

3.3 Stephen Hawking

Warming Up!

1. Get into pairs and match the prominent personalities with the disabilities they had :

'A'	'B'
(1) John Milton	The great German composer and musician who became deaf at the age of 28 years
(2) Beethoven	The great English poet who became blind at the age of 43 years
(3) Stephen Hawking	An American entrepreneur, animator, voice actor, had learning disability
(4) Walt Disney	Famous scientist of the 20 th century who was paralyzed
(5) Albert Einstein	Great inventor who has over 1000 patents had learning disability and became deaf.
(6) Thomas Edison	Great 20 th Century scientist and noted physicist who had learning disability
(7) Hellen Keller	Dancer whose leg had to be amputated because of an accident
(8) Sudha Chandran	Was blind and deaf.
(9) Tanay Grey-Thompson	Had polio and was elected as the President of the United States for four terms.
(10) Franklin Roosevelt	Is a wheelchair racer.

2. Word Building.

- (a) **Reduplication** : The root/stem of a word is repeated exactly the same or with a slight change.
For example, tweet-tweet, pitter-patter, chit-chat, bang-bang, riff-raff.
- (b) **Blending** : Parts of two or more words combine to form a new one.
For example, ● breakfast + lunch = brunch
● smoke + fog = smog
● motor + hotel = motel
- (c) **Clipping** : Reducing a word to one of its syllables or a part of it.
For example, ● Mathematics - Maths
● Advertisement - Ad
● Laboratory - Lab
- (d) **Acronym** : Words formed from the first letter of each of the words involved.
For example, ● radar, scuba, Unicef, Nasa
● BBC, CID, USA, ATM, VIP
● DOB, KYC, PM, GN, TY etc.

In your notebook, write five examples of each of the above types of word-building devices. (You may take the help of a Dictionary/the Internet)



Stephen Hawking

Stephen Hawking (8th January 1942 - 14th March 2018) : He was an English theoretical physicist, cosmologist, author and Director of Research at the centre of theoretical cosmology within the Cambridge University. Hawking was the first to set out a theory of cosmology explained by a union of the general theory of relativity and quantum mechanics. Hawking was an honorary Fellow of the Royal Society of Arts (FRSA), a lifetime member of the Pontifical Academy of Sciences, and a recipient of the Presidential Medal of Freedom, the highest civilian award in the US.

This lesson gives us an insight into the great scientist, his life and his works.

Stephen Hawking (born January 8, 1942) is a British scientist, professor and author who has done groundbreaking work in physics and **cosmology**, and whose books have helped to make science accessible to everyone. At the age of 21, while studying cosmology at the University of Cambridge, he was diagnosed with amyotrophic lateral sclerosis (ALS). Part of his life story was depicted in the 2014 film 'The Theory of Everything.'

Over the years, Stephen Hawking has written or co-written a total of 15 books. A few of the most noteworthy include: The Grand Design, The Universe in a Nutshell, The Theory of Everything.

In 1988 Hawking **catapulted** to international prominence with the publication of A Brief History of Time. The short, informative book became an account of cosmology for the masses and offered an overview of space and time, the existence of God and the future. The work was an instant success, spending more than four years atop the 'London Sunday Times' best-seller list. Since its publication, it has sold millions of copies worldwide and been translated into more than 40 languages.

'A Brief History of Time' also wasn't as easy to understand as some had hoped. So in 2001, Hawking followed up his book with 'The Universe in a Nutshell,' which offered a more illustrated guide to cosmology's big theories.

- **cosmology** : the science of the origin and development of the universe.

- **catapulted** : launched



- **core** : central, basic



- **holy grail** : (here) a thing which is eagerly pursued or sought after

- **dimensions** : aspects, features, facts

- ◆ *What was Hawking convinced of?*



In 2005, Hawking authored the even more accessible ‘A Briefer History of Time,’ which further simplified the original work’s **core** concepts and touched upon the newest developments in the field like String theory.



