Reaching for Space

#narrative_writing
#diversity_in_science #be_the_change

WARM-UP

Below are pictures of four famous people from different ethnic groups. Their life stories all have great significance in certain fields. Match each picture with the correct statement (A–D) based on the visual clues you find in the pictures.

1.

2.

3.

4.



Martin Luther King



Ellen Ochoa



Ang Lee



Kamala Harris

- (A) The first female vice president of the United States of America.
- (B) The first Asian to win the Academy Award for Best Director at the 85th Academy Awards.
- (C) An African American who received the Nobel Peace Prize for his devotion to racial equality. He is known for his "I Have a Dream" speech.
- (D) The first Hispanic woman to go into space. She worked as a research engineer at NASA.



Katherine Johnson was an African-American woman with a talent for math. She worked at NASA to help with space programs. Despite the challenges of being a black woman, she pushed the limits to achieve her dream. This passage, which is based on her life story, is written in the first person.



READING

Reading Strategy: Sequencing

Sequencing words are used to identify important elements of a story and help you understand how several events are put together in the correct time order in a text. You can better understand the order of a series of actions or events with these words.

In the beginning	Soon	Eventually
To begin/start (with)	After that	Finally

Reading Strategy Check

Read through the passage below and then put the following statements in the correct time order by using some of the sequencing signal words you learned above.



- (A) Johnson went to work at NASA and tried her best in an unfriendly environment.
- (B) Johnson encouraged people in different fields around the world.
- (C) Katherine Johnson, an African-American girl, was born in West Virginia.
- (D) Johnson started to play a big part in space missions and got the nickname "human computer."
- (E) Because of her contributions, Johnson was given the Presidential Medal of Freedom.
- (F) Johnson's hard work helped send the first American astronaut to the Moon.

 \rightarrow ____ \rightarrow ___ \rightarrow ___ \rightarrow

Paragraph 1 starts the story with the background of Johnson's early life. 1 My name is Katherine Johnson. My story began in 1918, when I was born into an African-American family

in West Virginia. Before I went to high school, my teachers

5 noticed how good I was at math. Because of my talent and hard

work, I was one of the few African-American girls who could study in college. After college, I got a job at NASA to help with American space programs. My dream was to use my gift to make a difference to the world.

2 However, it was not easy for me to achieve this dream, as 10 most African Americans still did not have equal opportunities in life even after slavery ended, especially women. The work environment at NASA was not friendly to minority populations during the 1950s either. Most of the scientists there were white men, and women like me had to work in other offices. I didn't 15 know whether I could adapt to or succeed in a man's world.

Yet, I was determined to go all out at work and quickly became an important figure in space missions. NASA scientists noticed my math skills and even called me a "human computer." In 1962, John Glenn was the first American to fly around the 20 Earth in space, and I was one of the key mathematicians who made it happen. Soon, I became part of the team that planned to



Paragraph 2 introduces the challenges Johnson faced.

Discourse Focus

In Paragraph 2, which word shows and highlights the difference between Johnson's dream and the actual environment?

Paragraph 3 talks about all of the key events that led to Johnson's success in her job.

Discourse Focus

In Paragraph 3, which two words serve as transitions to show contrast in the context? Paragraph 4 shows although Johnson's success was not recognized, she still stayed positive.

Discourse Focus

In Paragraph 4, which two words draw contrasts between different pieces of information?

Paragraphs 5-6 describe how the world sees Johnson now and what her life's work means to her. put humans on the Moon for the first time. The scientists then used computers to calculate the flight paths of spaceships, but they needed me to check the data again. Finally, our hard work paid off as the world watched American astronauts take the first steps on the Moon.

- During my career, I didn't think anyone would remember me,
- 30 but I was always proud of my achievements and never stopped growing. Just like what I once said, "I don't have a feeling of inferiority. Never had. I'm as good as anybody, but no better."
 - Thankfully, more attention is given to African-American women today. As a result, my work was publicly recognized. In
- Freedom for opening up the frontiers of space.

 I feel very honored to be an example of what

 African-American women can achieve.



- 6 Finally, I would like to encourage you all, regardless of race,
- 40 gender, or age, to do your best in the **field** you love. Always remember that if you keep pushing the limits with your talents and **efforts**, you too can make a difference.

