- Name:
- Date:

Standard(s):
1.1.9.A, 1.1.10.B, 1.2.9.A, 1.2.10.A, 1.2.11.A, 1.2.12.A, 1.2.L.A, 1.2.9.B, 1.2.10.B, 1.2.11.B, 1.2.12.B, 1.2.9.C, 1.2.10.C, 1.2.11.C, 1.2.12.C, 1.2.L.C, 1.2.9.D, 1.2.10.E, 1.2.11.E, 1.2.12.E, 1.2.L.E, L.F.2.1.1, L.F.2.1.2, L.N.2.1.1, L.N.2.1.2, L.N.2.4.1, L.N.2.4.2, L.N.2.4.3, L.N.2.4.4, L.N.2.4.5, R11.A.2.4.1, R11.A.2.5.1, R11.A.2.6.1, R11.A.2.6.2, R11.B.3.1.1, R11.B.3.2.1, R11.B.3.2.2, R11.B.3.3.1, R11.B.3.3.2, R11.B.3.3.3, R11.B.3.3.4

Part B

Directions: Read the text and study the graphic on the following pages, answer the multiple-choice questions, and write a response based on the situation described below. You may use the margins to take notes as you read and scrap paper to plan your response.

The Situation: As part of a schoolwide project on significant events of the 20th century, your environmental science class is publishing a class book on significant natural disasters that occurred during that period. For your contribution to the book, you have decided to write an essay about Hurricane Mitch and the conditions and effects that made that hurricane a significant natural disaster of the 20th century.

Your Task: Using relevant information from ***both*** documents, write an essay for a class book on natural disasters of the 20th century in which you describe the conditions and effects that made Hurricane Mitch a significant natural disaster of the 20th century.

Guidelines:

Be sure to

- Tell your audience what they need to know about the conditions and effects that made Hurricane Mitch a significant natural disaster of the 20th century
- Use specific, accurate, and relevant information from the article ***and*** the graphic to develop your essay
- Use a tone and level of language appropriate for an essay in a class book on significant natural disasters of the 20th century
- Organize your ideas in a logical and coherent manner
- Indicate any words taken directly from the text by using quotation marks or referring to the authors
- Follow the conventions of standard written English

Hurricane Mitch

On the morning of October 20, 1998, satellite images showed unorganized thunderstorm clusters developing over the southern Caribbean and northern Venezuela, which were associated with a weak tropical wave. As the clusters skirted the coast and headed west, meteorologists kept a vigilant eye. It was late in the hurricane season, when the atmosphere-ocean system is primed for hurricane development over the southern Caribbean from tropical downpour-makers just like the ones drenching the South American coast that morning.

Thirty-six hours later, by the early morning of October 22, the clusters had become organized into a tropical depression. Before the day was out, Tropical Storm Mitch was born, the 13th named storm of the season. Number 13 would be more than just unlucky for much of Central America—it was destined to become one of the strongest Atlantic hurricanes ever and one of the Western Hemisphere's greatest natural disasters of the 20th century....

The Monster's Path

Mitch intensified as it drifted north on the 23rd and 24th, slowed by an upper level ridge of high pressure. A turn to the west on the 25th signaled a change: In the next 34 hours Mitch's central pressure would fall 1.77 inches (60 mb)[1], bottoming out at 26.73 inches (905 mb) and tying Hurricane Camille for the fourth-lowest central pressure ever recorded in an Atlantic hurricane. It reached Category 5 intensity at 7:00 am on October 26—and maintained that strength for an amazing 33 hours....

For two days Mitch paralleled the north coast of Honduras as it continued to move slowly to the west. Feeder bands of thunderstorms repeatedly raked the coast and moved inland, dumping incredible amounts of rain over Honduras and Nicaragua. Onshore flow along the north coast of Honduras created waves 40 to 50 feet high. The already-torrential rain was enhanced as air was forced upwards by the highlands covering much of Honduras and Nicaragua.