Together these three books, along with Hawking’s own research and papers, articulate the physicist’s personal search for science’s **Holy Grail**: a single unifying theory that can combine cosmology (the study of the big) with quantum mechanics (the study of the small) to explain how the universe began. It’s this kind of ambitious thinking that has allowed Hawking, who claims he can think in 11 **dimensions**, to lay out some big possibilities for humankind. He’s convinced that time travel is possible, and that humans may indeed colonize other planets in the future.

In September 2010, Hawking spoke against the idea that God could have created the universe in his book *The Grand Design*. Hawking previously argued that belief in a creator could be compatible with modern scientific theories. His new work, however, concluded that the Big Bang was the inevitable consequence of the laws of physics and nothing more. “Because there is a law such as gravity, the universe can and will create itself from nothing,” Hawking said. “Spontaneous creation is the reason there is something rather than nothing, why the universe exists, why we exist.”

The Grand Design was Hawking’s first major publication in almost a decade. Within his new work, Hawking set out to challenge Sir Isaac Newton’s belief that the universe had to have been designed by God, simply because it could not have been born from chaos.



“It is not necessary to invoke God to light the blue touch paper and set the universe going,” Hawking said.

At the age of 21, Stephen Hawking was diagnosed with amyotrophic lateral sclerosis (ALS, or Lou Gehrig’s disease). In a very simple sense, the nerves that controlled his muscles were shutting down. At the time, doctors gave him two and a half years to live.

Hawking first began to notice problems with his physical health while he was at Oxford – on occasion he would trip and fall, or slur his speech – he didn’t look into the problem until 1963, during his first year at Cambridge. For the most part, Hawking had kept these symptoms to himself. But when his father took notice of the condition, he took Hawking to see a doctor. For the next two weeks, the 21-year-old college student made his home at a medical clinic, where he underwent a series of tests.

“They took a muscle sample from my arm, stuck electrodes into me, and injected some radio-opaque fluid into my spine, and watched it going up and down with X-rays, as they tilted the bed,” he once said. “After all that, they didn’t tell me what I had, except that it was not **multiple sclerosis**, and that I was an **atypical** case.”

Eventually, however, doctors did **diagnose** Hawking with the early stages of ALS. It was **devastating** news for him and his family, but a few events prevented him from becoming completely despondent. The first of these came while Hawking was still in the hospital. There, he shared a room with a boy suffering from **leukemia**. Relative to what his roommate was going through, Hawking later reflected, his situation seemed more tolerable. Not long after he was released from the hospital, Hawking had a dream that he was going to be executed. He said this dream made him realize that there were still things to do with his life.

In a sense, Hawking’s disease helped him become the noted scientist he is today. Before the diagnosis, Hawking hadn’t always focused on his studies. “Before my condition was diagnosed, I had been very bored with life,” he said. “There had not seemed to be anything worth doing.” With the sudden realization that he might not even live long enough to earn his Ph.D,

◆ *When did Hawking first notice his health problems?*

- **multiple sclerosis** : abnormal hardening of body tissue
- **atypical** : very unusual
- **diagnose** : detection of a medical condition
- **devastating** : causing a severe shock

- **leukemia** : a malignant progressive disease in which the bone marrow and the other blood forming organs produce increased numbers of abnormal white blood cells



◆ *In the mid 1970's what did the Hawking's family do?*

◆ *Why was Hawking forced to use a wheelchair?*

- **tracheotomy** : an incision in the windpipe made to relieve an obstruction to breathing.

- **peril** : serious and immediate danger

Guess the meaning of :

predicament :

- **sensor** : a device which detects or measures a physical property and records, indicates or otherwise responds to it.

◆ *What do Stephen Hawking works include?*

◆ *What remains a constant anxiety?*

Hawking poured himself into his work and research.