"

"I don't have a feeling of inferiority. Never had. I'm as good as anybody, but no better."

GRAPHIC ORGANIZER

Besides sequencing events in order of time, another way of storytelling is creating story maps by identifying the main parts of a story, such as who the main character is, what the background is, and what the key message is. The passage presents Katherine Johnson's life story and her contributions. Fill in each of the blanks below with the correct word or phrase (A–G) to help you better understand the story behind her success. The first one has been done for you.



Who was Katherine Johnson?

• She was ¹ (E) who had a talent for math.

- (A) Push your limits
- (C) helped John Glenn
- (E) an African American
- (G) unfriendly to minorities
- (B) NASA
- (D) received
- (F) inferiority

Where did Johnson work?

• She worked as a mathematician at

What difficulties did Johnson face?

- Most scientists in NASA were white men.
- The environment at NASA was ³

Katherine Johnson

When did Johnson's major achievements take place?

- She ⁴_____ become the first American to fly around the Earth in 1962.
- She planned the first human trip to the Moon in 1969.
- She ⁵____ the Presidential Medal of Freedom in 2015.

What messages do Johnson's story deliver?

- 6 ____ with your talents and effort.
- Everyone can make a difference regardless of race, gender, or age.

How did Johnson succeed?

- Proud of her contributions
- Never stopped growing
- No feeling of ⁷

READING COMPREHENSION

I. Choose the correct answer to each question.

) 1. What is the passage mainly about?

Main Idea

- (A) The unfriendly environment at NASA.
- (B) The history of the Presidential Medal of Freedom.
- (C) The hard work of a talented African-American woman.
- (D) A screening test for people who want to get into NASA.
- () 2. Which of the following statements is true about Johnson?
 - (A) She was one of the first astronauts who landed on the Moon.

Details

- (B) As a mathematician, she helped create the first computer in the world.
- (C) She was the first woman to be given the Presidential Medal of Freedom.
- (D) She was a key figure who contributed to John Glenn's trip around the Earth.
- () 3. Which of the following phrases best describes the narrator's message?
 - (A) Better late than never.

Inference

- (B) Stay hungry, stay foolish.
- (C) Actions speak louder than words.
- (D) Where there's a will, there's a way.

ADVANCED

CRITICAL THINKING

- 1. What words or phrases would you use to describe the social and work environments during the time Katherine Johnson went to school and joined NASA?
- 2. What would you do if you were in Katherine Johnson's shoes? Would you give up your dream in the face of the difficulties Johnson encountered, or would you choose a different way to deal with these difficulties?
- 3. Katherine Johnson's story carries the message that with abilities and effort, anyone can overcome challenges in life. Have you had such an experience or heard of similar stories? Talk about this with your classmates.



Narrative Writing



Narrative writing is basically storytelling. It typically includes structured information about settings, characters, and a series of events that make up the whole story.

Narrative writing can be widely applied to almost all forms of storytelling, such as fairy tales, fables, novels, autobiographies, and even jokes.



The unit's passage tells the life story of Katherine Johnson in order of time. She worked as a mathematician at NASA, overcame prejudice against black women during the 20th century, and was finally recognized as an important figure in the field of space exploration.

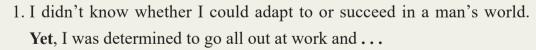
DISCOURSE FOCUS

Transitions: Contrast

The following group of transitions can be used to show the opposite relationship between two things.



Adverbs	Adverbs however, nevertheless, in contrast	
Conjunctions	but, yet, while, although	
Prepositions	despite, in spite of	