Once onshore, Mitch meandered through the mountains of Honduras and continued to unload extreme amounts of rainfall. The water then cascaded down the steep slopes and was funneled into the narrow valleys, creating unprecedented flooding. When the torrents exited the valleys along the north coast, mud-laden water spread over a wide area. In several locations banana plantation workers waited for two weeks on rooftops for the water to recede.

According to the National Climatic Data Center, estimated maximum total rainfall amounts over Honduras and Nicaragua ranged from 50 to 75 inches—and in one report an incredible 25 inches fell in six hours! Most of the rain gauges were washed away so satellite data will have to be studied to fine-tune the estimates.

To make a desperate situation even worse, much of the steep terrain of Honduras and Nicaragua is covered with poorly consolidated volcanic soil. Mudflows and landslides in this environment are deadly. In northwest Nicaragua, a mudslide traveled 13 miles down the slope of the Casitas Volcano, burying 10 communities. The death toll in this sparsely populated remote area is expected to reach 2,000....

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[1]mb – millibars – a unit of atmospheric pressure

The Making of a Disaster

What turned Mitch into such a monster?

The most important ingredient in Mitch's recipe was very warm ocean water. The intense October sunshine made plenty available by heating most of the surface of the southern Caribbean Sea to nearly 86°F. The warm water quickly evaporated, yielding an unlimited supply of water vapor (high-octane hurricane fuel) to the atmosphere.

A second ingredient was a pre-existing surface disturbance that lifted this warm, moistened air, and, as the water vapor cooled and condensed, the energy captured from the sun was made available to the developing storm....

High above the evolving storm was a sprawling area of high pressure that provided two additional ingredients necessary for a monster hurricane: light winds that allowed energy to be concentrated in the region and outflow aloft which supported the lift of the initial disturbance.

As Mitch rapidly strengthened north of Venezuela, a hurricane of epic proportions was born, which matured quickly and went on its deadly rampage.

Economic Impact

During the 1990s, the economies of many Central American countries were finally getting on their feet after the civil unrest of the 1980s. At this critical stage, even a minor disturbance could cause an infant economic recovery to stumble and fall. Mitch would prove to be a powerful giant for both Honduras and Nicaragua to wrestle with, however, leaving each nation's economic system in ruins.

In Honduras, agriculture (mostly coffee and bananas) makes up 80 percent of all exports; as well, 60 percent of all jobs are due to agriculture. The figures are similar in Nicaragua. Banana growers estimate damage to the current crop is in the hundreds of millions of dollars and even worse, many of the young trees have been killed, making future yields questionable and putting jobs in jeopardy. When the many Honduran "jornaleros" (day laborers) look out over the chaotic tangle of dead vegetation embedded in vast expanses of mud—which were once the productive north coast banana plantations—they have little hope of work in the near future.

Fortunately, the coffee crop was relatively unharmed. This was because coffee grows high on the slopes, well above the elevation where hundreds of small streams combined to concentrate four days of extreme rainfall into killer rivers. However, the "beneficios" (coffee processing plants) are nearly idle, because many mountain roads have disappeared, making it practically impossible to transport the harvest....

Nicaragua offers an example of the magnitude of the economic problem. Gross Domestic Product (GDP) is the total value of goods and services that a country produces. Preliminary figures place the total damage in Nicaragua at $1.36 billion, or 67 percent of the GDP—a monumental figure for a weak economy to overcome. If a natural disaster in the United States caused damage amounting to 67 percent of our GDP, the bill would be a staggering $4.3 trillion. That is equivalent to 170 hurricane landfalls the magnitude of Andrew, the costliest natural disaster in United States history.

...[Mitch] brought Honduras and Nicaragua to a standstill, now wholly dependent on the generosity of the world for survival and eventual recovery.
90 Honduras estimates that Mitch wiped out 50 years of progress in four days. In the words of Edna Amador, general editor of La Prensa, San Pedro Sula, Honduras, "As you can see, the tragedy is bigger than anyone can imagine. No Honduran ever expected this to happen and now we are in God's hands."

