $\angle ABC$ and $\angle 1 \cong \angle 2$

angle bisector An angle bisector is a ray whose endpoint is the vertex of the angle and which divides the angle into two congruent angles.



M is the midpoint of \overline{AB}

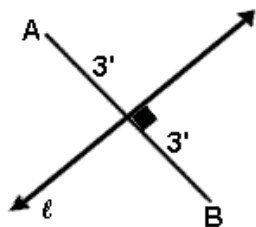
bisector of a line segment is any line (or subset of a line) that intersects the segment at its midpoint.



Angle 1 and angle 2 are complementary. Complementary angles are two angles the sum of whose measures is 90° . (Complementary angles need not be adjacent angles.)



congruent angles Congruent angles are angles of the same measure.



$l \perp \overline{AB}$ and l bisects \overline{AB}

perpendicular bisector The perpendicular bisector of a segment is a line (or subset of a line) that bisects the segment and is perpendicular to the segment.

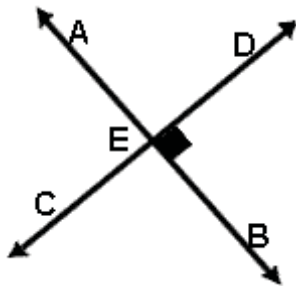


obtuse angle An obtuse angle is an angle whose measure is greater than 90° and less than 180° .



obtuse triangle An obtuse triangle is a triangle which contains one obtuse angle.

C1. Mathematics: Overview (Continued)



perpendicular lines Perpendicular lines are two lines which intersect to form right angles.

$\overline{AB} \perp \overline{CD}$ and $\angle AED, \angle DEB, \angle AEC, \angle CEB$ are right \angle s



right angle A right angle is an angle whose measure is 90° .



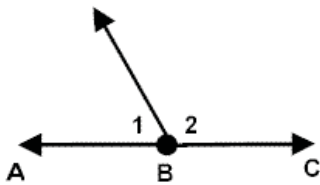
right triangle A right triangle is a triangle containing one right angle.



scalene triangle A scalene triangle is a triangle with no congruent sides.

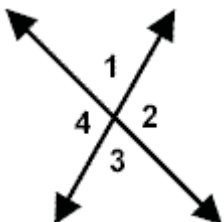


straight angle A straight angle is an angle whose measure is 180° .



Angle 1 and angle 2 are supplementary.

Supplementary angles are two angles the sum of whose measures is 180° . (Supplementary angles need not be adjacent.)



Angle 1 and angle 3 are vertical angles.

Angle 2 and angle 4 are vertical angles. Vertical angles are two nonadjacent angles formed by two intersecting lines.

C1. Mathematics: Overview (Continued)

Right Angles All right angles are congruent.

Congruent Supplements If two angles are supplementary to the same angle (or to congruent angles) then the two angles are congruent. If two angles are supplementary to the same angle (or to congruent angles) then the two angles are congruent.

Congruent Complements If two angles are complementary to the same angle (or to congruent angles) then the two angles are congruent. If two angles are complementary to the same angle (or to congruent angles) then the two angles are congruent.

Vertical Angles Vertical angles are congruent.

Alternate Interior Angles If two parallel lines are cut by a transversal, then the alternate interior angles are congruent. If two parallel lines are cut by a transversal, then the alternate interior angles are congruent.

Alternate Exterior Angles If two parallel lines are cut by a transversal, then the alternate exterior angles are congruent. If two parallel lines are cut by a transversal, then the alternate exterior angles are congruent.

Interiors on Same Side If two parallel lines are cut by a transversal, the interior angles on the same side of the transversal are supplementary. If two parallel lines are cut by a transversal, the interior angles on the same side of the transversal are supplementary.

Alternate Interior Angles Converse If two lines are cut by a transversal and the alternate interior angles are congruent, the lines are

parallel. If two lines are cut by a transversal and the alternate interior angles are congruent, the lines are parallel.

Alternate Exterior Angles Converse If two lines are cut by a transversal and the alternate exterior angles are congruent, the lines are parallel. If two lines are cut by a transversal and the alternate exterior angles are congruent, the lines are parallel.

Interiors on Same Side Converse If two lines are cut by a transversal and the interior angles on the same side of the transversal are supplementary, the lines are parallel. If two lines are cut by a transversal and the interior angles on the same side of the transversal are supplementary, the lines are parallel.

Triangle Sum The sum of the interior angles of a triangle is 180° .

Exterior Angle The measure of an exterior angle of a triangle is equal to the sum of the measures of the two non-adjacent interior angles. The measure of an exterior angle of a triangle is equal to the sum of the measures of the two non-adjacent interior angles.

Angle-Angle-Side (AAS) Congruence If two angles and the non-included side of one triangle are congruent to the corresponding parts of another triangle, the triangles are congruent. If two angles and the non-included side of one triangle are congruent to the corresponding parts of another triangle, the triangles are congruent.

Base Angle Theorem (Isosceles Triangle) If two sides of a triangle are congruent, the angles opposite these sides are congruent. If two sides of a triangle are congruent,

the angles opposite these sides are congruent.

Base Angle Converse (Isosceles Triangle) If two angles of a triangle are congruent, the sides opposite these angles are congruent. If two angles of a triangle are congruent, the sides opposite these angles are congruent.