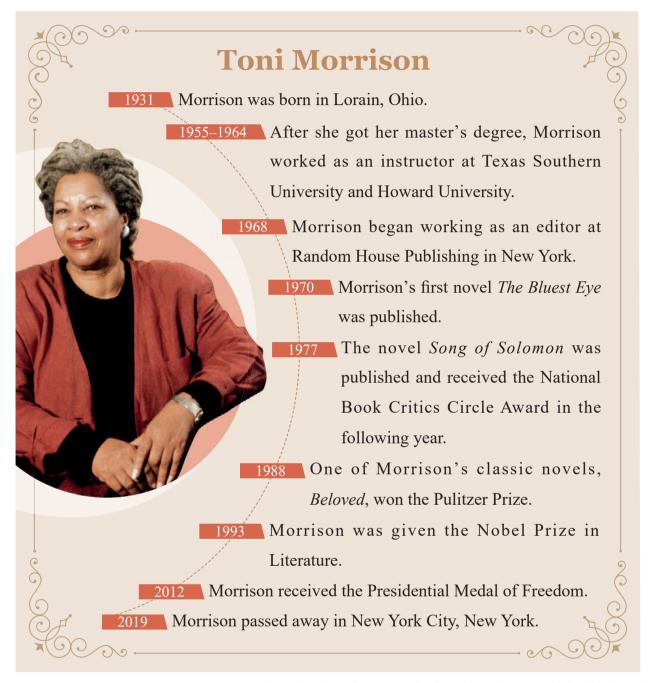




- → In the unit's passage, "yet" shows the contrast between Johnson's determination and the unfriendly environment which is described in the previous paragraph.
- 2. **Despite** my contributions, the public knew little about me.
- → In the passage, "despite" is used to make a contrast between the result of Johnson's effort and her reputation.

INFORMATION VISUALIZATION

Like Katherine Johnson, Toni Morrison is also an example of what African-American women can achieve. The following timeline shows several events in Morrison's life.



Source: www.pbs.org/wnet/americanmasters/toni-morrison-biographical-timeline/14516/

Toni Morrison was one of the most influential writers in African-American literature. Her books usually bring up gender, race, and social issues, and particularly focus on the experiences of black women. The stories in her books describe black women's struggles to survive and to find their identities. In 1993, Morrison became the first African-American woman to receive the Nobel Prize in Literature. The Nobel Prize judges described her as one who "gives life to an essential aspect of American reality."

- () 1. Which of the following is **NOT** directly presented in the timeline on page 128?
 - (A) Morrison's birth year.
 - (B) Morrison's work experience.
 - (C) Morrison's success in literature.
 - (D) The development of Morrison's writing styles.
- () 2. Which of the following statements is true about Toni Morrison?
 - (A) She was given the Nobel Peace Prize.
 - (B) Her first published novel is *Song of Solomon*.
 - (C) She used to teach in college and work as an editor.
 - (D) She was the first black woman to win the Pulitzer Prize.
- () 3. Jessica is preparing a report on Toni Morrison for her literature course. What topic(s) may be included in her report? Choose the correct answer(s) from (A) to (E) below.
 - (A) How to hide one's identity.
 - (B) White people's struggles in society.
 - (C) The social issues in Morrison's novels.
 - (D) A special recipient of the Presidential Medal of Freedom.
 - (E) A short introduction to *Beloved*, a Pulitzer Prize-winning novel.

VOCABULARY

Words for Production

talent ['tælənt]

▶ n. [C] a natural ability to do something well 天分,天賦 a talent for (doing) something

- achieve
 [ə`tʃiv]
- I'm impressed with Harry's talent for art. Although he is only six, the animals he draws look very real.
- 1.1.-----
- ▶ vt. to succeed in doing something 實現,達成

achievement

• Zoe has worked hard for many years to achieve her goal of becoming a lawyer.

[ə`t[ivmənt]

▶ n. [C] 成就,成績

a(n) great/fine/impressive achievement

- My grandfather told me about his great achievements, including founding a sports club and publishing a best-selling novel.
- opportunity
 [,apo`tjunəti]
- ▶ n. [C] (pl. opportunities) a chance to do something or a situation where someone can do something easily 時機,機會

take an opportunity to do something

- Andrew often shares his thoughts and ideas with the class because he wants to take every opportunity to improve his communication skills.
- especially
 [ə`spɛ[əlɪ]
- ▶ adv. particularly 尤其,特別
- It is very important for people to have a good night's sleep, especially children. Sleep has been proven to be a factor that greatly affects child development.
- minority
 [mai`noreti]
- ▶ n. [C] (pl. minorities) a small group of people in society that is different in race, religion, culture, etc. from the rest 少數 (群體)

a minority group

- Evelyn was born into a Chinese-American family living in America. They belong to a minority group there, since only 1.5% of the U.S. population are Chinese Americans.
- ▶ n. sing. a smaller group of people or things 少數
- A lot of people participated in this program, but those who completed it were in the minority.