— Mace Bentley and Steve Horstmeyer
excerpted from "Monstrous Mitch,"
Weatherwise, March/April 1999

GRAPHIC

Chart A

Deadliest Atlantic Hurricanes			
Year	**Storm**	**Areas Hit**	**Deaths**
1780	"The Great Hurricane"	Martinique St. Eustatius Barbados	22,000
1998	Mitch	Honduras Nicaragua	9,000+
1900	"Great Galveston Hurricane"	Galveston Island	8,000
1974	Fifi	Honduras	8,000
1930	Number 2	Dominican Republic	8,000

Source: National Climatic Data Center

Chart B

Most Intense Atlantic Hurricanes			
By Lowest Pressure			
Year	**Storm**	**Pressure**	**Duration of Category 5 Status**
1988	Gilbert	26.23"	18 hrs
1935	Florida Keys	26.34"	less than 6 hrs
1980	Allen	26.55"	24 hrs
1969	Camille	26.73"	24 hrs
1998	Mitch	26.73"	33 hrs
By Wind Speed			
Year	**Storm**	**Wind**	**Duration of Maximum Wind**
1969	Camille	195 mph	6 hrs
1980	Allen	195 mph	less than 6 hrs
1988	Gilbert	185 mph	12 hrs
1950	Dog	185 mph	12 hrs
1998	Mitch	180 mph	15 hrs

(adapted)

Scoring Guide:

SESSION ONE – PART B – SCORING RUBRIC
READING AND WRITING FOR INFORMATION AND UNDERSTANDING

QUALITY	6 Responses at this level:	5 Responses at this level:	4 Responses at this level:	3 Responses at this level:	2 Responses at this level:	1 Responses at this level:
Meaning: the extent to which the response exhibits sound understanding, interpretation, and analysis of the task and text(s)	-reveal an in-depth analysis of the documents -make insightful connections between information and ideas in the documents and the assigned task	-convey a thorough understanding of the documents -make clear and explicit connections between information and ideas in the documents and the assigned task	- convey a basic understanding of the documents -make implicit connections between information and ideas in the documents and the assigned task	-convey a basic understanding of the documents -make few or superficial connections between information and ideas in the documents and the assigned task	-convey a confused or inaccurate understanding of the documents -allude to the documents but make unclear or unwarranted connections to the assigned task	-provide minimal or no evidence of understanding -make no connections between information in the documents and the assigned task
Development: the extent to which ideas are elaborated using specific and relevant evidence from the document(s)	-develop ideas clearly and fully, making effective use of a wide range of relevant and specific details from the documents	-develop ideas clearly and consistently, using relevant and specific details from the documents	-develop some ideas more fully than others, using specific and relevant details from the documents	-develop ideas briefly, using some details from the documents	-are incomplete or largely undeveloped, hinting at ideas, but references to the documents are vague, irrelevant, repetitive, or unjustified	-are minimal, with no evidence of development
Organization: the extent to which the response exhibits direction, shape, and coherence	-maintain a clear and appropriate focus -exhibit a logical and coherent structure through skillful use of appropriate devices and transitions	-maintain a clear and appropriate focus -exhibit a logical sequence of ideas through use of appropriate devices and transitions	-maintain a clear and appropriate focus -exhibit a logical sequence of ideas but may lack internal consistency	-establish, but fail to maintain, an appropriate focus - exhibit a rudimentary structure but may include some inconsistencies or irrelevancies	-lack an appropriate focus but suggest some organization, or suggest a focus but lack organization	-show no focus or organization
Language Use: the extent to which the response reveals an awareness of audience and purpose through effective use of words, sentence structure, and sentence variety	-are stylistically sophisticated, using language that is precise and engaging, with a notable sense of voice and awareness of audience and purpose -vary structure and length of sentences to enhance meaning	-use language that is fluent and original, with evident awareness of audience and purpose -vary structure and length of sentences to control rhythm and pacing	-use appropriate language, with some awareness of audience and purpose -occasionally make effective use of sentence structure or length	-rely on basic vocabulary, with little awareness of audience or purpose -exhibit some attempt to vary sentence structure or length for effect, but with uneven success	-use language that is imprecise or unsuitable for the audience or purpose -reveal little awareness of how to use sentences to achieve an effect	-are minimal -use language that is predominantly incoherent, inappropriate, or copied directly from the text
Conventions: the extent to which the response exhibits conventional spelling, punctuation, paragraphing, capitalization, grammar, and usage	-demonstrate control of the conventions with essentially no errors, even with sophisticated language	-demonstrate control of the conventions, exhibiting occasional errors only when using sophisticated language	-demonstrate partial control, exhibiting occasional errors that do not hinder comprehension	-demonstrate emerging control, exhibiting occasional errors that hinder comprehension	-demonstrate a lack of control, exhibiting frequent errors that make comprehension difficult	-are minimal, making assessment of conventions unreliable -may be illegible or not recognizable as English

- If the student addresses only one text, the response can be scored no higher than a 3.
- If the student writes only a personal response and makes no reference to the text(s), the response can be scored no higher than a 1.
- Responses totally unrelated to the topic, illegible, incoherent, or blank should be given a 0.
- A response totally copied from the text(s) with no original student writing should be scored a 0.

1

Standard(s):
1.1.9.A, 1.1.10.B, 1.2.9.A, 1.2.10.A, 1.2.11.A, 1.2.12.A, 1.2.L.A, 1.2.9.B, 1.2.10.B, 1.2.11.B, 1.2.12.B, 1.2.9.C, 1.2.10.C, 1.2.11.C, 1.2.12.C, 1.2.L.C, 1.2.9.D, 1.2.10.E, 1.2.11.E, 1.2.12.E, 1.2.L.E, L.F.2.1.1, L.F.2.1.2, L.N.2.1.1, L.N.2.1.2, L.N.2.4.1, L.N.2.4.2, L.N.2.4.3, L.N.2.4.4, L.N.2.4.5, R11.A.2.4.1, R11.A.2.5.1, R

11.A.2.6.1, R11.A.2.6.2, R11.B.3.1.1, R11.B.3.2.1, R11.B.3.2.2, R11.B.3.3.1, R11.B.3.3.2, R11.B.3.3.3, R11.B.3.3.4

According to the passage, the increase in severity of Tropical Storm Mitch was signaled by a movement from

(1) low to high ocean waves
(2) unclear to clear satellite images
(3) unorganized to organized storm clusters
(4) high to low atmospheric temperatures

Answer:

3

2

Standard(s):
1.2.9.B, 1.2.10.B, 1.2.11.B, 1.2.12.B, 1.2.9.C, 1.2.10.C, 1.2.11.C, 1.2.12.C, 1.2.L.C, 1.2.9.D, 1.2.10.E, 1.2.11.E, 1.2.12.E, 1.2.L.E, L.F.2.1.1, L.F.2.1.2, L.N.2.1.1, L.N.2.1.2, R11.A.2.4.1, R11.A.2.5.1, R11.A.2.6.1, R11.A.2.6.2, R11.B.3.1.1, R11.B.3.2.1, R11.B.3.2.2, R11.B.3.3.1, R11.B.3.3.2, R11.B.3.3.3, R11.B.3.3.4

Lines 14 through 20 suggest that one measure of a hurricane's strength is a decrease in

(1) angle of direction
(2) speed of wind
(3) distance from the Equator
(4) pressure at the center

Answer:

4

3

Standard(s):
1.1.9.A, 1.1.10.B, 1.2.9.A, 1.2.10.A, 1.2.11.A, 1.2.12.A, 1.2.L.A, 1.2.9.B, 1.2.10.B, 1.2.11.B, 1.2.12.B, 1.2.9.C, 1.2.10.C, 1.2.11.C, 1.2.12.C, 1.2.L.C, 1.2.9.D, 1.2.10.E, 1.2.11.E, 1.2.12.E, 1.2.L.E, L.F.2.1.1, L.F.2.1.2, L.N.2.1.1, L.N.2.1.2, L.N.2.4.1, L.N.2.4.2, L.N.2.4.3, L.N.2.4.4, L.N.2.4.5, R11.A.2.4.1, R11.A.2.5.1, R11.A.2.6.1, R11.A.2.6.2, R11.B.3.1.1, R11.B.3.2.1, R11.B.3.2.2, R11.B.3.3.1, R11.B.3.3.2, R11.B.3.3.3, R11.B.3.3.4

Accurate measures of rainfall from the hurricane were difficult to determine due to the

(1) lack of personnel
(2) loss of equipment
(3) time of day
(4) position of satellites

Answer:

2

4

Standard(s):
1.2.9.A, 1.2.10.A, 1.2.11.A, 1.2.12.A, 1.2.L.A, 1.2.9.B, 1.2.10.B, 1.2.11.B, 1.2.12.B, 1.2.9.C, 1.2.10.C, 1.2.11.C, 1.2.12.C, 1.2.L.C, 1.2.9.D, 1.2.10.E, 1.2.11.E, 1.2.12.E, 1.2.L.E, L.F.2.1.1, L.F.2.1.2, L.N.2.1.1, L.N.2.1.2, L.N.2.4.1, L.N.2.4.2, L.N.2.4.3, L.N.2.4.4, L.N.2.4.5, R11.A.2.4.1, R11.A.2.5.1, R11.A.2.6.1, R11.A.2.6.2, R11.B.3.1.1, R11.B.3.2.1, R11.B.3.2.2, R11.B.3.3.1, R11.B.3.3.2, R11.B.3.3.3, R11.B.3.3.4

In line 39, the phrase "poorly consolidated volcanic soil" refers to soil that is

(1) loose
(2) wet
(3) fertile
(4) gritty

Answer:

1

5

Standard(s):
1.2.9.A, 1.2.10.A, 1.2.11.A, 1.2.12.A, 1.2.L.A, 1.2.9.B, 1.2.10.B, 1.2.11.B, 1.2.12.B, 1.2.9.C, 1.2.10.C, 1.2.11.C, 1.2.12.C, 1.2.L.C, 1.2.9.D, 1.2.10.E, 1.2.11.E, 1.2.12.E, 1.2.L.E, L.F.2.1.1, L.F.2.1.2, L.N.2.1.1, L.N.2.1.2, L.N.2.4.1, L.N.2.4.2, L.N.2.4.3, L.N.2.4.4, L.N.2.4.5, R11.A.2.4.1, R11.A.2.5.1, R11.A.2.6.1, R11.A.2.6.2, R11.B.3.1.1, R11.B.3.2.1, R11.B.3.2.2, R11.B.3.3.1, R11.B.3.3.2, R11.B.3.3.3, R11.B.3.3.4

In lines 48 and 49, "high-octane hurricane fuel" refers to

(1) strong solar gases
(2) complex surface disturbances
(3) intense October sunshine
(4) evaporated ocean water

Answer:

4

6

Standard(s):
1.2.9.A, 1.2.10.A, 1.2.11.A, 1.2.12.A, 1.2.L.A, 1.2.9.B, 1.2.10.B, 1.2.11.B, 1.2.12.B, 1.2.9.C, 1.2.10.C, 1.2.11.C, 1.2.12.C, 1.2.L.C, 1.2.9.D, 1.2.10.E, 1.2.11.E, 1.2.12.E, 1.2.L.E, L.F.2.1.1, L.F.2.1.2, L.N.2.1.1, L.N.2.1.2, L.N.2.4.1, L.N.2.4.2, L.N.2.4.3, L.N.2.4.4, L.N.2.4.5, R11.A.2.4.1, R11.A.2.5.1, R11.A.2.6.1, R11.A.2.6.2, R11.B.3.1.1, R11.B.3.2.1, R11.B.3.2.2, R11.B.3.3.1, R11.B.3.3.2, R11.B.3.3.3, R11.B.3.3.4

Before Hurricane Mitch, the economy in Nicaragua and Honduras could best be described as

(1) thriving
(2) fragile
(3) chaotic
(4) fluctuating

Answer:

