



CCRA ENGLISH – SAMPLE QUESTIONS
45 Minutes - 75 Questions

Marie Curie: A Lasting Legacy

[1]

Marie Sklodowska-Curie, known famously as just

Marie Curie, is primarily recognized for her discoveries with radiation in the late 19th and early 20th centuries. She alone¹ is also credited as being the sole creator of the word

“radiation.” Although it was cut tragically short by the work that she loved, Curie’s story is a true inspiration.

[2]

Curie was born in Warsaw, Poland, in late 1867. At

an early age, she was exposed to a life of physics and

mathematics from her father who also taught those

subjects at a nearby public high school. Despite the fact

that she had an obvious fervor for the sciences, the nearby² Krakow University would not admit her as a student

because of her gender. She worked as a governess and

tutor for nearby families for a few years until her sister’s

chance encounter would forever change her life.

[3]

Her sister married a man from Paris, and she

urged Marie to accompany her to France, however, Marie³ declined twice before yielding to her sister. Upon reaching

the great city, she enrolled in the prestigious Sorbonne

University in late 1891. This greatly invigorated her study,

and she ended up graduating in 1893 with a degree in

physics and again in 1894 with a secondary degree.

Because of her advanced studies, she accrued the interest⁴ of a nearby scientist who employed her in an industrial

1. A. NO CHANGE
B. She, on her own
C. She, independently
D. She

2. A. NO CHANGE
B. sciences; the
C. sciences. The
D. sciences the

3. A. NO CHANGE
B. France; however,
C. France however
D. France; however

4. A. NO CHANGE
B. began to notice
C. garnered the attention of
D. shared the attention with



laboratory. Her first job was to explore the magnetic properties of multiple kinds of steel. In doing so, she attained the interest of Pierre Curie, her future husband.

[4]

Pierre employed her at his laboratory in Paris shortly thereafter. They ended up spending a lot of time together which brought them closer and made them fall in love. Despite Pierre insisting on marriage, Marie had a very strong desire to return to her homeland to pursue teaching at Krakow University. After earning her secondary degree in 1894, the reason Marie was denied a teaching position because she was a woman; it was the second time in her life that she was treated in such a way. When she returned to Paris, Pierre's insistence gave way, and she joined him in civil union in July of 1894.

[5]

With the discovery of x-rays in 1895, Marie and her new husband began studying the uranium that caused the creation of such rays. The new reaction that the x-rays created, later deemed by Curie as radiation, was

hypothesized by Curie as coming from the atoms

themselves. 6 Curie's hypothesis suggested that not

only could the atom be split, but it also created a reaction

that would inspire a new type of growth. Curie and her

husband discovered this while they were working in a small shack behind their laboratory.

[6]

While working in the shack and publishing their findings, Marie and her husband discovered and named the elements "Polonium" and "Radium" created by the radiation and its subsequent reactions. For her and her

5. **A.** NO CHANGE
B. Marie was denied
C. it could be assumed that Marie was denied
D. because Marie was denied

6. **Suppose the author wants to insert a sentence here to explain the importance of Curie's hypothesis. Which sentence would best serve that purpose?**

- A.** NO CHANGE
B. This was the first relevant scientific hypothesis made by a woman that was given the attention it deserved.
C. What is so significant about this claim is that for hundreds of years it was believed that the atom was indivisible.
D. It is amazing that Curie was able to make this discovery working in an environment that was less than ideal.



husband's discoveries, she was awarded the Nobel Prize in Physics in December of 1903. Eight years later in 1911, she was awarded a second Nobel Prize, but this time it is for her advances in chemistry. Marie's story is especially inspirational for women because she was the first female to win the Nobel Prize. She is still the only person, male or female, to win the award in two different fields of science.

[7]

Unfortunately, it was Marie's work that would end up being her undoing. On July 4th, 1934, Marie died in her native Poland from aplastic anemia; doctors believed the condition was likely caused by her continual exposure to radiation. Interestingly, her papers were considered too radioactive to handle although they could potentially hold more discoveries than what were known and published to this day. Regardless, her lasting legacy on the scientific and gender role fields earned her a place in history as one of the greatest Nobel Prize winners of all time.

7. A. NO CHANGE
B. this time it was
C. this time it will be
D. this time had been

Question 8 asks about the preceding passage as a whole.

8. The author wants to insert this sentence:

Her prowess opened the door for future female scientist to enter the scientific community.

What would be the most logical placement for this sentence?

- A. after sentence 3 in paragraph 3
B. before sentence 5 in paragraph 4
C. after sentence 4 in paragraph 6
D. before sentence 3 in paragraph 7



CCRA MATH – SAMPLE QUESTIONS

60 Minutes - 60 Questions

1. Which expression is equivalent to $4x^5 \cdot 3x^4y^2 \cdot 5x^4y^2$?

USE THIS SPACE FOR YOUR WORK.