minor

[`maina-]

6 adapt
[ə`dæpt]

7 succeed
[sək`sid]

success

[sək`ses]

8 determined
[dı'təmınd]

determine

[di`tsmin]

determination

[di_tsmə\neson]

- ▶ adi. 較不重要的,輕微的
- Don't worry too much about the minor mistakes in your paper. Instead, you should focus on how to present the main idea better.
- ▶ vi. to change one's ideas, behavior, or attitudes in order to deal with a new situation 適應(新狀況)

adapt to something

- This foreign student adapted to life in Taiwan well. He not only made some good friends but also fell in love with the local culture.
- ▶ vi. to achieve something that someone is trying to do 成功, 達成目標

succeed in doing something

- Ryan finally succeeded in winning Emily's heart by helping her get through a difficult time.
- ▶ n. [C] 成功
- With the success of her new songs, the singer has become famous all around the world.
- ▶ adj. having strong feelings to do something without being stopped by someone or something 堅決的,下定決心的

be determined to do something

- After his mother recovered from cancer, Carlos realized the importance of staying healthy and was determined to take good care of his parents.
- ▶ vt. (fml.) 決定, 裁定
- The school committee called a meeting and determined that they would celebrate the school's birthday by holding a school fair.
- ▶ n. [U] 決心

determination to do something

• The pianist practiced with great determination to win first prize in the competition.

9 figure [`figjo]

▶ n. [C] someone who is important or well-known in a certain field or in some way (重要或知名的) 人物

a key/leading figure

- When it comes to silent movies, Charlie Chaplin is definitely a key figure. He is also regarded as one of the most influential filmmakers in history.
- ▶ n. [C] (usu. pl.) a number that shows an amount 數字,數據 sales/trade figures
 - Thanks to its effective marketing strategy, the yearly sales figures of this online clothing store have doubled, and they are up to ten million dollars now.
- ▶ vt. (infml.) 弄清楚, 弄明白
- I can't figure why Tim went outside late last night without putting on his shoes.
- ▶ n. [C] an important task that is given to someone 任務

a mission to somewhere

- During a military mission to Iraq, the captain lost all of his crew members in a bomb attack.
- ▶ vt. to find out the number or amount of something by using numbers 計算
- We calculated the total cost of the trip to find out how much each of us would have to spend to tour Tokyo for a week.
- ▶ prep. in spite of 儘管,即使
- Despite the heavy rain, many people still took part in the Sun Moon Lake triathlon and finished the race.
- ▶ n. [C] a service or an action which helps or causes something to happen 貢獻

make a contribution to/toward something

- Leo made a great contribution to our team by suggesting a way to work more efficiently.
- ▶ vt. 捐助,捐獻

contribute something to/toward something

• The kind-hearted woman regularly contributes US\$200 to the charity in order to help stray animals.

figure

[`figja-]

- mission [ne]im']
- calculate
 [`kælkjə_let]
- despite [dr`spart]
- contribution
 [,kantrə`bjuʃən]

contribute

[kən`trıbjut]

career [kəˈrɪr]

- ▶ n. [C] a job that someone has done for a long time and usually involves more money and responsibilities 生涯,職業
- Elena loves her acting career and hopes that more and more people will enjoy the plays she performs in.
- attention
 [ə`tenʃən]
- ▶ n. [U] the interest, notice, thought, etc. that is given to someone or something 關注,注意

catch one's attention

- At the ball, a beautiful lady caught Luca's attention. He couldn't help but watch her dance all night.
- recognize
 ['rɛkəg,naɪz]
- ▶ vt. to accept or have positive opinions of someone or something

be recognized as something

- Hayden's first novel features vivid descriptions of nature, and he was thus recognized as one of the best writers of the last decade.
- ▶ vt. to know someone or something from past experience 辨認,認出
- Kate hadn't seen me for years, but she recognized me immediately when she saw me walking down the street.
- recognition