2

7

Standard(s):
1.2.9.B, 1.2.10.B, 1.2.11.B, 1.2.12.B, 1.2.9.C, 1.2.10.C, 1.2.11.C, 1.2.12.C, 1.2.L.C, 1.2.9.D, 1.2.10.E, 1.2.11.E, 1.2.12.E, 1.2.L.E, L.F.2.1.1, L.F.2.1.2, L.N.2.1.1, L.N.2.1.2, R11.A.2.4.1, R11.A.2.5.1, R11.A.2.6.1, R11.A.2.6.2, R11.B.3.1.1, R11.B.3.2.1, R11.B.3.2.2, R11.B.3.3.1, R11.B.3.3.2, R11.B.3.3.3, R11.B.3.3.4

In Honduras, coffee exports were reduced because the hurricane destroyed the

(1) factories
(2) ports
(3) crops
(4) roads

Answer:

4

8

Standard(s):
1.2.9.B, 1.2.10.B, 1.2.11.B, 1.2.12.B, 1.2.9.C, 1.2.10.C, 1.2.11.C, 1.2.12.C, 1.2.L.C, 1.2.9.D, 1.2.10.E, 1.2.11.E, 1.2.12.E, 1.2.L.E, L.F.2.1.1, L.F.2.1.2, L.N.2.1.1, L.N.2.1.2, R11.A.2.4.1, R11.A.2.5.1, R11.A.2.6.1, R11.A.2.6.2, R11.B.3.1.1, R11.B.3.2.1, R11.B.3.2.2, R11.B.3.3.1, R11.B.3.3.2, R11.B.3.3.3, R11.B.3.3.4

The information in Chart A implies that hurricanes are defined as "deadliest" in terms of

(1) location of impact
(2) year of occurrence
(3) number of fatalities
(4) frequency of occurrence

Answer:

3

9

Standard(s):
1.2.9.B, 1.2.10.B, 1.2.11.B, 1.2.12.B, 1.2.9.C, 1.2.10.C, 1.2.11.C, 1.2.12.C, 1.2.L.C, 1.2.9.D, 1.2.10.E, 1.2.11.E, 1.2.12.E, 1.2.L.E, L.F.2.1.1, L.F.2.1.2, L.N.2.1.1, L.N.2.1.2, R11.A.2.4.1, R11.A.2.5.1, R11.A.2.6.1,

R11.A.2.6.2, R11.B.3.1.1, R11.B.3.2.1, R11.B.3.2.2, R11.B.3.3.1, R11.B.3.3.2, R11.B.3.3.3, R11.B.3.3.4

According to Chart A, what was the second deadliest hurricane on record?

(1) Hurricane Mitch
(2) the "Great Galveston Hurricane"
(3) Hurricane Fifi
(4) Hurricane Number 2

Answer:

1

10

Standard(s):
1.1.9.A, 1.1.10.B, 1.2.9.A, 1.2.10.A, 1.2.11.A, 1.2.12.A, 1.2.L.A, 1.2.9.B, 1.2.10.B, 1.2.11.B, 1.2.12.B, 1.2.9.C, 1.2.10.C, 1.2.11.C, 1.2.12.C, 1.2.L.C, 1.2.9.D, 1.2.10.E, 1.2.11.E, 1.2.12.E, 1.2.L.E, L.F.2.1.1, L.F.2.1.2, L.N.2.1.1, L.N.2.1.2, L.N.2.4.1, L.N.2.4.2, L.N.2.4.3, L.N.2.4.4, L.N.2.4.5, R11.A.2.4.1, R11.A.2.5.1, R11.A.2.6.1, R11.A.2.6.2, R11.B.3.1.1, R11.B.3.2.1, R11.B.3.2.2, R11.B.3.3.1, R11.B.3.3.2, R11.B.3.3.3, R11.B.3.3.4

According to the information in Chart B, of the five most intense Atlantic hurricanes, Hurricane Mitch can be described as

(1) having the fastest wind speed
(2) maintaining Category 5 status the longest
(3) having the highest pressure
(4) lasting the shortest period of time

Answer:

2