

Senior High School

Department of Education
National Capital Region
SCHOOLS DIVISION OFFICE
MARIKINA CITY

Disaster Readiness and Risk Reduction

First Quarter-Module 2 **Concept of Disaster Risk**

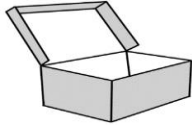


Jeoffrey F. Robles



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Government Property
NOT FOR SALE



What I Need to Know

This module was designed and written with you in mind. It is here to help you master the concept of risk factors underlying disasters. The scope of this module permits it to be used in many different learning situations. The language used recognizes the diverse vocabulary level of students. The lessons are arranged to follow the standard sequence of the course.

The module includes lesson 1 –Concept of Disaster Risk

After going through this module, you are expected to **differentiate the risk factors underlying disasters**. DRR11/12-Ia-b-2

Specifically, you should be able to

1. identify the risk factors underlying disaster; and
2. cite ways on how to reduce the disaster risk factors.



What I Know

Read each statement carefully. Then, encircle the letter of the best answer.

1. All statements about disaster risk are correct, **EXCEPT** one. Which one is it?
 - A. It is a set of rules or guidelines on how to prevent disaster.
 - B. It is defined as the combination of three terms: hazard, exposure, and vulnerability.
 - C. It is expressed as the likelihood of loss of life, injury or destruction and damage from a disaster in each period of time.
 - D. It is the result of the interaction between a hazard and the characteristics that makes people and places vulnerable and exposed.
2. Which of the following statements is **INCORRECT**?
 - A. Vulnerability means the condition of being unprotected.
 - B. Risk is the possibility that something bad or unpleasant may happen.
 - C. Vulnerability is the ability of individuals, communities, and states to adapt to and recover from hazards.
 - D. Hazard is a dangerous phenomenon, substance, human activity, or condition that may cause loss of life, injury, and damage to property.

3. Which of the following is considered the variable that either aggravate or mitigate the effects of hazards, affecting the degree or scope of a disaster?
 - A. Resilience
 - B. Vulnerabilities
 - C. Capacity to cope
 - D. Disaster risk factors
4. All of the following are disaster risk factors, **EXCEPT** one. Which one is it?
 - A. Nationality
 - B. Socio-cultural
 - C. Economic factors
 - D. Biological risk factors
5. Which of the following analogies is **CORRECT**?
 - A. Psychological factors: flora and fauna
 - B. Biological factors: income and economic class
 - C. Socio- cultural factors: religion and social status
 - D. Physical factors: state of mental capacity and health
6. All of the following are ways on how to avoid disaster risk factors, **EXCEPT** one. Which one is it?
 - A. Preparedness measures
 - B. Knowledge and awareness raising
 - C. Weak governance of the local government
 - D. Emphasizing economic diversity and resilient livelihoods
7. Disaster risk is defined through the combination of the following terms, **EXCEPT** one. Which one is it?
 - A. Exposure
 - B. Hazard
 - C. Precautions
 - D. Vulnerability
8. Which of the following describes the physical disaster risk factor?
 - A. It includes government structure and diplomatic issues.
 - B. It includes flora and fauna in the surroundings, health, and diseases.
 - C. It pertains to tangible objects or infrastructure like the availability of fire exits and the sturdiness of the building that can harm everyone.
 - D. It includes assets and liabilities, income, economic class, and availability of natural resources in the area such as farmland, and livestock.
9. Which of the following describes the economic disaster risk factor?
 - A. It includes government structure and diplomatic issues.
 - B. It includes flora and fauna in the surroundings, health, and diseases.
 - C. It pertains to tangible objects or infrastructure like the availability of fire exits and the sturdiness of the building that can harm everyone.
 - D. It includes assets and liabilities, income, economic class, and the availability of natural resources in the area such as farmland, and livestock.

10. Which of the following describes the environmental risk factor?
 - A. It includes government structure, and diplomatic issues.
 - B. It includes flora and fauna in the surroundings, health, and diseases.
 - C. It pertains to tangible objects or infrastructure like the availability of fire exits, and the sturdiness of the building that can harm everyone.
 - D. It includes assets and liabilities, income, economic class, and the availability of natural resources in the area such as farmland, and livestock.