As physical control over his body diminished (he'd be forced to use a wheelchair by 1969), the effects of his disease started to slow down. Over time, however, Hawking's ever-expanding career was accompanied by an ever-worsening physical state. By the mid-1970s, the Hawking family had taken in one of Hawking's graduate students to help manage his care and work. He could still feed himself and get out of bed, but virtually everything else required assistance. In addition, his speech had become increasingly slurred, so that only those who knew him well could understand him. In 1985 he lost his voice for good following a **tracheotomy**. The resulting situation required 24-hour nursing care for the acclaimed physicist.

It also put in **peril** Hawking's ability to do his work. The **predicament** caught the attention of a California computer programmer, who had developed a speaking program that could be directed by head or eye movement. The invention allowed Hawking to select words on a computer screen that were then passed through a speech synthesizer. At the time of its introduction, Hawking, who still had use of his fingers, selected his words with a handheld clicker. Today, with virtually all control of his body gone, Hawking directs the program through a cheek muscle attached to a **sensor**.

Through the program, and the help of assistants, Stephen Hawking has continued to write at a prolific rate. His work has included numerous scientific papers, of course, but also information for the non-scientific community.

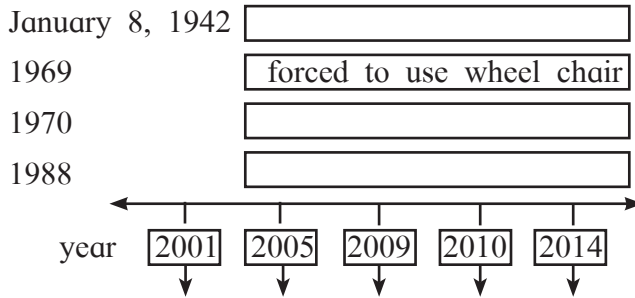
Hawking's health, of course, remains a constant concern – a worry that was heightened in 2009 when he failed to appear at a conference in Arizona because of a chest infection. In April, Hawking, who had already announced he was retiring after 30 years from the post of Lucasian Professor of Mathematics at Cambridge, was rushed to the hospital for being what university officials described as “gravely ill.” It was later announced that he was expected to make a full recovery.

(He passed away on 14th March, 2018.)



ENGLISH WORKSHOP

1. Observe the time line and search the occurrences according to it. Prepare a chart.



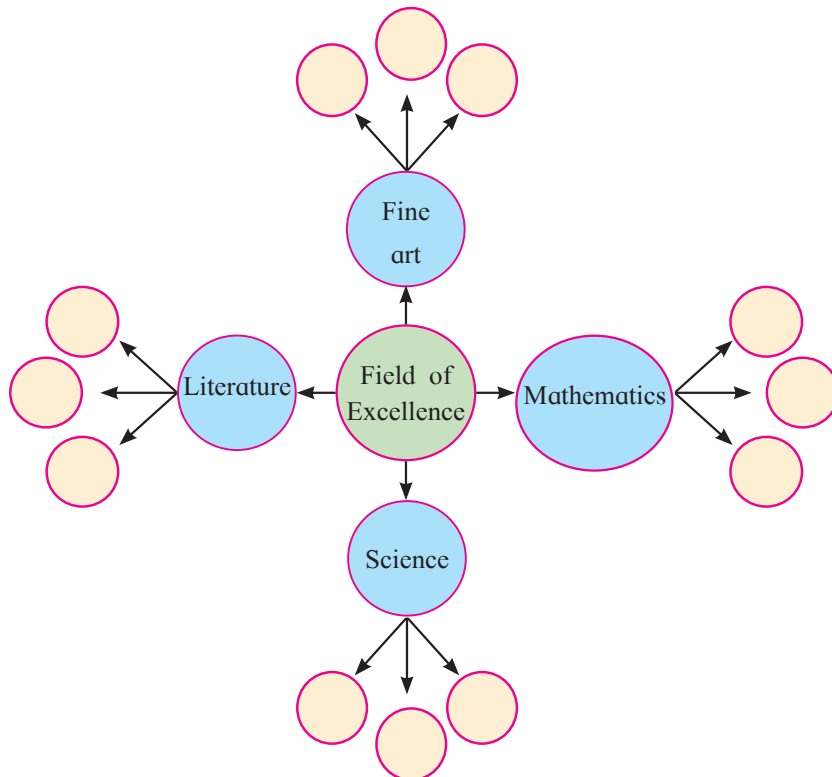
2. Make a list of books written by Stephen Hawking.

