



FRQs

How to answer the question that
is asked!

Free Response Questions (FRQ)

THREE Questions over a 70 minute period

Free response section accounts for 40% of the grade

Questions are of the following type:

- 1- Design an experiment
- 2- Analyze an environmental problem and propose a solution
- 3- Analyze an environmental problem, propose a solution and justify it using mathematical calculations

FRQ 1 - Design an experiment

- Explain environmental concepts/models
- Analyze visual representations
- Analyze research studies
- Propose and justify solutions

FRQ 2 - Analyze an environmental problem

- Real life scenario
- Explain environmental concepts
- Analyze visual data (picture, chart, graph)
- Propose and justify solutions

FRQ 3- Analyze an environmental problem

Same as #2 BUT....

Justify a solution using calculations

A quantitative way to solve an environmental problem

Timing

Ideally, you should use about 22 minutes per essay broken up as the following:

3 minutes: read, consider, organize and outline

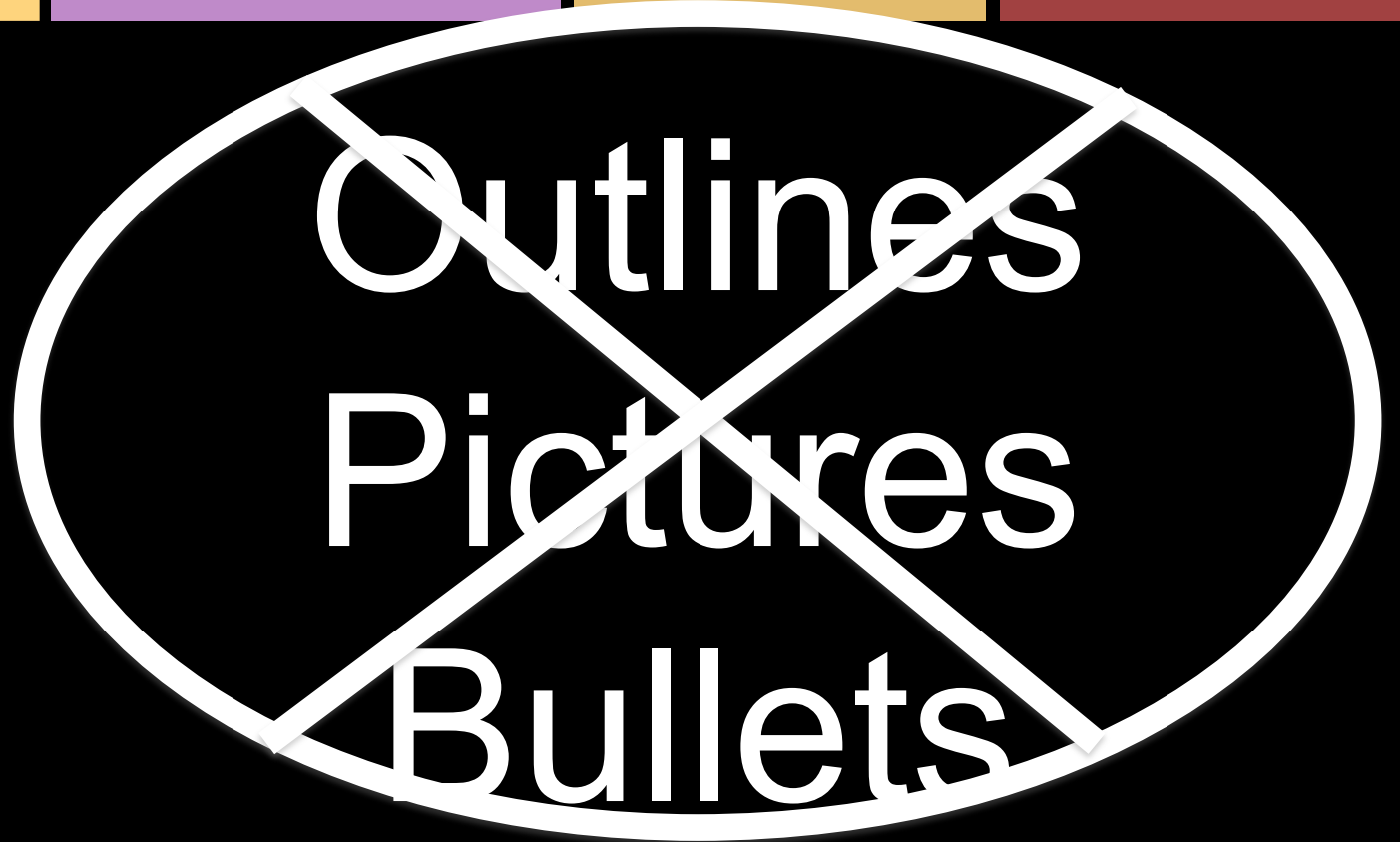
17 minutes: answer the question

2 minutes: re-read and edit your essay

Have a watch with you to keep time **(no cell phones)**

You may go back to questions given time left over from other questions.

NOT ALLOWED



~~Outlines~~

~~Pictures~~

~~Bullets~~

APES FRQ Language

- Environmental
- Ecological
- Economical
- Social/Societal
- Human Health
- Identify
- Describe
- Discuss
- Explain
- Calculate
- Justify
- Make a claim
- Propose

Environmental

- Talk about biotic (LIVING) and abiotic (NON-LIVING) factors in the environment / ecosystem- **never people!**
 - Plants, animals, soil, water and air quality

Ecological

- Talk about biotic (LIVING) factors in the environment / community- *never people!*
 - Plants, animals, fungi and bacteria

Economic

- Talk about how the topic affects money and jobs! Include the words “money” and “jobs” in your answer to ensure you get the point- *never plants or animals here!*

Social / Societal

- Talk about HUMANS!
 - Buildings, crops, human diseases, laws, human birth and deaths rates

Human Health

- Talk about human diseases
 - respiratory damage, lung cancer, skin cancer, nervous system damage, reproductive disorders

PRACTICE

Go back to today's FRQ

Circle these main category terms where you see them in the questions

Environmental

Ecological

Economic

Social / Societal

Human health

Identify

- One Idea

Example: When is prom?

Prom is May 20.

- Be careful not to continue on and answer incorrectly-
-you will lose the point.

Prom is May 20. It starts tomorrow. = NO POINT!

Describe

- One Idea - One Process
- Must communicate all the information about the process (all steps / all parts)

Example: Describe how you would purchase a prom ticket.

Discuss

- Similar to “describe” except these questions seemed to be linked to cause and effect ideas rather than processes.
- One point is generally awarded for the cause and the effect linked. You must have both parts in your answer to earn the one point.

Discuss Practice

Discuss the potential outcome of drinking alcohol after the prom.

Explain

- For “Explain” questions, pick TWO ideas (processes) related to the topic of the question and explain each in detail.
- “Explain” questions must have three parts-
 - Identify the idea (process)
 - Give the “how” the process works
 - Give the “why” the process is significant or the outcome

Explain Practice

Explain how you will get ready for the prom.

Calculate

- You must show your work on math calculations to get a point for a correct answer!
- To get both points, the set-up must be shown with labeled numbers! Dimensional analysis is the best way to ensure you have the correct set -up.

Calculate

- *Calculate how much it will cost you to go to Prom.*

Tuxedo \$100

Ticket \$125

Post prom ticket \$50

Flower for date \$20

Limo rental / Uber black \$50

Justify

- Provide evidence to support or defend a claim
- Must include evidence or reasoning (the WHY)
- *Example: Justify why junior and senior high school students need a job.*

Make A Claim

- Make an assertion that is based on evidence or knowledge
- *Example: Make a claim for the importance of picking the right date for Prom.*

Propose A Solution

- Provide a solution to a problem based on evidence or knowledge
- *Example: Propose a solution for how you will get to Prom if your limo driver does not show up.*

PRACTICE

Go back to today's FRQ

Box these main instructional words as you see them in the questions

Identify

Justify

Describe

Make a claim

Discuss

Propose sol.

Explain

Calculate

PRACTICE

Go back to today's FRQ

Underline where you see values (two, four, etc...)





Other Hints for Success

- Use temporal language if possible
 - Example: During an earthquake plates slide past each other *rapidly*.
- If a chemical equation can be used to describe a process, then use it!
 - Example: Describe the biological cycle that removes carbon from the atmosphere. Use the photosynthesis equation!

Other hints for success

- Answer the question asked!
 - For example- 2014 Q1 asked students to identify ways to reduce use of electricity. Students missed the point because they answered about alternative energy (using solar). This is about shifting the source rather than decreasing use.
- Do not answer more than what is asked.
 - If it asks for *two* reasons, then give two reasons not three! The reader can not award points for your third reason even if it is correct.

Other hints for success

- Write legibly. Graders won't read your essay if it is not readable.
You know who you are... practice writing legibly (PRINTING IS ACCEPTABLE)
- Use blue or black ink. Cross out mistakes with one line to avoid jumble.

Other hints for success

- **Avoid “tree hugging”** Don't go on and on about how important or lovely nature is. This is a science based test, so use specific detail and support to back up your assesment.

Attacking the Question

BOX - Identify, Explain, Describe or Discuss

Underline- academic vocabulary

Circle- one, two or three / except

Attacking the Question

Example:

Explain how atmospheric carbon is incorporated into two ocean sinks.