11. All analogies of disaster risk factors are correct, **EXCEPT** one. Which one is it?
 - A. Psychological factors: state of mental capacity and health
 - B. Physical factors: pertain to tangible objects or infrastructure
 - C. Economic factors: assets and liabilities, income, and economic class
 - D. Political factors: flora and fauna in environment, health, and diseases

12. Which of the following situations is **NOT** a way on how to reduce risk of disaster?
 - A. Address pre-existing risks
 - B. Avoid the construction of new risks
 - C. Share an awareness on how to prevent disaster risk
 - D. Limited availability of technology, unsustainable uses of natural resources, and pandemics.

13. Which of the following may prevent or lessen the impact of disaster?

A. Mitigation	C. Preparedness
B. Prevention	D. All of the above

14. Which of the following is considered the ability of the community to recover quickly in any difficulties?

A. Resilience	C. Low self- esteem
B. Pessimistic	D. Decision making

15. All are ways on how to reduce disaster risk, **EXCEPT** one. Which one is it?
 - A. Weak governance
 - B. Have access to information by local people concerning an approaching typhoon or tropical storm.
 - C. Home gardening can improve nutrition and increase reserves in the time of drought.
 - D. Planting mangroves to lessen tidal surges and raising awareness of disasters through school-based education projects.

Lesson 1

Concept of Disaster Risk

Disaster risk is expressed as the likelihood of loss of life, injury or destruction and damage from a disaster in a given period of time (United Nations Office for Disaster Risk Reduction (UNDRR) (2009), formerly known as UNISDR (adapted by Philippines DRR Law, 2015).



What's In

In the previous lesson, you learned about the concepts and nature of disaster. You learned that disaster is a sudden, catastrophic event that seriously disrupts the functioning of a community or society and causes human, material, and economic or environmental losses that exceed the community's or society's ability to cope using its own resources.

Furthermore, there are 4 types of disaster: natural disaster, man-made disaster, complex, and pandemic emergencies.



What's New

Concept of Disaster Risk

To understand more about this lesson, accomplish the activity below. Decode the following sets of numbers and write the meaning of the decoded words using the dictionary or internet beside the sets of numbers. Write the meaning of the word (s) on the space provided. Use the **Cryptogram** below, to unlock sets of numbers into words.



Activity 1.1. Cryptogram

A	B	C	D	E	F	G
26	25	24	23	22	21	20
H	I	J	K	L	M	N
19	18	17	16	15	14	13
O	P	Q	R	S	T	U
12	11	10	9	8	7	6
V	W	X	Y	Z		
5	4	3	2	1		

1. 23,18,8,26,8,7,22,9; 9,18,8,16; 21,26,24,7,12,9= _____

Meaning:

2. 9,18,8,16= _____

Meaning:

3. 19,26,1,26,9,23= _____

Meaning:



What Is It

Disaster risk is the result of the interaction between a hazard and the characteristics that make people and places vulnerable and exposed. According to CHED, The Teaching Guide for Senior High School DISASTER READINESS AND RISK REDUCTION (2016), **disaster risk factors** are variables that either aggravate or mitigate the effects of hazards, affecting the degree or scope of a disaster. **Risk** is

the probability that something wrong or unpleasant will happen. According to United Nations Office for Disaster Risk Reduction (UNDRR) (2009), formerly known as UNISDR (adapted by Philippines DRR Law, 2010), **hazard** is a dangerous phenomenon, substance, human activity or condition that may result to loss of life, injury or other health problems. It can also cause the loss of livelihoods, house, and other properties, and services, social and economic disruption, or environmental damage. **Disaster** is a serious disruption of the functioning of a society involving widespread of human, material, economic, or biological losses which allow the ability of the affected community or society to adapt using its own resources.