Name of the book	What's in it? (topics covered)	His contribution to the world
1.	(a)	
2.	(b)	
3.	(c)	
4.	(d)	

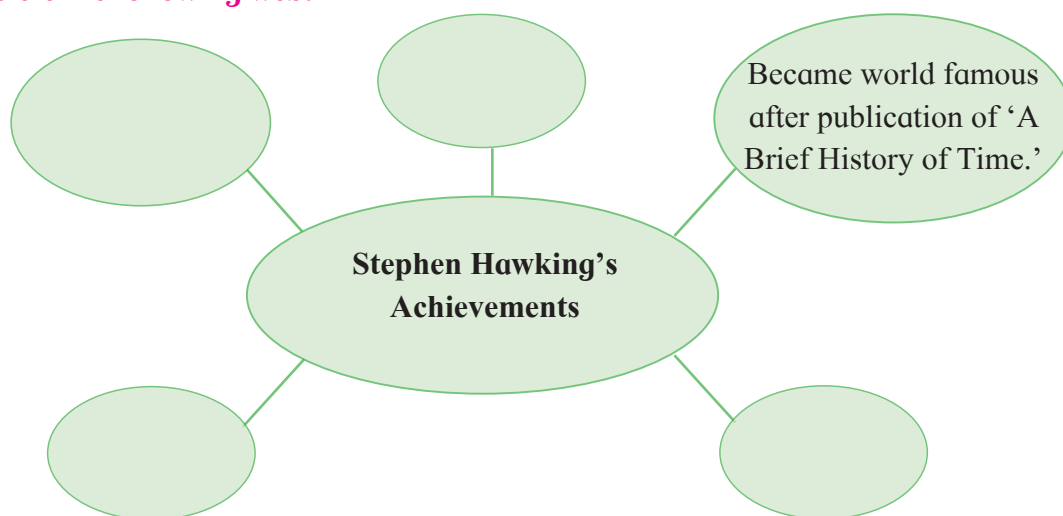
3. Make a list of Hawking's physical disabilities after 1963.

- | | |
|-----------|-----------|
| (a) | (d) |
| (b) | (e) |
| (c) | (f) |

4. Shape your mind. Complete the network of cluster diagram with the name of great personalities and their contribution.



5. Complete the following web.



6. Explain how the life of Stephen Hawking proves the proverb 'Every cloud has a silver lining'. Write it down in your notebook.

7. Do you agree or disagree with the following statements ? Justify your stand/ answer by quoting a line from the text.

- (a) Stephen Hawking was diagnosed with Alzheimer's disease.
- (b) Hawking believed that man cannot live on other planets in the future.
- (c) Though Hawking lost control over his body, he wrote with a prolific rate with the help of assistants.
- (d) Hawking has written or co-written more than 25 books.

8. Following incidents in Stephen Hawking's life are given in jumbled order. Arrange the incidents in proper sequence as per their order of occurrence in Hawking's life.

- (a) Hawking's book 'The Universe in a Nutshell' offered illustrated guide to cosmology's big theories.
- (b) Hawking published the book 'A Brief History of Time' that offered an overview of space and time.
- (c) Hawking was unable to attend a conference in Arizona.
- (d) Hawking was diagnosed with ALS while studying cosmology at the University of Cambridge.
- (e) