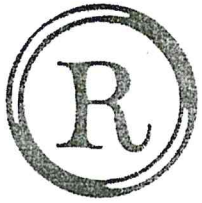

RESTATE THE QUESTION
Restate or reword the question and turn it into a statement.

ANSWER THE QUESTION
What is being asked? Answer all parts of the question.

CITE THE SOURCE
Tell where you found examples and details.

In paragraph 2... The lab results show...
From my data.. The article states...

EXPLAIN YOUR RESPONSE
Give evidence from your lab or the text to support your answer. Add your thoughts to create a general scientific rule.

SLINKY LAB

Problem: *How do waves travel in a spring?*

Conclusion:

Claim (Educated response to the question) -

R
A

Evidence(2-3 pieces of data or information that supports the claim) -

C

Reasoning (Restate the "Claim" with a nibble of your "Evidence" and a general scientific statement to back it up)

R
A
C
E

Name_____

Rogue Waves

Directions: Read the passage below about rogue waves. Answer the questions that follow.

Dangerous Waves

Rogue waves, sometimes referred to as "freak" waves, are natural occurring phenomena that can cause disasters at sea. On June 3,1984, a ship known as the Marques, carrying a crew of twenty-eight people, sailed into a storm near Bermuda in the Atlantic Ocean. Suddenly, an enormous wave with incredible force inundated the ship. The Marques sank in less than one minute. Only eight crew members and Captain John Sefton survived the storm.

Rogue waves are massive waves that have been known to occur even in calm seas. In folklore these waves were referred to as "holes in the ocean." Only in the past twenty years have they been defined as rogue waves. The mysterious sinking of many ships throughout history could be attributed to rogue waves.

Some characteristics of rogue waves are a deep low trough and a very high crest, which results in a very steep wave. It is not known exactly how rogue waves are formed in the ocean. The explanation for the cause of rogue waves is theoretical and controversial. It is generally agreed, however, that rogue waves are a result of an interference of waves. Many strong waves in a fully developed sea move randomly. If two waves collide at exactly the same point on each wave, the crests and the troughs of the wave match up. This results in one wave with a very high crest, and is an example of constructive interference. Usually, when two waves meet their crests, their troughs do not match up. The waves then cancel each other out, causing destructive interference. Scientists have found that powerful ocean currents cause the onset of a rogue wave. The Agulhas Current is the current responsible for the common occurrence of rogue waves on the coast in southeast Africa.

A disproportionately high number of rogue waves occur off the coast of southeast Africa. They are also common, however, in the Gulf of Alaska, and off the coast of Florida. The largest rogue wave ever recorded was 112 feet high, which is larger than a ten-story building. Crew members of a naval ship called the Ramapo recorded this wave near the coast of San Diego in 1933. As it was their duty to collect oceanographic data, they were prepared for large waves and rough seas. All of the crew members survived.

Scientists are currently working on the development of more advanced satellite-based radar systems which track rogue waves, so that ships can be forewarned about these dangerous waves.

Name_____

Rogue Waves (cont.)

Directions: Part I: Circle the correct multiple choice answer. Part II: Decide whether the statement is True (T) or False (F).

Part I

1. A highly significant number of rogue waves occur in which region?

   A. Japan
   B. southeast Africa
   C. Bermuda
   D. the Gulf of Mexico

2. Another term sometimes used to describe rogue waves:

   A. tidal waves
   B. freak waves
   C. "holes in the ocean"
   D. both B and C are correct

3. Which term best describes how rogue waves are formed?

   A. Refraction
   B. Destructive Interference
   C. Constructive Interference
   D. Diffraction

4. Which are characteristics of a rogue wave?

   A. high crest
   B. very steep
   C. low trough
   D. A and C are correct
   E. A, B and C are correct

Part II

1. The term "rogue wave" has been around for centuries.	T	F
2. When the Marques sank in 1984, some of it's crew members did not survive.	T	F
3. Rogue waves can occur in calm seas.	T	F
4. Two waves that cancel each other out is an example of constructive interference.	T	F
5. The crew members of the Marques recorded the largest rogue wave ever.	T	F

Part III

Create a short story about a ship that encounters a rogue wave during a dangerous sea storm. Describe what the wave looks like and include what happens to the ship and it's crew members. Invent a name for the ship and a location of where the storm occurred.