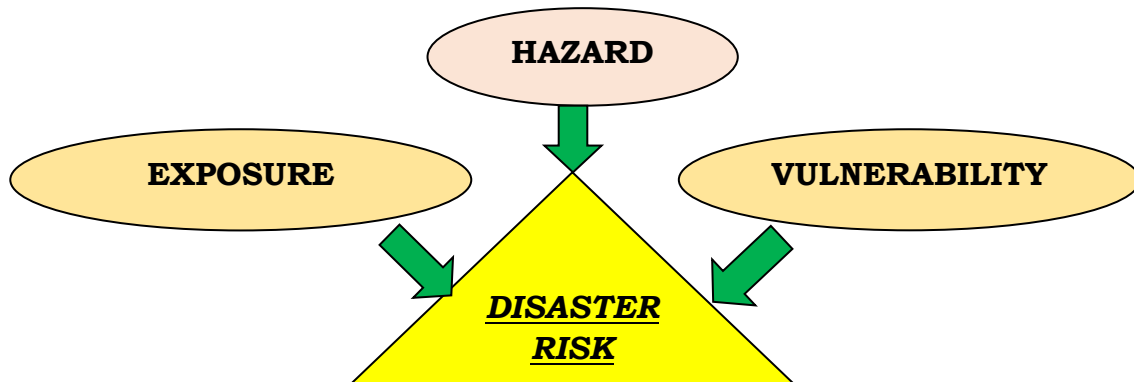


Figure 1.1. Representation of Disaster Risk

Disaster risk is also defined through the combination of three terms: **hazard**, **exposure**, and **vulnerability**, where **exposure** means the condition of being unprotected while **vulnerability** is the ability of being easily hurt or injured.

As stated in CHED, The Teaching Guide for Senior High School DISASTER READINESS AND RISK REDUCTION (2016), and M and E studies, the following are some of the disaster risk factors that can add to the degree or scope of disaster in an area or on one's life.

- (1) According to the presentation in Coursehero, **physical factors** pertain to infrastructure, like the availability of fire exits, or the sturdiness of the building, or availability of objects that can harm you or help you. It also includes an area lies near the coastlines, fault lines, unstable hills etc. It makes the area more vulnerable to disasters as compared to an area that is distant from the location of disaster-prone area.



Figure 1.2. Effects of Typhoon Yolanda

Source: Ruiz, Lawrence. "Basey after Yolanda.JPG." 2013. Accessed August 7, 2020. https://commons.wikimedia.org/wiki/File:Basey_after_Yolanda.JPG.

- (2) As stated in the presentation in Coursehero, **psychological factors** include state of mental capacity and health (e.g., people with special needs), perception of self (e.g., self-assessment of capability to respond to disasters, (Quizlet nd)).
- (3) (Quizlet nd), states that **socio-cultural factors** include religion, social status, traditions, and perception of society.
- (4) **Economic factors** include assets and liabilities, income, and economic class. It also includes the availability of natural resources in the area such as farmland, livestock, irrigation, capital, and adequacy of economic fall back mechanisms.
- (5) **Political factors** include government structure and diplomatic issues.
- (6) **Biological or environmental factors** include flora and fauna in the environment, health, and diseases.



Figure 1.3. COVID 19- Pandemic

Source: "Corona Virus Pandemic Disease Hygiene." Accessed August 7, 2020. <https://pixabay.com/photos/coronavirus-virus-pandemic-china-4810201/>.

Disaster risk factors are also known as the types of vulnerabilities in disaster, which means that these are sets of prevailing conditions which adversely affect the community's ability to prevent, mitigate, prepare for or respond to a disaster.

In understanding disaster risk, you need to know that disaster is the basis of development failures, which means that it is a measure of sustainability of development. According to United Nations Office for Disaster Risk Reduction (UNDRR) (2015), formerly known as UNISDR, hazard, vulnerability and exposure are influenced by several risk drivers, including poverty and inequality. In addition, it includes badly planned and managed urban and regional development, climate change and environmental degradation (Preventionweb).

In knowing more about disaster risk, we not only needed to consider the three (3) factors, (hazard, exposure, and vulnerability), but also the resilience of the society to disaster. Nevertheless, the real question is, how will you avoid that disaster risk factors? Are there ways to prevent these factors? Read some ways to avoid becoming victim of underlying disaster risk factors.

According to PreventionWeb, here are some approaches to reduce the disaster risk factors.

Approaches to vulnerability reduction include:

1. Implementing building codes
2. Insurance and social protection (risk)
3. Emphasizing economic diversity and resilient livelihoods
4. Knowledge and awareness raising
5. Preparedness measures

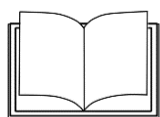


Figure 1.4. Warning Signs

Source: Mallet, Christophe. "Cable beach warning sign.jpg." 2005. Accessed August 8, 2020. https://commons.wikimedia.org/wiki/File:Cable_beach_warning_sign.jpg

In addition, according to International Federation of Red Cross and Red Crescent Societies (IFRC), here are several aspects to disaster risk reduction:

1. In the presentation of IFRC, **disaster mitigation** is defined as structural and non-structural measures undertaken to limit the adverse effect of natural hazards such as planting mangroves to lessen the negative effects of tidal surges or increasing the awareness of natural hazards through school-based education program.
2. IFRC's presentation entitled, "Reducing Risk", defined **early warning** as the provision of timely information enabling people to take steps to reduce the impact of hazards. Early warning requires genuine ownership and participation by area in the community and other stakeholders, e.g., access to information from local people concerning an approaching typhoon or tropical storm.
3. IFRC presentation entitled "Reducing Risk", defined **disaster preparedness** as the measures that help ensure a timely and effective 'first line' of response supported by National volunteers, such as community action teams with the help of national and international society or response team.
4. IFRC's presentation explains that **recovery** is defined as decisions and actions taken after a disaster with a view to restoring or improving the pre-disaster living conditions of the affected community while taking an action necessary for adjustments to reduce disaster risk such as assessing levels of future risk when planning housing projects in the aftermath of a disaster.
5. IFRC presentation defined **support to livelihood** as projects that strengthen livelihoods which enable individuals or households to create strategies to lessen risk like home gardening which can improve nutrition and increase reserves in the time of drought.



What's More

Activity 1.2

Tell whether the following situations are Physical factors (**PHF**), Psychological factors (**PSF**), Socio-cultural factors (**SCY**), Economic factors (**EF**), Political factors (**PF**) and Biological factors (**BF**). Write the designated code **PHF**, **PSF**, **SCF**, **EF**, **PF**, and **BF** in identifying the risk factor underlying disaster.

- _____ 1. An area lies near the coastlines, fault lines, and unstable hills. It makes the area more vulnerable to disasters as compared to an area that is far away from the origin of the disaster.
- _____ 2. The availability of natural resources in the area such as farmland, livestock, irrigation, and capital.

- ____ 3. Poverty and inequality, marginalization, social exclusion, and discrimination by gender, social status, disability, and age.
- ____ 4. Poor environmental management, overconsumption of natural resources, decline of risk regulating ecosystem services, and climate change.
- ____ 5. A community which has a negative attitude towards change and lacks initiative in life become victims of conflicts, hopelessness, and pessimism which reduces their capacity of coping with a disaster.



What I Have Learned

Activity 1.3

Fill in the blanks with the correct answer to check what you have learned in this lesson.

____(1)____ is the result of the interaction between a hazard and the characteristics that make people and places vulnerable and exposed. It is also defined through the combination of three terms: ____ (2)____, exposure and vulnerability, where ____ (3)____ means the condition of being unprotected while ____ (4)____ is the ability of being easily hurt or injured. ____ (5)____ are variables that either aggravate or mitigate the effects of hazards, affecting the degree or scope of a disaster. It includes ____ (6)____, ____ (7)____, ____ (8)____, ____ (9)____, ____ (10)____, ____ (11)____. Some ways on how to avoid the disaster risk factors are ____ (12)____, ____ (13)____, ____ (14)____, ____ (15)____.



What I Can Do

Activity 1.4

Read the part of an article from Inquirer.net below and ask the members of the family about their point of view on the article. Write your answers on a separate sheet of paper.

Marikina, model city for disaster management, draws up plans for life after ECQ

By: Matthew Reysio-Cruz -

Reporter / @inquirerdotnet

Philippine Daily Inquirer / 04:05

AM May 13, 2020



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MANILA, Philippines — Marikina City is no stranger to crisis. Hemmed by the Sierra Madre mountain range, the low-lying eastern city has long functioned as Metro Manila’s catch basin due to its geography. Nowhere was this more vivid than when Tropical Storm “Ondoy” plunged much of Marikina underwater in 2009 and left a trail of destruction. But not only did the city bounced back, it would also emerge as the country’s eminent model for managing disasters. The pandemic unleashed by the new coronavirus disease (COVID-19) is unprecedented and demands a more sweeping response than even the worst flood. But it has brought out the same survival instincts that Marikina has successfully cultivated for years.

As of Saturday, Marikina had the slowest COVID-19 transmission rate among Metro Manila’s 16 cities. Its case doubling time of 8.32 meant it took an average of eight days before cases in the city doubled, better than all six other cities that had also recorded a decelerating caseload.

More tests

Teodoro was one of the earliest and most vocal proponents of mass testing, figuring in a public clash with the Department of Health after it delayed the opening of the city’s COVID-19 testing center. In March, weeks before other cities began partnering with hospitals to process test results, Marikina already put up its molecular laboratory specifically for COVID-19. The virus could be contained, Teodoro said, but only if people were tested and isolated.