Hypotenuse-Leg (HL) Congruence (right triangle) If the hypotenuse and leg of one right triangle are congruent to the corresponding parts of another right triangle, the two right triangles are congruent. If the hypotenuse and leg of one right triangle are congruent to the corresponding parts of another right triangle, the two right triangles are congruent.

Mid-segment Theorem (also called mid-line) The segment connecting the midpoints of two sides of a triangle is parallel to the third side and is half as long. The segment connecting the midpoints of two sides of a triangle is parallel to the third side and is half as long.

Parallelograms: About Sides

* If a quadrilateral is a parallelogram, the opposite sides are parallel.
* If a quadrilateral is a parallelogram, the opposite sides are congruent.

Parallelograms: About Angles

* If a quadrilateral is a parallelogram, the opposite angles are congruent.
* If a quadrilateral is a parallelogram, the consecutive angles are supplementary.

C1. Mathematics: Overview (Continued)

the sum of the measures of the two non-adjacent interior angles. The measure of an exterior angle of a triangle is equal to the sum of the measures of the two non-adjacent interior angles.

Angle-Angle-Side (AAS) Congruence

If two angles and the non-included side of one triangle are congruent to the corresponding parts of another triangle, the triangles are congruent. If two angles and the non-included side of one triangle are congruent to the corresponding parts of another triangle, the triangles are congruent.

Base Angle Theorem

(Isosceles Triangle) If two sides of a triangle are congruent, the angles opposite these sides are congruent. If two sides of a triangle are congruent, the angles opposite these sides are congruent.

Base Angle Converse

(Isosceles Triangle) If two angles of a triangle are congruent, the sides opposite these angles are congruent. If two angles of a triangle are congruent, the sides opposite these angles are congruent.

Hypotenuse-Leg (HL) Congruence (right triangle)

If the hypotenuse and leg of one right triangle are congruent to the corresponding parts of another right triangle, the two right triangles are congruent. If the hypotenuse and leg of one right triangle are congruent to the corresponding parts of another right triangle, the two right triangles are congruent.

Mid-segment Theorem

(also called mid-line) The segment connecting the midpoints of two

sides of a triangle is parallel to the third side and is half as long. The segment connecting the midpoints of two sides of a triangle is parallel to the third side and is half as long.

Parallelograms

About Sides

* If a quadrilateral is a parallelogram, the opposite sides are parallel.

* If a quadrilateral is a parallelogram, the opposite sides are congruent.

Parallelograms

About Angles

* If a quadrilateral is a parallelogram, the opposite angles are congruent.

* If a quadrilateral is a parallelogram, the consecutive angles are supplementary.

Parallelograms

About Diagonals

* If a quadrilateral is a parallelogram, the diagonals bisect each other.

* If a quadrilateral is a parallelogram, the diagonals form two congruent triangles.

Parallelogram Converses

About Sides

* If both pairs of opposite sides of a quadrilateral are parallel, the quadrilateral is a parallelogram.

* If both pairs of opposite sides of a quadrilateral are congruent, the quadrilateral is a parallelogram.

C1. Mathematics: Overview (Continued)

Parallelogram Converses

About Angles

- * If both pairs of opposite angles of a quadrilateral are congruent, the quadrilateral is a parallelogram.
- * If the consecutive angles of a quadrilateral are supplementary, the quadrilateral is a parallelogram.

Parallelogram Converses

About Diagonals

- * If the diagonals of a quadrilateral bisect each other, the quadrilateral is a parallelogram.
- * If the diagonals of a quadrilateral form two congruent triangles, the quadrilateral is a parallelogram.

Side Proportionality If two triangles are similar, the corresponding sides are in proportion. If two triangles are similar, the corresponding sides are in proportion.

Addition Postulate If equal quantities are added to equal quantities, the sums are equal.

Subtraction Postulate If equal quantities are subtracted from equal quantities, the differences are equal.

Multiplication Postulate If equal quantities are multiplied by equal quantities, the products are equal. (also Doubles of equal quantities are equal.)

Division Postulate If equal quantities are divided by equal nonzero quantities, the quotients are equal. (also Halves of equal quantities are equal.)

Substitution Postulate A quantity may be substituted for its equal in any expression.

Parallel Postulate If there is a line and a point not on the line, then there exists one line through the point parallel to the given line.

Corresponding Angles Postulate If two parallel lines are cut by a transversal, then the pairs of corresponding angles are congruent.

Corresponding Angles Converse Postulate If two lines are cut by a transversal and the corresponding angles are congruent, the lines are parallel.

Side-Side-Side (SSS) Congruence Postulate If three sides of one triangle are congruent to three sides of another triangle, then the triangles are congruent.

Side-Angle-Side (SAS) Congruence Postulate If two sides and the included angle of one triangle are congruent to the corresponding parts of another triangle, the triangles are congruent.

Angle-Side-Angle (ASA) Congruence Postulate If two angles and the included side of one triangle are

congruent to the corresponding parts of another triangle, the triangles are congruent.

Angle-Angle (AA) Similarity Postulate If two angles of one triangle are congruent to two angles of another triangle, the triangles are similar.

