Question 1-11 are based on the following passage.

A Work in Progress: The Periodic Table

1 How long does it take to write a chemistry textbook? Now a ubiquitous sight in chemistry classrooms everywhere, 2 the conception of this orderly arrangement of the elements was due to the nineteenth-century Russian chemist Dmitri Mendeleev while he was writing a textbook on general chemistry. The basic 3 principle of Mendeleev's periodic order of elements have remained the same, even as it has grown in size. This key development in the history of science still defines our contemporary understanding 4 of matter in today's times.

1

Which choice most effectively introduces the main topic of the passage?

A) NO CHANGE
B) Which elements in the periodic table are the most important?
C) What important discoveries were made by Russian scientists?
D) Where did the modern periodic table come from?

2

A) NO CHANGE
B) Dmitri Mendeleev, a nineteenth-century Russian chemist, conceived this orderly arrangement
C) the nineteenth-century Russian chemist Dmitri Mendeleev conceived this orderly arrangement of the elements
D) this orderly arrangement of the elements was conceived by the nineteenth-century Russian chemist Dmitri Mendeleev

3

A) NO CHANGE
B) principles
C) principals
D) principal

4

A) NO CHANGE
B) and how we think about matter in today's times.
C) of matter.
D) and how we think about matter.

ROYS 印刷

[1] Like many scientific breakthroughs, 5 Mendeleev was partially anticipated by the work of other scientists. [2] For example, the French geologist Alexandre-Emile Béguyer de Chancourtois is generally credited with discovering periodicity—the existence of recurring trends across 6 elements—in 1862. [3] Another key observation was made the following year by the British scientist John Newlands, who noted that similar elements were often related in mass by a multiple of eight. [4] By Mendeleev's own account, de Chancourtois and Newlands were among those "foremost" in research that led to the discovery of this law. 7

5

A) NO CHANGE

B) Mendeleev's periodic table

C) this

D) it

6

A) NO CHANGE

B) elements,

C) elements;

D) elements

7

The writer wants to add the following sentence to the paragraph.

This mathematical relationship, named the "Law of Octaves" by Newlands, would later be defined as the 'periodic law.'

The best placement for the sentence is after

A) sentence 1.

B) sentence 2.

C) sentence 3.

D) sentence 4.

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While not the first scientist to attempt a comprehensive organization of the elements, Mendeleev did publish a paper in 1869 with the first draft of the modern periodic table. In this table, families of elements were arranged horizontally; however, Mendeleev eventually revised this format to the vertical structure found in contemporary chemistry textbooks. 8 Based on the patterns he observed, Mendeleev suggested that the properties of elements are a reflection of their atomic weight. Also based on these patterns, Mendeleev made concrete predictions about elements that had yet to be discovered. For instance, Mendeleev predicted the discovery of two elements analogous to aluminium and silicon; these were later discovered to be gallium and germanium. 9 This predictive power became one of the defining characteristics of the periodic table.

8

Which choice most effectively combines the underlined sentences?

A) Mendeleev made concrete predictions about elements that had yet to be discovered, and before this he even suggested, based on the patterns he observed, that properties of elements are a reflection of their atomic weight.

B) Based on the patterns he observed, Mendeleev not only suggested that the properties of elements are a reflection of their atomic weight, but he also made concrete predictions about elements that had yet to be discovered.

C) Mendeleev made concrete predictions, based on the patterns he observed, about elements that had yet to be discovered, although he also suggested that the properties of elements are a reflection of their atomic weight.

D) Elements that had yet to be discovered, according to Mendeleev, could be predicted concretely, and he also suggested that the properties of elements are a reflection of their atomic weight, based on the patterns he observed.

9

The writer is considering deleting the underlined sentence. Should the sentence be kept or deleted?

A) Kept, because it effectively concludes the paragraph by tying the discussion back to the passage's focus on the periodic table.

B) Kept, because it provides evidence to support the argument that Mendeleev's periodic table was anticipated by the work of previous scientists.

C) Deleted, because it unnecessarily repeats evidence about the the specific elements which Mendeleev predicted.

D) Deleted, because it blurs the paragraph's focus on the predictions Mendeleev made about the discovery of future elements.

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CONTINUE

The periodic table proposed by Mendeleev was the culmination of many observations and discoveries—10 unfortunately, many of his peers were reluctant to accept his ideas. From electronegativity to electron orbitals, the periodic table 11 anticipating many future topics of scientific inquiry. Even today, scientists use the predictive power of the periodic table to generate new hypotheses and design experiments that further expand our understanding of the universe.

10

Which choice best establishes the main topic of the paragraph?

A) NO CHANGE
B) however, the accomplishments of his predecessors are not always acknowledged.
C) the mathematical order of the universe was central to his success.
D) but, like every culmination, this end was also a beginning.

11

A) NO CHANGE
B) anticipated
C) that anticipated
D) that anticipating

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