TESTING IS KEY
As the city prepares to transition to a post lockdown world, it will ramp up testing as Mayor Marcelino Teodoro believes the virus can be contained only by testing and isolating the infected. —PHOTO COURTESY OF MARIKINA LGU



He has clung to that messaging with the fervor of the devout. While some politicians have relied on bluster to navigate the pandemic, Teodoro has focused on the science. This will help shore up the shoe industry, a pillar of the local economy that employs up to 10,000 residents.

Those hit hardest by COVID-19 can now also secure up to P100,000 in medical assistance, compared to a cap of P25,000 before the crisis. In keeping with the city's strong working-class tradition, Teodoro has upped compensation for those at the front line of the epidemic, instituting hazard pay not just for health workers but equally essential workers such as garbage collectors.

Guide Questions:

1. Based on the article, what are the possible disaster risk factors that can be found in Marikina City?
2. What are the types of disaster Marikina community experienced and how is it related to the disaster risk factor present in the article?
3. Cite ways on how to avoid becoming a victim of underlying disaster risk factors and relate it to the article.

SCORING RUBRIC:

NOTE: This rubric will be used in checking questions 1 to 3.

	Excellent (4 pts)	Good (3 pts)	Approaching standard (2 pts)	Needs Improvement (1pt)
Ideas and Content	What you are writing about is clear and well-expressed, including specific examples to demonstrate what you learned. Well done	What you are writing is clear. You answered the question. Some support may be lacking, or your sentences may be a bit awkward. Overall a decent job.	You put thought into this, but there is no real evidence of learning. More specific information is needed, or you need to follow the directions more closely.	There is no clear or specific explanation in answer to the question.
Use of terms	Your answer included all the terms from the lesson that applied to the question asked. All terms are fully defined and used in the proper context.	Your answer included several terms from the lesson, demonstrating adequate understanding of the material.	Only one term from the lesson is used in the answer. Try for a few more, next time.	No terms from the lesson are used.
Sentence fluency	Sentences are complete and they are read out loud. Your writing flows.	Sentences are complete and able to be understood.	Some sentences are complete and easy to understand. Others require some work.	Sentences are incomplete or too long. It makes reading them difficult.
Conventions	No punctuation or structural mistakes. No spelling errors. Your writing shows full awareness of the rules of English use.	Use of punctuation marks and capitals as well as spelling is mostly correct. Few errors exist in your answer.	Mistakes using end marks or capitals as well as spelling mistakes make writing hard to read.	Few end marks or capital letters. Answers contain numerous spelling or structural errors.



Posttest

Read each statement carefully. Then, encircle the letter of the best answer.

1. All are ways on how to reduce disaster risk, **EXCEPT** one. Which one is it?
 - A. Weak governance
 - B. Have access to information by local people concerning an approaching typhoon or tropical storm.
 - C. Home gardening can improve nutrition and increase reserves in the time of drought.
 - D. Planting mangroves to lessen tidal surges and raising awareness of disasters through school-based education projects.
2. Which of the following is considered the ability of the community to recover quickly in any difficulties?
 - A. Resilience
 - B. Pessimistic
 - C. Self-centered
 - D. Decision making
3. Which of the following may prevent or lessen the impact of disaster?
 - A. Mitigation
 - B. Prevention
 - C. Preparedness
 - D. All of the above
4. Which of the following situations is **NOT** a way on how to reduce risk of disaster?
 - A. Address pre-existing risks
 - B. Avoid the construction of new risks
 - C. Share an awareness on how to prevent disaster
 - D. Limited availability of technology, unsustainable uses of natural resources, and pandemics.
5. All analogies of disaster risk factors are correct, **EXCEPT** one. Which one is it?
 - A. Psychological factors: state of mental capacity and health
 - B. Physical factors: pertain to tangible objects or infrastructure
 - C. Economic factors: assets and liabilities, income, and economic class
 - D. Political factors: flora and fauna in environment, health, and diseases
6. Which of the following describes the environmental risk factor?
 - A. It includes government structure, and diplomatic issues.
 - B. It includes flora and fauna in the surroundings, health, and diseases.



- C. It pertains to tangible objects or infrastructure, like the availability of fire exits, and the sturdiness of the building that can harm everyone.
 - D. It includes assets and liabilities, income, economic class, and the availability of natural resources in the area such as farmland, and livestock.
7. Which of the following describes the economic disaster risk factor?
- A. It includes government structure, and diplomatic issues.
 - B. It includes flora and fauna in the surroundings, health, and diseases.
 - C. It pertains to tangible objects or infrastructure, like the availability of fire exits, and the sturdiness of the building that can harm everyone.
 - D. It includes assets and liabilities, income, economic class, and the availability of natural resources in the area such as farmland, and livestock.
8. Which of the following describes the physical disaster risk factor?
- A. It includes government structure, and diplomatic issues.
 - B. It includes flora and fauna in the surroundings, health, and diseases.
 - C. It pertains to tangible objects or infrastructure, like the availability of fire exits, and the sturdiness of the building that can harm everyone.
 - D. It includes assets and liabilities, income, economic class, and the availability of natural resources in the area such as farmland, and livestock.
9. Disaster risk is defined through the combination of the following terms, **EXCEPT** one. Which one is it?
- A. Exposure
 - B. Hazard
 - C. Precautions
 - D. Vulnerability
10. All of the following are ways on how to avoid disaster risk factors, **EXCEPT** one. Which one is it?
- A. Preparedness measures
 - B. Knowledge and awareness raising
 - C. Weak governance of the local government
 - D. Emphasizing economic diversity and resilient livelihoods

11. All statements about disaster risk are correct, **EXCEPT** one. Which one is it?
- A. It is a set of rules or guidelines on how to prevent disaster.
 - B. It is the result of the interaction between a hazard and the characteristics that makes people and places vulnerable and exposed.
 - C. It is expressed as the likelihood of loss of life, injury or destruction and damage from a disaster in a given period of time.
 - D. It is defined as the combination of three terms, the hazard, exposure, and vulnerability
12. Which of the following statements is **INCORRECT**?
- A. Vulnerability means the condition of being unprotected
 - B. Risk is the possibility that something bad or unpleasant may happen.
 - C. Hazard is a dangerous phenomenon, substance, human activity, or condition that may cause loss of life, injury, and damage to the property.
 - D. Vulnerability is the ability of individuals, communities, and states to adapt to and recover from hazards.
13. Which of the following is the variable that either aggravates or mitigates the effects of hazards, affecting the degree of scope of a disaster?
- A. Resilience
 - B. Vulnerability
 - C. Capacity to cope
 - D. Disaster risk factor
14. All of the following are disaster risk factors, **EXCEPT** one. Which one is it?
- A. Nationality
 - B. Socio-cultural
 - C. Economic factors
 - D. Biological risk factors
15. Which of the following analogies is, **CORRECT**?
- A. Psychological factors: flora and fauna
 - B. Biological factors: income and economic class
 - C. Socio- cultural factors: religion and social status
 - D. Physical factors: state of mental capacity and health



Additional Activities

Make at least three (3) different hashtags (ex. #proudmarikēños) about the concept of disaster risk. Explain why you made those kinds of hashtags. Write your answers on the table below. You may post it also in your Twitter and Facebook account if you have internet connection in your house. (Screenshot your hashtags and send it to me via messenger)

HASHTAGS	EXPLANATION
1.	
2.	
3.	

SCORING RUBRIC:

NOTE: This rubric will be used in checking the explanation part of the activity. Two (2) points will automatically be given to the hashtags you created.

SCORING RUBRIC:

	Excellent (4 pts)	Good (3 pts)	Approaching standard (2 pts)	Needs Improvement (1pt)
Ideas and Content	What you are writing about is clear and well-	What you are writing is clear. You	You put thought into this, but there is no real	There is no clear or specific explanation in



	expressed, including specific examples to demonstrate what you learned. Well done	answered the question. Some support may be lacking, or your sentences may be a bit awkward. Overall a decent job.	evidence of learning. More specific information is needed, or you need to follow the directions more closely.	answer to the question.
Use of terms	Your answer included all the terms from the lesson that applied to the question asked. All terms are fully defined and used in the proper context.	Your answer included several terms from the lesson, demonstrating adequate understanding of the material.	Only one term from the lesson is used in the answer. Try for a few more, next time.	No terms from the lesson are used.
Sentence fluency	Sentences are complete and they are read out loud. Your writing flows.	Sentences are complete and able to be understood.	Some sentences are complete and easy to understand. Others require some work.	Sentences are incomplete or too long. It makes reading them difficult.
Conventions	No punctuation or structural mistakes. No spelling errors. Your writing shows full awareness of the rules of English use.	Use of punctuation marks and capitals as well as spelling is mostly correct. Few errors exist in your answer.	Mistakes using end marks or capitals as well as spelling mistakes make writing hard to read.	Few end marks or capital letters. Answers contain numerous spelling or structural errors.

Source: Reazon System , Inc. 2020. Accessed August 9, 2020.
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