C1. Mathematics: Overview (Continued)

Methods of Proving (Showing) Triangles to be Congruent

Methods of Proving (Showing) Triangles to be Congruent

SSS If three sides of one triangle are congruent to three sides of another triangle, the triangles are congruent.

SAS If two sides and the included angle of one triangle are congruent to the corresponding parts of another triangle, the triangles are congruent.

ASA If two angles and the included side of one triangle are congruent to the corresponding parts of another triangle, the triangles are congruent.

AAS If two angles and the non-included side of one triangle are congruent to the corresponding parts of another triangle, the triangles are congruent.

HL If the hypotenuse and leg of one right triangle are congruent to the corresponding parts of another right triangle, the right triangles are congruent.

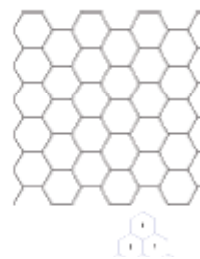
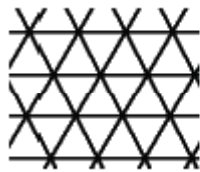
III. Departmental Standards

C2. Mathematics: Paragraph Proofs

A paragraph proof is an explanation of how and why you can conclude what the problem has asked you to conclude in complete sentences. It should start with information that is given in the problem, and should include detailed reasons as to how you are able to arrive at each further step in the problem. See Appendix A for an example.

A tessellation is a repeating shape or set of shapes arranged on a plane such that there are no gaps between them on the plane and the shapes do not overlap. Tessellations can be used in quilts, Roman mosaics, patterns, other art, fabric patterns, and can be found all over nature, such as in a beehive or on a pineapple. In the Euclidean plane

there are only three types of regular tessellations.



In order for shapes to tessellate on a Euclidean plane, the measures of each interior angle must be exact divisors of 360. If, when arranged together, the vertices of a polygon do not add up to 360, there must be a gap between them which means that we do not have a tessellation. We can now turn this conclusion into an equation. Let N represent the number of vertices in a specific regular polygon. We know that $180(N-2)$ is the formula for the sum

of all of the polygon's interior angles. Thus, in order to get the mea-

sure of an individual interior angle, we must divide this equation by N , the total number of angles. Our new formula is $[180(N-2)] \div N$. According to the conclusion above, the measure of each interior angle of a polygon needs to be an exact divisor of 360 in order to form a regular tessellation. We can now include 360 in the formula: $360 \div \{[180(N-2)] \div N\}$. So if, after substituting a number in place of N , the solution is an integer, then the polygon with this number

of angles will be able to tessellate regularly. Now, we know how to test if a polygon can tessellate regularly. You may have noticed that the simplified solutions of these three equations (for the triangle, square, and hexagons) equal the second number in the Schläfli symbol notation of each tessellation: $\{3,6\}$, $\{4,4\}$, $\{6,3\}$. We can use the values of the simplified solutions in the next method of proving which tessellations can exist on the Euclidean plane. For all tessellations $\{n,k\}$, there exist k polygons at n vertices. So, the measure of the angle at the vertex is $(360 \div k)^\circ$ and the total sum of the angles at all n vertices is $[n(360 \div k)]^\circ$. We know from the previous ex-

C1. Mathematics: Overview (Continued)

$[180(n-2)]^\circ$ in a Euclidean plane only. Therefore, in order for the polygon to be able to tessellate regularly in the Euclidean plane, $[n(360 \div k)]^\circ$ must equal $[180(n-2)]^\circ$. Now, we can rearrange the equation to arrive at:

$$1/n + 1/k = 1/2 .$$

We can use this new equation to test whether or not a regular polygon can tessellate on the Euclidean plane. For this equation, we will use the tessellation {5,4} to see if it will tessellate regularly in the Euclidean plane.

Now, we will test if squares, triangles, and hexagons meet this new criteria. We

will use the values of the simplified solutions for the “k” value in the equation.

We can prove that the three examples of regular tessellations presented above are the only possible ones with the following proof:

As before, let's consider that each polygon has n vertices and at each vertex there are k adjacent polygons. By definition a polygon is a convex geometrical figure with at least 3 sides so that n must be greater than or equal to 3.

We already proved that:

$$1/k + 1/n = 1/2, \text{ where both } k \text{ and } n \text{ are integers.}$$

$$\text{Therefore } 1/k = 1/2 - 1/n$$

$$\text{From here we conclude that } k = 2 + [4 / (n-2)]$$

Using this formula we can determine all the possible values for n and k , simply

by checking for each integer value of n , starting at 3 (see above).

$$\text{For } n=3 \text{ we have } k=6$$

$$\text{For } n=4 \text{ we have } k=4$$

For $n=5$ we have $k=3.33$ (we disregard this possibility because k has to be an integer)

$$\text{For } n=6 \text{ we have } k=3$$

For $n > 6$ we have $n-2 > 4$ therefore $4 / (n-2) < 1$. In conclusion for any $n > 6$

we have $k < 3$. But $k < 3$ is impossible because 2 (let alone 1) polygons cannot

fill 360 degrees around a vertex. Therefore the only possible values for n and k

are {3,6}, {4,4}, and {6,3}.

C3. Mathematics: Math Projects

A project in a mathematics class often/ usually involves creating a poster with some specific type(s) of problem(s) on it. You will have to follow the specific instructions from your teacher about what kind of work can be included. However, your poster should always include specific steps, written in complete sentences, showing why you arrive at each step in your problem.