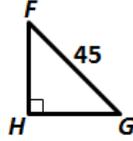
- A. $12x^{13}y^4$
- B. $12x^{80}y^4$
- C. $60x^{13}y^4$
- D. $60x^{80}y^4$
- E. $60x^{20}y^2$

2. Mark is a tennis instructor. He offers lessons for \$55 each. However, a customer can also purchase a set of 16 lessons for \$752. How much cheaper is each lesson if a customer buys the package?

- A. \$6
- B. \$8
- C. \$9
- D. \$47
- E. \$128



3. $\triangle FGH$ is drawn. The cosine of angle F is $\frac{4}{5}$.



What is the length of \overline{GH} ?

- A. 8
B. 9
C. 27
D. 36
E. 56
4. What 2 numbers can be placed in the blanks so that the difference between consecutive numbers is the same?

23, __, __, 74

- A. 28, 51
B. 34, 45
C. 40, 57
D. 46, 59
E. 48, 63
5. Brenda sets a goal to earn an average of 93 on her math tests. On the first 4 100-point math tests, she has scored 90, 85, 94, and 88. What must Brenda score on the 5th 100-point test to earn an average of 93 on the 5 tests?
- A. 92
B. 94
C. 95
D. 100
E. Brenda cannot earn an average of 93.

USE THIS SPACE FOR YOUR WORK.



CCRA READING – SAMPLE QUESTIONS

35 Minutes - 40 Questions

an excerpt from Sailing Alone around the World

by Joshua Slocum

In the fair land of Nova Scotia, a maritime province, there is a ridge called North Mountain, overlooking the Bay of Fundy on one side and the fertile Annapolis valley on the other. On the northern slope of the range grows the hardy spruce-tree, well adapted for ship-timbers, of which many vessels of all classes have been built. The people of this coast, hardy, robust, and strong, are disposed to compete in the world's commerce, and it is nothing against the master mariner if the birthplace mentioned on his certificate be Nova Scotia. I was born in a cold spot, on coldest North Mountain, on a cold February 20, though I am a citizen of the United States—a naturalized Yankee, if it may be said that Nova Scotians are not Yankees in the truest sense of the word. On both sides my family were sailors; and if any Slocum should be found not seafaring, he will show at least an inclination to whittle models of boats and contemplate voyages. My father was the sort of man who, if wrecked on a desolate island, would find his way home, if he had a jack-knife and could find a tree. He was a good judge of a boat, but the old clay farm which some calamity made his was an anchor to him. He was not afraid of a capful of wind, and he never took a back seat at a camp-meeting or a good, old-fashioned revival.

As for myself, the wonderful sea charmed me from the first. At the age of eight I had already been afloat along with other boys on the bay, with chances greatly in favor of being drowned. When a lad I filled the important post of cook on a fishing-schooner; but I was not long in the galley, for the crew mutinied at the appearance of my first duff, and "chucked me out" before I had a chance to shine as a culinary artist. The next step toward the goal of happiness found me before the mast in a full-rigged ship bound on a foreign voyage. Thus I came "over the bows," and not in through the cabin windows, to the command of a ship. My best command was that of the magnificent ship Northern Light, of which I was part-owner. I had a right to be proud of her, for at that time—in

the eighties—she was the finest American sailing-vessel afloat. Afterward I owned and sailed the Aquidneck, a little bark which of all man's handiwork seemed to me the nearest to perfection of beauty, and which in speed, when the wind blew, asked no favors of steamers, I had been nearly twenty years a shipmaster when I quit her deck on the coast of Brazil, where she was wrecked. My home voyage to New York with my family was made in the canoe *Liberdade*, without accident.

My voyages were all foreign. I sailed as freighter and trader principally to China, Australia, and Japan, and among the Spice Islands. Mine was not the sort of life to make one long to coil up one's ropes on land, the customs and ways of which I had finally almost forgotten. And so when times for freighters got bad, as at last they did, and I tried to quit the sea, what was there for an old sailor to do? I was born in the breezes, and I had studied the sea as perhaps few men have studied it, neglecting all else. Next in attractiveness, after seafaring, came ship-building. I longed to be master in both professions, and in a small way, in time, I accomplished my desire. From the decks of stout ships in the worst gales I had made calculations as to the size and sort of ship safest for all weather and all seas. Thus the voyage which I am now to narrate was a natural outcome not only of my love of adventure, but of my lifelong experience.

One midwinter day of 1892, in Boston, where I had been cast up from old ocean, so to speak, a year or two before, I was cogitating whether I should apply for a command, and again eat my bread and butter on the sea, or go to work at the shipyard, when I met an old acquaintance, a whaling-captain, who said: "Come to Fairhaven and I'll give you a ship. But," he added, "she wants some repairs." The captain's terms, when fully explained, were more than satisfactory to me. They included all the assistance I would require to fit the craft for sea. I was only too glad to accept, for I had already found that I could not obtain work in the



95 shipyard without first paying fifty dollars to a
society, and as for a ship to command—there
were not enough ships to go round. Nearly all
our tall vessels had been cut down for coal-
barges, and were being ignominiously towed by
the nose from port to port, while many worthy
captains addressed themselves to Sailors' Snug
100 Harbor.

The next day I landed at Fairhaven,
opposite New Bedford, and found that my friend
had something of a joke on me. For seven years
the joke had been on him. The "ship" proved to
105 be a very antiquated sloop called the Spray,
which the neighbors declared had been built in
the year 1. She was affectionately propped up in
a field, some distance from salt water, and was
covered with canvas. The people of Fairhaven, I
110 hardly need say, are thrifty and observant. For
seven years they had asked, "I wonder what
Captain Eben Pierce is going to do with the old

115 Spray?" The day I appeared there was a buzz at
the gossip exchange: at last someone had come
and was actually at work on the old Spray.
"Breaking her up, I s'pose?" "No; going to
rebuild her." Great was the amazement. "Will it
pay?" was the question which for a year or more
I answered by declaring that I would make it pay.

1. Which conclusion can be reasonably drawn from the passage's discussion of the author's father?

- A. He was a master craftsman of vessels and was born to be a sailor just like his son.
- B. He was a loner who preferred to spend his time in the woods than on the sea.
- C. He was a talented builder of boats but was unable to navigate the ocean.
- D. He was a planner of voyages but never took the initiative to sail the sea.

2. The author uses which method to develop the second paragraph?

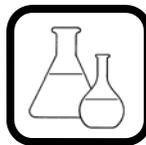
- A. a series of anecdotes regarding his life experiences with being a sailor
- B. a chronological account of his innate connection to sailing and the sea
- C. a description of the author's attempts at various careers
- D. a list of factual information in reference to the qualities desired in a sailor

3. The main point of the fourth paragraph is that:

- A. the author's whole life revolved around the sea.
- B. the author was determined to travel to as many places as he could during his life.
- C. the author was never able to choose his own destination.
- D. the author spent so much time on the sea that he forgot the customs of the land.

4. The author's feelings towards the changes in the treatment of vessels by the end of the excerpt can best be described as:

- A. disappointed
- B. enthusiastic
- C. indignant
- D. supportive



CCRA SCIENCE – SAMPLE QUESTIONS

35 Minutes - 40 Questions

Sample Passage I

A group of students conducted an investigation to find out how adding different substances to water affects water's boiling point. Four different substances were massed and stirred into 500 mL of distilled water, producing four different solutions. Each solution was heated, and the boiling point of each was determined. A list of the substances used to make the solutions is shown in Table 1.

Substance	Amount of Substance Added to 500 mL of Water (in grams)
NaCl	10.0
MgCl ₂	5.0
AlCl ₃	5.0
BaCl ₂	10.0

Table 1

The teacher reminded the students that any time a solute is added to water, the boiling point increases. The results of the students' investigation are shown in Figure 1.

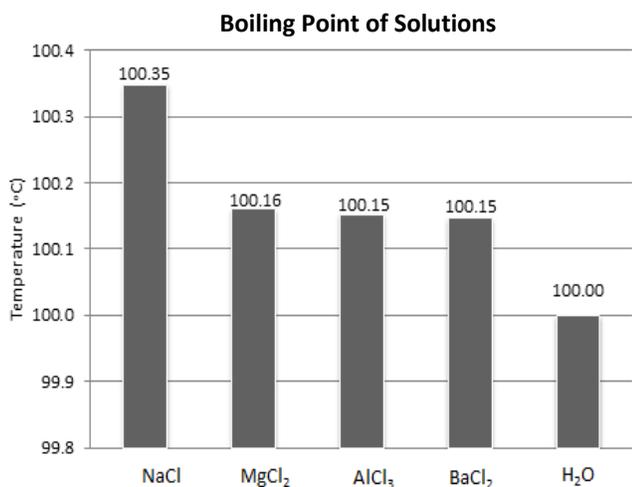


Figure 1

1. Which solute caused the *greatest* change in boiling point?

- A. AlCl₃
- B. BaCl₂
- C. MgCl₂
- D. NaCl

2. Assume there is standard pressure. What is the boiling point of pure, distilled water?

- A. 100.00°C
- B. 100.15°C
- C. 100.16°C
- D. 100.35°C

3. The teacher provides a mystery solution that is the same as one of the solutions the students made. The students determine that the boiling point of the mystery solution is 100.33°C. Which substance is the *most likely* solute the teacher used to make the mystery solution?

- A. AlCl₃
- B. BaCl₂
- C. H₂O
- D. NaCl

4. Students are asked to determine the boiling point of a solution that contains 30.0 grams of NaCl in 500.0 grams of water. Which is the *most likely* boiling point of this solution?

- A. 100.00°C
- B. 100.15°C
- C. 100.35°C
- D. 101.05°C



5. The students are asked to mix a solution that contains 5.0 grams of BaCl_2 in 250.0 grams of water. What is the boiling point of this solution?
- A. 100.00°C
 - B. 100.15°C
 - C. 100.16°C
 - D. 100.35°C
6. An unknown solution is provided to the students. They are told that the solution contains 2.0 grams of an unknown solute in 100 grams of water. The solution boils at 100.14°C . Which is the *most probable* identity of the unknown substance?
- A. AlCl_3
 - B. BaCl_2
 - C. MgCl_2
 - D. NaCl