[ˌrɛkəg`nɪʃən]

- ▶ n. [U] 辨認,認出
- The town has changed beyond all recognition. I can't believe this is the place where I spent my childhood.
- receive [rɪ`siv]
- ▶ vt. (fml.) to get something that is sent or given 得到,收到 receive something from . . .
- At Christmas, children usually receive gifts from their parents.
- honor [`ana-]
- ▶ vt. to admire or show respect for someone, especially in public 向…致敬

feel/be honored (to do something)

- Joey felt honored to be part of the team that designed this impressive building.
- ▶ n. sing. 光榮, 榮譽
- It is an honor to receive the Best Director Award at the Cannes Film Festival.

[`ana-]

encourage [ɪn`kɜ·ɪdʒ]

▶ vt. to give someone hope or support to do something 鼓勵 encourage someone to do something

• Customers are encouraged to recycle their old clothes. By doing so, they can get a 10% discount.

encouragement
[In'k3-Id3mant]

- ▶ n. [U] 鼓勵
- After Roger Federer won the match, he thanked his fans for their encouragement.

field [fild]

- ▶ n. [C] *an area of work or interest* 專業領域、範圍 **in the field of something**
- After years of hard work in medical school and hospitals, Phoebe became a well-known scholar in the field of medicine.
- ▶ n. [C] an area of land for growing plants or keeping animals 田地,牧場
- When I was little, I often sat beside my family's rice field and watched my grandparents take care of the crops.

- effort [`ɛfət]
- ▶ n. [C] the physical or mental energy someone needs to do something or make something happen 努力

make an effort to do something

• These developers made an effort to add features to make the app useful and enjoyable.

Words for Recognition

- 1 African-American [,æfrɪkən ə`mɛrɪkən] adj. relating to an American whose family originally came from Africa 非裔美籍人士的
 African American [,æfrɪkən ə`mɛrɪkən] n. [C] 非裔美籍人士
- **West Virginia** [,west vo`dʒɪnjə] n. a state in the eastern United States 西維吉尼亞州
- 3 NASA [`næsə] n. abbr. (= National Aeronautics and Space Administration) an American research organization that is responsible for space travel and scientific studies of space (美國) 航空暨太空總署
- 4 slavery [`slevərɪ] n. [U] the system of owning slaves 奴隸制
- **mathematician** [,mæθəmə`tɪʃən] n. [C] someone who studies or is an expert in mathematics 數學家
- 6 flight path [`flait ,pæ θ] n. [C] a route that an aircraft travels through the air 飛行路線

- 7 **astronaut** [`æstrəˌnɑt] n. [C] someone who works in a spacecraft and travels in space 太空人
- 8 inferiority [ɪnˌfɪrɪ`ərətɪ] n. [U] the state of not being as good, smart, important, etc. as someone or something else 低等, 劣勢
- 9 Presidential Medal of Freedom [ˌprɛzə`dɛnʃəl `mɛdl əv `fridəm] n. the highest civilian honor which is given to a person for greatly contributing to world peace, culture, security, etc. 總統自由勳章 presidential [prɛzə`dɛnʃəl] adj. 總統的

medal [`mɛdl] n. [C] 獎牌, 勳章

freedom [`fridəm] n. [U] 自由

frontier [frʌn`tɪr] n. [C] (usu. pl.) the limits of what is known in an area of knowledge (專業領域之) 尖端,疆界

Idioms and Phrases

- **go all out** to use all one's strength and energy to do or get something 全力以赴,卯足全勁
 - To get to the world competition, the team has to go all out to win their remaining three games.
- **2 pay off** to bring benefits or have good results 取得成功,有所回報
 - To Cynthia, all her hard work as a singer paid off when her first album became a hit.
- **3** regardless of without being influenced by someone or something 不管,不論
 - The online forum is open to all high school students who are interested in science, regardless of where they live.
- **push the limits** to try to go beyond what is thought to be possible or acceptable 超越極限
 - Those top athletes constantly push the limits in training and performance to prepare for the coming Olympic Games.