Example:

A bag contains 3 red and 5 blue marbles. If two marbles are drawn without replacement, what is the probability that both marbles drawn are red?

$$P(\text{red and red}) =$$

The problem asks for the probability of a compound event.

$$P(\text{first red marble}) =$$

- There are 3 red marbles out of a total of 8 marbles in the bag.

$$P(\text{second red marble}) =$$

- If the first red marble drawn is not replaced, then there are only 2 red marbles and 7

total marbles left in the bag. Therefore, the probability of choosing a red marble second is only 2 red out of 7 total marbles.

$$P(\text{red AND red}) =$$

- When finding the probability of a compound event, the probabilities of each separate event must be multiplied.

$$P(\text{both red}) =$$

- When multiplying fractions, the numerators must be multiplied, and the denominators must be multiplied.

$$P(\text{both red}) =$$

- The final answer must always be in simplest form. The numerator, 6, and the denominator, 56, were both reduced by a factor of 2.

C4.Mathematics: Open-ended Questions

a. Often, you are required to solve word problems in which a common mistake is to solve for a variable, such as "x," and then forget to use this result to find the actual value that the question asks for. Read the question, and write a complete sentence that answers it.

Example:

The product of a two-digit number and its tens digit is 285. The units digit is two more than the tens digit. Find the original number.

Tens digit = x
285

Equation: $y = x + 2$

Units digit = y

$+ x + 2)(x) = 285$

So, the number = $10x + y$

$(11x + 2)(x) = 285$

$+ 2x - 285 = 0$

$57)(x - 5) = 0$

$= \{ \quad, 5 \}$

* At this point, read what the question is asking for:

The original number!

Equation: $(10x + y)(x) =$

Substitute in for y: $(10x$

$11x2$

$(11x +$

x

$x = 5$ is the only answer that is a digit $y = x + 2$ $y = 5 + 2$ $y = 7$.

The number = $10x + y = 10(5) + 7 = 57$.

* The final answer should be a complete sentence!

The original number is 57.

b. Many math problems ask for an answer to a question, and then ask you to "explain," or "explain why or why not." An explanation should be written in complete sentences.

Example:

Can 2, 3, and 6 be the lengths of the sides of a triangle? Why or why not?

(The question might also ask you to "explain.")

No, 2, 3, and 6 cannot be the lengths of the sides of a triangle. The Triangle Inequality Theorem states that the sum of any 2 sides of a triangle must be greater than the 3rd side. The sum of 2 and 3 is equal to 5. Since 5 is NOT greater than 6, these lengths cannot form a triangle.

C4.Mathematics: Beginning of & End of Lesson Summaries

Some teachers may require that you summarize the lesson at the end of the period, or summarize the lesson from the previous day at the beginning of the period. Even when it is not required, this is an excellent task to do on your own in order to review what you have learned and make sure you feel comfortable with the material. Summaries should be 1 – 3 complete sentences explaining in general what you learned.

Example:

Yesterday we learned that there are 4 ways to prove two triangles congruent. Side-Side-Side, Side-Angle-Side, Angle-Side-Angle, and Angle-Angle-Side. We also learned that you can only prove that two triangles are similar, not necessarily congruent, if you have Angle-Angle-Angle. Last, we learned that Side-Side-Angle could form two different triangles, so it is not enough information to prove two triangles congruent.

D1. Science: Lab Report

A typical lab report should be between 2-3 pages of text and should be double spaced in size 12 font. Each of the 4 major sections as well as the subsections should have a heading. Please see the description below for guidelines on content.

Introduction

-Background (1 paragraph) 15 points

-Purpose (2-3 sentences) 10 points

Experimental

-Materials (listed) 5 points

-Procedure (2-3 paragraphs) 5 points

-Set Up (drawn and labeled) 10 points

Results

-Data Tables 10 points

- Calculations 10 points

-Observations (1-2 paragraphs) 10 points

Discussion

-Analysis (2-3 paragraphs) 15 points

-Conclusion (3-4 sentences) 7 points

-References 3 points

** The remaining 10 points will be rewarded for proper spelling, grammar, and formatting (see rubric)

Introduction: This section tells the reader why you did the experiment. When the reader finishes reading the introduction, he/she should know what to expect in the report. The background paragraph should put the experiment in an overall context. It should be a general overview of this type of experiment and should tell the reader a little bit about the topic of the experiment. The purpose should be a concise statement specific to this particular lab, that includes what will be done and what you are trying to find out. While the background section should be general, the purpose should mention the specific reaction you are looking at.

Experimental: Materials should be listed (chemicals and equipment). The procedure should NOT be listed, but be in paragraph form. Unlike in other subjects, in science you should speak only in the passive voice and avoid using "I" or "we". It should provide enough information that another student would be able to read the procedure and repeat what you have done. The experimental set up should be drawn and labeled.

Results: This section should include any necessary data tables. Observations should be written in paragraph form, also avoiding "I" and "we". The observations should be limited strictly to what you see, hear, feel, or smell. Save any analysis for the discussion section. This section should also include any necessary calculations including percent error. Calculations need only be shown (not explained), with proper units.

