**Symbiosis School, Nasik.**

**Std: X Term I (2020-21)**

**Subject: English Language & Literature - Worksheet – 51**

**Chapter 6 – The Making of a Scientist**

**By Robert W. Peterson**

**Concept Based Answers**

**Answer 1:**

Ebright’s mother was a great help to him. She always encouraged his interest in learning and finding more. She took him out on trips. In fact, she also bought him a telescope, a microscope, cameras, mounting materials and other equipments that helped him in many ways.

**Answer 2:**

Richard’s mother was a vigilant parent who keenly observed her child, identified his interests and inclinations and channelized his energies in the right direction. She very deftly kept him occupied with learning activities which was a constructive use of the leisure time. She bought him books to kindle his curiosity and thus provided the impetus towards scientific interests. She thereby played a significant role in ‘the Making of a Scientist’.

**Answer 3:**

Richard Ebright decided to conduct real experiments after he did not win anything in the science exhibition. He tried to find the cause of a viral disease that kills nearly all Monarch caterpillars every few years. After that he also began his research into the discovery of an unknown insect Monarch.

**Answer 4:**

Richard Ebright as a child had developed a keen interest for collecting things like rocks, fossils, coins and   
butterflies. By the time he reached his second grade, he had collected all the twenty-five species of butterflies found in Pennsylvania. When his mother bought him the book, ‘The Travel of Monarch V’, it rekindled his curiosity in the insects. He also started tagging the Monarch’s at the behest of the author Dr. Tredrick A. Urgu Hart. Later he researched the significance of the hormone in the yellow spots of its pupa which won him great recognition in the world of science.

**Answer 5:**

When young, Ebright felt he could neither play football nor baseball but there was one thing which he could do and that was collecting things. And then he started collecting things. He had a wonderful assortment of monarch butterflies, fossils, rocks and coins.

**Answer 6:**

Other than Science, Richard Ebright was interested in collecting rocks, coins and fossils and was also interested in star-grazing and astronomy. He was also a good debater, canoeist and expert photographer. Mr. Weiherer felt that Richard not only was interested in his experiments but also kept his mind open for other things and put in that extra effort to attain success.

**Answer 7:**

When Ebright did not win anything at the country science fair, he learnt that winner had to show real experiments, and not just a simple neat display. Then he started conducting experiments. It was definitely a stepping stone towards his success. His competitive nature, his extra effort and the will to win for the right reasons made him a successful scientist.

**Answer 8:**

When Ebright could not win a prize at the science fair, he learnt that winners do real experiment, they don’t simply display slides. Then he started conducting experiments. It was definitely a stepping stone towards his success. His competitive nature, his extra efforts and the will to win for the right reasons made him a successful scientist.

**Answer 9:**

According to Ebright’s teacher, the essential qualities of becoming a scientist are to have a first-rate mind, and have a lot of curiosity. Along with that, the person should have the zeal to excel for the sake of doing the best job.

**Answer 10:**

Ebright used to tag butterflies wings and let them go. In fact, the basement of his house was home to thousands of monarch butterflies. He started losing interest in it because it was a tedious job and there wasn’t much feedback.

**Answer 11:**

Richard A. Weiherer was Richard Ebright’s social studies teacher and adviser to the debating and Model United Nations Club. He helped Ebright a lot because he opened his mind to new ideas.

**Answer 12:**

Richard Ebright had some innate character traits that are the pre-requisites for the making of a scientist. He had, besides an intelligent mind, the curiosity to seek information, keen observing powers, perseverance, patience as well as self-discipline, which are the basic requirements for any scientific research. And the credit also goes to his mother for recognizing his inclinations and curiosity. She not only encouraged and supported him, but also provided the required stimulus through books and other materials.

**Textual Question Answers**

**Read and Find Out  
(Page 32)**

**Question 1.**How did a book become a turning point in Richard Ebright’s life?

**Answer:**The book ‘The Travels of Monarch X’ opened the world of science for Richard. After reading it he became interested in tracking the migration of butterflies. This interest led to his other projects and experiments. Finally, he became a great scientist.

**Question 2.**How did his mother help him?

**Answer:**Richard’s mother proved to be a great help. She took him on trips and bought scientific equipment for him. She spent all her time in setting up challenges for him. This helped him to learn a lot. She presented him the book ‘The Travels of Monarch X’. The book changes Richard’s life forever.

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**Question 1.**

What lesson does Ebright learn when he does not win anything at a science fair?

**Answer:**Ebright exhibited slides of frog tissues at a science fair. He did not get any prize. He learnt an important lesson that science is not just about display. It is about projects and experiments. He began conducting experiments from that day onwards.

**Question 2.**

What experiments and projects does he do then undertake?

**Answer:**He undertook many projects and experiments. He worked on viceroy butterflies to show that they copied monarch butterflies. He studied bright spots on the monarch pupa and discovered a new hormone. Also, he found out how cells read their DNA.

**Question 3.**What are the gualities that go into the making of a scientist?

**Answer:**There are three essential qualities that make a scientist. The first is a first rate mind. Next is the presence of curiosity. Last but not the least, it is the will to do the best and win.

**Think About It  
(Page 38)**

**Question 1.**

How can one become a scientist, an economist, a historian …? Does it simply involve reading many books on the subject? Does it involve observing, thinking and doing experiments?

**Answer:**  
Reading many books on a subject is not enough. One must develop the skill of observation and thinking. Experiments need to be done. One needs to have curiosity to explore and find new things. Above all, one must work hard and not get upset by failures.

**Question 2.**

You must have read about cells and DNA in your science books. Discuss Richard Ebright’s work in the light of what you have studied. If you get an opportunity to work like Richard Ebright on projects and experiments, which field would you like to work on and why?

**Answer:**DNA carry the blue print of life and heredity. They pass information from one generation to the other.

If I get an opportunity to work like Richard Ebright, I would choose to study about diseases. By studying the DNA, I may find ways and means to cure many illnesses.

**Talk About It  
(Page 38)**

**Question 1.**

Children everywhere wonder about the world around them. The questions they ask are the beginning of scientific inquiry. Given below are some questions that children in India have asked Prof. Yash Pal and Dr. Rahul Pal as reported in their book, Discovered Questions**.**

1. What is DNA fingerprinting? What are its uses?
2. How do honeybees identify their own honeycombs?
3. Why does rain fall in drops?

Can you answer these questions? You will find Prof. Yash Pal’s and Dr. Rahul’s answers (as given in Discovered Questions) on**Page 75.**  
**Answer:**

1. DNA fingerprinting is a forensic technique used to identify individuals by the characteristics of their DNA. It is used in parentage testing. It is also used in criminal investigation to identify a person or to place him at the scene of crime.
2. Honeybees have signalling chemicals. They leave trails for fellow honeybees so that they can reach their honeycomb.
3. The only solid thing in the air are dust particles. Water vapour uses it as a centre of attraction when it becomes too heavy. Water vapor condenses on the dust particle as a drop and falls on Earth.

**Question 2.**You also must have wondered about certain things around you. Share these questions with – your class, and try and answer them.

**Answer:**  
Some of the questions are

1. Why is the sky blue?
2. Why do stars twinkle?
3. What is a rainbow?
4. Why do fruits fall on Earth?