SENTENCE STRUCTURE



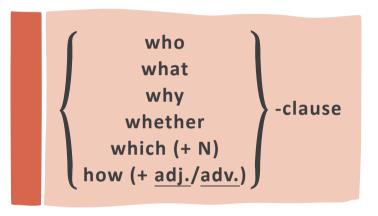
Imagine How Great Working with US Would Be!

Now United Space (US) is hiring outstanding mathematicians! If you've got the talent to deal with numbers as fast as a calculator, don't hesitate to apply!

Send us your application and show us what you are capable of.

JOIN US!

Computing and Space Exploration Section | United Space Technologies Crop. (US)



What is it?

- 1 本課句型為「疑問詞所引導的名詞子句」,作為主詞,或是動詞及介系詞之受詞。
- 2 「疑問詞」包含 who、what、why、whether、which (+ N)、how (+ <u>adj./adv.</u>)。要使用哪一個疑問詞須由句子語意決定。

Examples

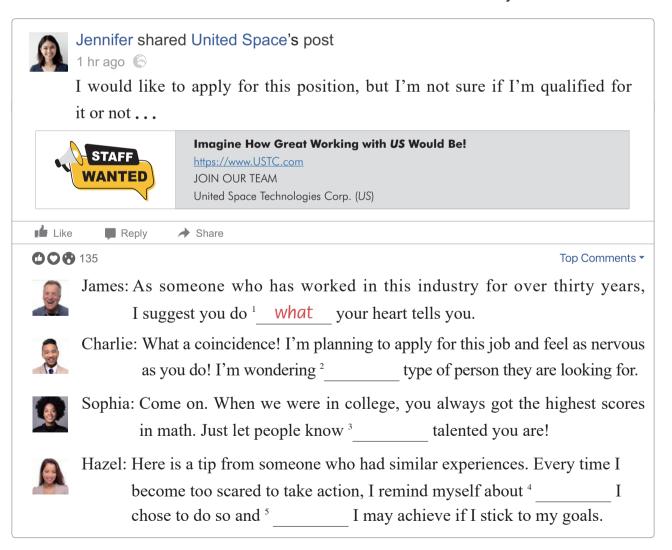
	Noun Clause		
1 My teacher noticed	how good I was at math.		
2 I didn't know	whether I could adapt to or succeed in a man's world.		
3 Just like	what I once said, "I don't have a feeling of inferiority. Never had. I'm as good as anybody, but no better."		
4 I am an example of	what African-American women can achieve.		

How to use it

- 此句型作句中主詞時,疑問詞所引導之名詞子句視為單數:
 - → Whether you are good at math does not matter. What really matters is your passion.
- 2 此句型作動詞或介系詞的受詞時:
 - → Lucy couldn't remember where she put her keys.
 - → We are all confused about why Tom chose to drop out of school.

Exercise

Jennifer is a mathematician. After she saw the United Space Technologies Corporation's job ad on a job platform, she shared the job ad on her social media. The following are Jennifer's post and other people's replies. Complete the replies with the sentence structure of this unit. The first one has been done for you.



Extended Exercise ADVANCED

Katherine Johnson, an important figure in the reading of this unit, is in fact the main character of the movie, Hidden Figures. It tells Johnson and other women's real-life stories in NASA. The following are four reviews of this movie. Complete the reviews by using the sentence structure of this unit. The first one has been done for you.

Susie Marotta ★★★★ September 1						
An outstanding movie directed by Theodore Melfi. I was so impressed by 1 how hard						
those three gifted women worked (hard/worked/those/how/three gifted women) at						
NASA Langley Research Center.						
Macy McDonald ★★★★ August 25						
An inspiring work indeed! Three brilliant black women experienced many difficulties at						
work. Regardless of ² (they/who/are), everyone						
deserves an equal job opportunity. Also, these brave women encourage us to consider						
(suits/which/us/career choice/the						
best).						
Johnny Brunson ★★★★ August 14						
Katherine Johnson was not afraid of any racial and gender discrimination. She let the						
whole world know ⁴ (mathematical/what/got/						
talent/she). NASA even named the research center's Computational Building after her. A						
must-see movie!						
Richard Cruise ★★★★ July 30						
Hidden Figures reminds us of the ugly history of space science. Because of these bright						
Hidden Figures reminds us of the ugly history of space science. Because of these bright						
Hidden Figures reminds us of the ugly history of space science. Because of these bright and hard-working women, great progress has been made in this field. However, I am						

INTEGRATED ACTIVITY









I. Huda Shaarawi was one of the role models who fought for women's rights in Egypt. Read the passage below and use the sequencing strategy to answer the following questions. You can pay attention to certain signal words to better understand the order of each event.