Discussion: This section should include the analysis which discusses what your data tells you. It should answer any discussion questions included with the lab and address any sources of error. The conclusion should be a concise, specific description of what you did and what you found out. It should relate closely to the purpose. This section should also include references for any outside sources you used.

D2.Science: Projects

Determination of the Boiling Point of Water

By: Albert LaGuardia Einstein

4/1/2008

I. Introduction

Background

Kinetic theory states that all molecules in matter are in constant motion (Kane and Sternheim, 1984). As these molecules absorb more energy they have a higher amount of random movement. As energy is absorbed in the form of heat the average kinetic energy (temperature) of the molecules will increase except during a phase change. The absorbed energy used in the phase change breaks the attractive forces between the molecules, thus

transformation occurs in the orientation of the molecules. An example of a phase change would be the boiling point of water which is a change from a liquid to a gas. This can be observed by using a temperature versus time line graph when the slope becomes zero (plateau) The boiling point of water is expected to be 100.00 oC (Merck, 1976).

Purpose

The purpose of this lab is to determine the boiling point of water by slowly heating a sample of H₂O and recording the point at which it begins to change phases.

Experimental

Materials

500 ml beaker, distilled water, thermometer, hot plate

Procedure

The required materials were selected and taken to the workstation. The beaker was filled with approximately 300 ml of distilled water. The beaker was gently placed on the hotplate. The thermometer was placed in the beaker and the initial temperature was recorded. The hotplate was switched on to high. The temperature was recorded every 2 minutes until 6 minutes after boiling began. The hotplate was turned off and the materials were allowed to cool for at least 10 minutes before the equipment was dismantled.

Set-up

Figure 1. The equipment for this experiment was set up as shown in this figure.

III. Results

Table 1 Graph displaying data obtained from the heating of water from 0 to 16 minutes.

Observations

Numerous small bubbles formed at the bottom of the beaker at 70.6 oC. The size and rate of bubble formation increased as the temperature increased. At 100.0 oC the rate and size of bubble formation remained constant. At that temperature, there was constant production of steam.

IV. Discussion

Analysis

It was determined from the data plotted in the temperature versus time graph (Figure 2) that the boiling point of water is 99.51 oC. This concurs very closely with the stated hypothesis, therefore the experiment was deemed a success.

As noted above, bubble formation began slowly then sped up until it reached a constant rate. This can be explained by the fact that the water is slowly gaining kinetic energy. At first only some of the particles have enough kinetic energy to escape the liquid phase and enter the gas phase. As the kinetic energy of the system increases, however, more and more particles are able to escape the liquid phase. This also accounts for the gradual increase in size of the bubbles as the temperature increased.

The percent error was found to be 0.49%. Possible sources of error could have involved impurities in the water and human error in reading the thermometer. Since the water sample tested was distilled water these impurities likely came from dirty glassware. Additionally, the atmospheric pressure in the room, which affects boiling point, was not recorded during the experiment. Improvements would include more accurate thermometers, cleaner equipment, recording of atmospheric pressure and proper reading of the thermometer. The experiment would also be improved by performing more than one trial.

Conclusion

By slowly heating a sample of water and recording the temperature at which it began to boil, it was determined that the boiling point of H₂O is 99.51 oC.

References

Kane, Joseph W. and Morton M. Sternheim. Physics. New York: John Wiley & Sons,

D2.Science: Projects (Continued)

Time (minutes)	0	2	4	6	8	10	12	14	16
Temp (°C)	20.05	41.46	60.62	79.39	97.11	99.68	99.51	99.51	99.51

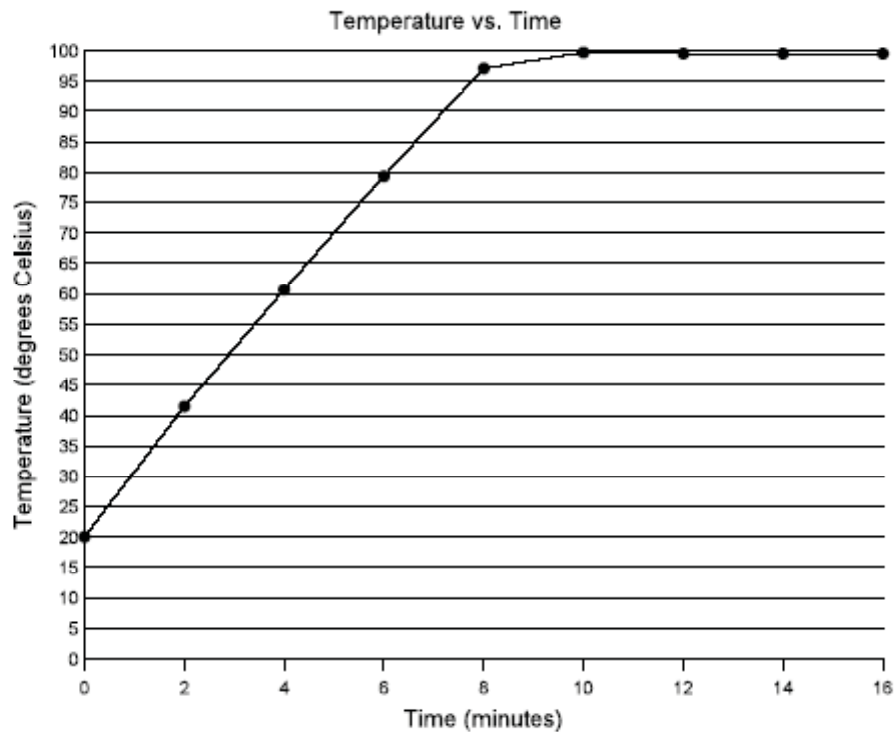


Figure 2. A line graph of temperature versus time of the data obtained in Table 1.

