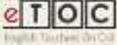


1 *For Teachers: When you use Dual method, please have the students do the shadowing after you. Then*
 2 *have them read by them self. And correct their pronunciation, through all of this material.*

3 イートックのレッスン以外で使用禁止。Ban using this without eTOC

4  Part2 Lesson10.G2-3C-2018.3chobundokkai スマホの方は横にご覧下さい

4 ***Female Pioneers***

5 Since the computer's invention, many of the people famous for working in
 6 computer science have been men. Even now, only about 25 percent of people
 7 working in computer-related fields in the United States are women. Even now,
 8 only about 25 percent of people working in computer-related fields in the United
 9 States are women. However, some of the first computer programmers were a
 10 group of American women who worked at the University of Pennsylvania in the
 11 1940s. They made a huge contribution to the development of modern computers,
 12 but for many years their work was largely forgotten. During World War II,
 13 many American men were fighting overseas. As a result, women were needed for
 14 jobs that were traditionally done by men. For example, in 1942, the U.S. Army
 15 hired a group of women who had studied math in university.

16 **Further Questions & Sample Answers** *For Teachers: Please use the direct method like CALLAN*
 17 *for this part. 1. Ask student to answer the question on their own first. 2. Then read the "sample answer". 3. Tell*
 18 *student to close their eyes. 4. Let them repeat after you again. Because student can't see the answer. 5. Have the*
 19 *student try to memorize the answer. 6. Once they have memorized the answer, ask the question one last time.*

20 **1) What is the percentage rate of women working in computer-related fields in**
 21 **the United States?**

22 *1) Only about 25 percent of women working in computer-related fields in the US.*

23 **2) Who made a huge contribution to the development of modern computers but**
 24 **their work was largely forgotten.**

25 *2) The Women worked at the University made a contribution to the development*
 26 *of computers.*

27 The U.S. Army needed to understand where and how its rockets and bombs
 28 moved, so the army asked the women to do the calculations. At first, the women
 29 worked with desk calculators. Each calculation took one woman about 20 hours
 30 to complete. To reduce the time, it took to complete these calculations, the army
 31 developed a special computer in 1943. It was called ENIAC, and it was designed
 32 by engineers at the University of Pennsylvania. The computer was big enough to
 33 fill a whole room and had to be programmed before each calculation. Six women
 34 were chosen to develop a way to program the computer. Their names were
 35 Kathleen Antonelli, Jean Bartik, Betty Holberton, Marlyn Meltzer, Frances
 36 Spence, and Ruth Teitelbaum.

37 **Further Questions & Sample Answers** 

38 **3) About how many hours does a woman complete a calculation?**

39 *3) A woman completed about 20 hours to complete each calculation.*

40 **4) What was developed in 1943 to reduce the time to complete the calculations?**

4) The army developed a special computer in 1943.

41 Although it could sometimes take a long time to program the computer for a
 42 calculation, once the computer was programmed, it only took 30 seconds to
 43 complete each calculation. Although the women created one of the first
 44 computer programs, few people remembered them. Then, in 1986, a young female
 45 student at Harvard University, Kathryn Kleiman, was researching women in
 46 computer science. She came across a photo of the six women working with
 47 ENIAC. She began to research the women's contribution and eventually made a
 48 documentary about them. Finally, the women were recognized for the big role
 49 they had played in the development of modern computing. Kleiman believes that
 50 remembering these women is important because it will encourage more women to
 51 take up careers in computer science.

Further Questions & Sample Answers

- 53 **5) Who came across a photo of six women working with ENIAC?**
 54 **5) Kathryn Kleiman came across a photo of the six women working with ENIAC.**
 55 **6) Why did Kleiman believe that remembering these women was important?**
 56 **6) She believed that they will encourage women to take up careers in computer science.**

57 **(34) What is true about computer programming?**

- 58 1. Most people had forgotten that some of the first computer programmers were female.
 59 2. A majority of people who study to become computer programmers are women.
 3. Male computer programmers have trouble finding jobs in the modern economy.
 60 4. Most of the men working in computer programming studied at the University of Pennsylvania.

61

62 **(35) What happened during World War II?**

- 63 1. Women began doing jobs which had mostly been done by men before the men went to war.
 64 2. Men who had studied math in college often found it difficult to find a place to work.
 65 3. The U.S. Army calculated the time it took to build rockets and bombs.
 66 4. The U.S. Army hired a group of women to fight along with men overseas.

67

68 **(36) ENIAC was**

- 69 1. a special program where women could learn how to develop new computers.
 70 2. a device that could quickly do calculations that took humans a long time to complete.
 71 3. an event held by the U.S. Army to increase the security of their computers.
 72 4. a type of device that was used by computers to increase the speed of their calculations.

73 (37) *What did Kathryn Kleiman do?*

- 74 1. She created a group to support women who want to become computer programmers.
- 75 2. She made a documentary about a group of women who helped develop modem computer programming.
- 76 3. She became the first woman to get a degree in computer programming at Harvard University.
- 77 4. She developed a new way to use computer programming to create movies.

78

79 (38) *Which of the following statements is true?*

- 80 1. Women calculated the movements of rockets and bombs for the U.S. Army during World War II.
- 81 2. Kathryn Kleiman began teaching computer science at Harvard University in 1986.
- 82 3. The first computer was so large that it took two days for a group of women to repair.
- 83 4. About 75 percent of young American women have said that they will study computer science.



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84 Answers: (34)1 (35)1 (36)2 (37)2 (38)1