Huda Shaarawi 1879-1947 Nationality: Egyptian

Huda Shaarawi's unusual story started in the late 19th century. She was born and raised in a rich family, so she had the opportunity to get a good education, which was rare for women at that time. However, her life was still restricted by her society's traditions. When she was 13, she was forced to marry her 40-year-old cousin. When she went outside, she had to wear a veil all the time to cover most of her face.

After adulthood, Shaarawi started to use her knowledge and experience to make an impact. In the late 1910s, she was one

of the leaders of the Wafd Party, which fought for independence from the British. Then, she started to turn her attention to women's rights. In 1923, Shaarawi formed the Egyptian Feminist Union, which focused on women's rights in politics and education. In the same year, she shocked the Muslim world by taking her face veil off publicly, which showed her determination to pursue freedom and encouraged many women to fight against unfair social norms.

Finally, in 1945, Shaarawi received the Nishan al-Kamal award, a national award, for her contribution to women's rights. Although she did not receive the right to vote in her lifetime, she was undoubtedly an important figure in Islamic countries.

-) 1. What is the passage mainly about?
 - (A) A leading figure of Egyptian feminism.
 - (B) The independence movements in Egypt.
 - (C) A list of traditional rules in the Muslim world.
 - (D) An introduction to Islamic clothing for women.

2.	According to the	passage, put the	e following even	ts in Shaaraw	i's life in the	correct time order.
		r , r				

 $\underline{\hspace{1cm}} \rightarrow \underline{\hspace{1cm}} \rightarrow \underline{\hspace{1cm}} \rightarrow \underline{\hspace{1cm}} \rightarrow \underline{\hspace{1cm}} \rightarrow \underline{\hspace{1cm}} \rightarrow \underline{\hspace{1cm}}$

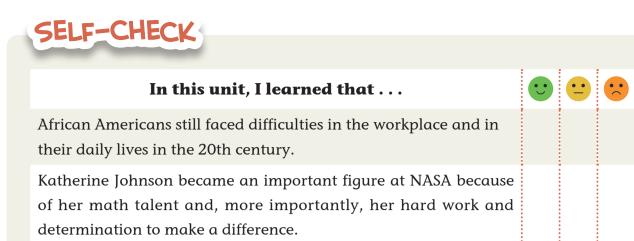
- A. She married her cousin.
- B. She received a national award.
- C. She took off her veil in a public space.
- D. She formed an organization for women's rights.
- E. She joined a political party to fight for Egyptian independence.
- II. Write down the answers to the questions below based on your understanding of the passage on page 139.
- 1. Choose two words from the passage and put them in the correct blanks below. Alterations to the words may be needed to make the sentences grammatical.
 - (1) At that time, women didn't have many rights in Egypt. Very few had the chance to receive education, and they had to be _____ at all times when they went outside.
 - (2) In 1923, Shaarawi stood in public with her face uncovered. This represented her wish for more ______, which encouraged many women to fight against cultural traditions.
- 2. Which word in the first paragraph means "not having freedom of movement or action"?

Speaking Strategy: Listing Points



To list the main points:

- 1. First(ly), ... Second(ly)/Next/Then, ... Third(ly), ... Finally/Lastly, ...
- 2. One is ... Another is ... The other is ...
- III. Work in pairs and practice using the sentence frames above to discuss the following questions with your classmates.
- 1. What cultural traditions do women follow in Egypt?
- 2. What did Shaarawi achieve during her adulthood?
- 3. What are the similarities between Huda Shaarawi and Katherine Johnson that made both of them successful figures in history?



Katherine Johnson could also be considered a fighter for human rights because she broke racial and gender barriers.

everyone can have a chance of success in the field they love through hard work and determination.

NOTE