$$= \frac{0.49 \text{ } ^\circ\text{C} \times 100}{100.00 \text{ } ^\circ\text{C}}$$

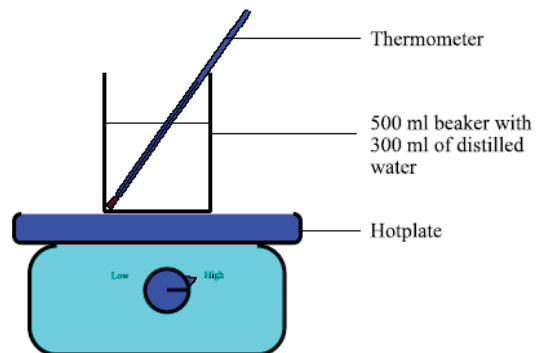
$$= 0.49 \% \text{ error}$$

Calculations

Percent error:

$$\% \text{ error} = \frac{\text{theoretical value} - \text{experimental value}}{\text{theoretical value}} \times 100$$

$$= \frac{100.00 \text{ } ^\circ\text{C} - 99.51 \text{ } ^\circ\text{C}}{100.00 \text{ } ^\circ\text{C}} \times 100$$



E1. Studio: Musical Terms

Abbreviations: F.=French, G.=German, It.=Italian

Accelerando (It.) - to accelerate; get faster

Accent (F.) - emphasized

^ = very strong accent

> = strong accent

- = tenuto; stress a pitch of syllable

Adagio (It.) - slow

Affrettando (It.) - hurrying, speeding up

Allargando (It.) - broadening; slowing down

Allegretto (It.) - moderately lively, fast

Allegro (It.) - lively; fast

Andante (It.) - moderate, "walking" tempo

Animando (It.) - to go faster

Animato (It.) - faster, animated

Appena (It.) - hardly, scarcely

Assai (It.) - very

A tempo (It.) - back in the original tempo

Attacca (It.) - go directly on to the next section

Mit ausdrück (G.) - with feeling

Beaucoup (F.) - much

Beleben, belebt (G.) - lively

Ben, bene (It.) - well

Bewegt (G.) - moving

Breit (G.) - broadly

Breve (It.) - short, brief

Calando (It.) - calming down

Cantabile (It.) - in a singing way

Capo, da capo (It.) - head or beginning; from the beginning

Come (It.) - as, like

Con (It.) - with

Col, colla, colle (It.) - with

Colla voce (It.) - with the voice: follow the vocal line

Crescendo, cres., cresc. (It.) - get louder

Da (It.) - from

Da capo al fine; D.C. al Fine (It.) - from the beginning to the word fine

Dal segno (It.) - get softer

Diminuendo, dim., dimin. (It.) - get softer

Dolce, dolcemente (It.) - sweet, sweetly

Fermata (It.) - hold for a desired length

Feurig (G.) - fiery

Fine (It.) - end

Fliessend (G.) - flowingly

Forte, f (It.) - strong - loud

Fortepiano, fp (It.) - loud then soft

Fortissimo, ff (It.) - very loud

Ganz (G.) - very, completely

Geschwind (G.) - fast

Giocoso (It.) - playfully

Grave (It.) - seriously, a slow tempo

Immer (G.) - always

Innig (G.) - sincerely, secretly

Kein, keine, keiner (G.) - no

Langsam (G.) - slow, slowly

Languendo (It.) - languishing

Largo, largamente (It.) - broad, broadly [tempo]

Lebhaft (G.) - lively

Legato (It.) - smooth and connected sound

Leggiero (It.) - lightly

Lento (It.) - slow

Lentamente (It.) - slowly

Lunga, lungo (It.) - long

Ma (It.) - but

Maestoso (It.) - majestically

Marcata (It.) - marked, emphasized

Meno (It.) - less

Mezzo, mezza (It.) - half; moderate

Mezzoforte, mf (It.) - moderately loud

Mezzopiano mp (It.) - moderately soft

Misurato (It.) - measured; in time

Mit (G.) - with

Molto (It.) - very

Moto; movimento (It.) - movement

Morendo (It.) - dying, fading away

Nicht (G.) - not

Niente (It.) - nothing

Non (It.) - not

Ohne (G.) - without

Ogni (It.) - all, every

Oppure (It.) - or

Ossia (It.) - or it may be

Parlando (It.) - speaking

Pesante (It.) - heavily

Piacere, a piacere (It.) - at your pleasure; freely

Piu; piu e piu (It.) - more; more and more

Poco; poco a poco (It.) - little; little by little

Piano; pianissimo, p, pp (It.) - softly; very soft

Presto (It.) - quick; fast

Quasi (It.) - almost, as if

Rallentando (It.) - slowing down

Ritenuto, riten. (It.) - immediately slower

E1. Studio: Musical Terms (Continued)

Abbreviations: F.=French, G.=German, It.=Italian

Rubato (It.) - with flexible tempos, expression

Ruhig (G.) - quietly, restfully

Sans (F.) - without

Segno, dal segno (It.) - sign; from the sign

Segue (It.) - to follow, continue

Sehr (G.) - very

Sempre (It.) - always

Senza (It.) - without

Sforzando, sfz. (It.) - very great emphasis

Sostenuto (It.) - sustained

Staccato (It.) - detached, short

Subito (It.) - suddenly

Tanto (It.) - so, so much

A tempo (It.) - in time - back to original tempo after rit.

Tenuto (It.) - held

Troppo (It.) - too, too much

Vite (F.) - quick; quickly

Vivace (It.) - lively; fast

Wieder (G.) - again

Zart (G.) - tender, tenderly

Some words worth knowing:

The names of instruments in other commonly used languages, especially names that are not like their English counterparts, Bratsche, Posaune.

Music theory terms: measure, bar, chord, interval, scale, rest, quarter note.

Music history terms: Baroque, Renaissance.

E2. Studio: Music - Recommended Reading

History of Western Music; Hugh Miller and Dale Cockwell
Harper Collins College Outline; 1972

First nights – Five Musical Premiers; Thomas Forrest Kelly
Yale University Press; 2000

Mozart – His Character, His Work; Alfred Einstein
Oxford University Press; 1945, 1962, 1873

Mozart – A Biography; Marcia Davenport
Charles Scribner's Sons, New York

The History of Pianoforte Music; Herbert Westerby
Dacapo Press, New York; 1971

Lexicon of Musical Invective; Nicolas Slominsky
Norton and Company, New York & London

Haydn – A Creative Life in Music; Karl Geiringer
University of California; 1968

The Wordsworth Book of Opera; Arthur Jacobs & Stanley Sadie
Pan Books Ltd., London; Wordsworth Ed.

Bruce Adophe. *Exercises for Improving Musical Imagination. What To Listen for in the World. Of Mozart, Parrots and Cerry Blossoms in the Wind: A Composer Explores Mysteries of the Musical Mind.*

Donald Jay Grout. *A History of Western Music.*

Oliver Sachs. *Musicophilia: Tales of Music and the Brain.*

George Thaddeus Jones. *Harper Collins College Outline Music Theory.*

Kent Kennan & Donald Grantham. *The Technique of Orchestration.*

Barry Green with Timothy Gallwey. *The Inner Game of Music.*

Janet Horvath. *Playing (less) Hurt.*

Stephen Nachmanovitch. *Free Play.*

Julie Lyonn Lieberman. *You Are Your Instrument.*

A1. Social Studies: Doc.-based Essay Generic Scoring Rubric

Score of 5: 90-100

- *Thoroughly develops all aspects of the task evenly and in depth
- *Is more analytical than descriptive (analyzes, evaluates, and/or creates information)
- *Incorporates relevant information from at least xxx documents
- *Incorporates substantial relevant outside information
- *Richly supports the theme with many relevant facts, examples, and details
- *Demonstrates a logical and clear plan of organization; includes an introduction and a conclusion that are beyond a restatement of the theme

Score of 4: 80-89

- *Develops all aspects of the task but may do so somewhat unevenly
- *Is both descriptive and analytical (applies, analyzes, evaluates, and/or creates information)
- *Incorporates relevant information from at least xxx documents
- *Incorporates relevant outside information
- *Supports the theme with relevant facts, examples, and details
- *Demonstrates a logical and clear plan of organization; includes an introduction and a conclusion that are beyond a restatement of the theme

Score of 3: 70-79

- *Develops all aspects of the task with little depth or develops most aspects of the task in some depth
- *Is more descriptive than analytical (applies, may analyze, and/or evaluate information)
- *Incorporates some relevant information from some of the documents
- *Incorporates limited relevant outside information
- *Includes some relevant facts, examples, and details; may include some minor inaccuracies
- *Demonstrates a satisfactory plan of organization; includes an introduction and a conclusion that may be a restatement of the theme

Score of 2: 60-69

- *Minimally develops all aspects of the task or develops some aspects of the task in some depth
- *Is primarily descriptive; may include faulty, weak, or isolated application or analysis
- *Incorporates limited relevant information from the documents or consists primarily of relevant information copied from the documents
- *Presents little or no relevant outside information
- *Includes few relevant facts, examples, and details; may include some inaccuracies
- *Demonstrates a general plan of organization; may lack focus; may contain digressions; may not clearly identify which aspect of the task is being addressed; may lack an introduction and/or a conclusion

Score of 1: 0-59

- *Minimally develops some aspects of the task
- *Is descriptive; may lack understanding, application, or analysis
- *Makes vague, unclear references to the documents or consists primarily of relevant and irrelevant information copied from the documents
- *Presents no relevant outside information
- *Includes few relevant facts, examples, or details; may include inaccuracies
- *May demonstrate a weakness in organization; may lack focus; may contain digressions; may not clearly identify which aspect of the task is being addressed; may lack an introduction and/or a conclusion

Score of 0:

- *Fails to develop the task or may only refer to the theme in a general way; OR includes no relevant facts, examples, or details; OR includes only the historical context and/or task as copied from the test booklet; OR includes only entire documents copied from the test booklet; OR is illegible; OR is a blank paper

A2. Social Studies: Thematic Essay Generic Scoring Rubric

B. Social Studies Thematic Essay Generic Scoring Rubric

Score of 5: 90-100

- *Thoroughly develops all aspects of the task evenly and in depth
- *Is more analytical than descriptive (analyzes, evaluates, and/or creates information)
- *Richly supports the theme with many relevant facts, examples, and details
- *Demonstrates a logical and clear plan of organization; includes an introduction and a conclusion that are beyond a restatement of the theme

Score of 4: 80-89

- *Develops all aspects of the task but may do so somewhat unevenly
- *Is both descriptive and analytical (applies, analyzes, evaluates, and/or creates information)
- *Supports the theme with relevant facts, examples, and details
- *Demonstrates a logical and clear plan of organization; includes an introduction and a conclusion that are beyond a restatement of the theme

Score of 3: 70-79

- *Develops all aspects of the task with little depth or develops most aspects of the task in some depth
- *Is more descriptive than analytical (applies, may analyze, and/or evaluate information)
- *Includes some relevant facts, examples, and details; may include some minor inaccuracies
- *Demonstrates a satisfactory plan of organization; includes an introduction and a conclusion that may be a restatement of the theme

Score of 2: 60-69

- *Minimally develops all aspects of the task or develops some aspects of the task in some depth
- *Is primarily descriptive; may include faulty, weak, or isolated application or analysis
- *Includes few relevant facts, examples, and details; may include some inaccuracies
- *Demonstrates a general plan of organization; may lack focus; may contain digressions; may not clearly identify which aspect of the task is being addressed; may lack an introduction and/or a conclusion

Score of 1: 0-59

- *Minimally develops some aspects of the task
- *Is descriptive; may lack understanding, application, or analysis
- *Includes few relevant facts, examples, or details; may include inaccuracies
- *May demonstrate a weakness in organization; may lack focus; may contain digressions; may not clearly identify which aspect of the task is being addressed; may lack an introduction and/or a conclusion

Score of 0:

- *Fails to develop the task or may only refer to the theme in a general way; OR includes no relevant facts, examples, or details; OR includes only the theme, task, or suggestions as copied from the test booklet; OR is illegible; OR is a blank paper

B.Science: Generic Scoring Rubric

	Incomplete	Substandard	Meets Standards	Exceeds Standards
Background (___/15)	Very little background information provided or information is incorrect	Some introductory information, but still missing some major points	Introduction is nearly complete, missing some minor points	Introduction complete and well-written; provides all necessary background principles for the experiment
Purpose (___/10)	No objective is stated and purpose is not a complete sentence	Objective is incorrect or incomplete	The objective is clearly stated in a complete sentence	The objective is clear, specific, concise, and in complete sentences
Experimental Materials and Procedure (___/10)	Missing several important experimental details or not written in paragraph format	Setup is not drawn and labeled. Written in paragraph format, still missing some important experimental details. Setup is drawn but not labeled, or not correct	Written in paragraph format, important experimental details are covered, some minor details missing. Set up is correctly drawn and labeled.	Well-written in paragraph format, all experimental details are covered. Set up is correctly drawn and labeled.
Results (data, graphs, tables, etc.) (___/10)	Graphs, tables contain errors or are poorly constructed, have missing titles, captions or numbers, units missing or incorrect, etc.	Most figures, graphs, tables OK, some still missing some important or required features	All graphs, tables are complete and include title, most units.	All graphs, tables are complete and contain correct titles and appropriate units.
Observations (___/10)	Observations are unclear and incomplete.	Some observations are clearly reported.	Most observations are clearly reported.	All observations are clearly reported.

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1984 ed.

Merck, Josef. *Merck Index of Chemical Constants*. New York: Benjamin/Cummings Publishing Company Inc. 1976.

B. Science: Generic Scoring Rubric (Continued)

	Incomplete	Substandard	Meets Standards	Exceeds Standards
Analysis (___/15)	Very incomplete or incorrect interpretation of data indicating a lack of understanding of results. Analysis questions are not answered.	Some of the results have been correctly interpreted and discussed; partial but incomplete understanding of results is still evident. Some analysis questions answered.	Almost all of the results have been correctly interpreted and discussed, only minor improvements are needed. All analysis questions have been answered.	All data have been interpreted correctly and discussed, good understanding of results is conveyed. All analysis questions are correctly answered.
Conclusions and References (___/10)	Conclusions missing or missing the important points	Conclusion does not address the purpose.	Conclusion addresses the purpose.	Conclusion is concise, complete, and clearly addresses the purpose.
Spelling, Grammar, and Sentence Structure (___/5)	Frequent grammar and/or spelling errors, writing style is rough and immature	Occasional grammar/spelling errors, generally readable with some rough spots in writing style	Less than 3 grammar/spelling errors, mature, readable style	All grammar/spelling correct and very well-written
Appearance and Formatting (___/5)	Sections out of order, too much handwritten copy, sloppy formatting	Sections in order, contains the minimum allowable amount of handwritten copy, formatting is rough but readable	All sections in order, formatting generally good but could still be improved	All sections in order, well-formatted, very readable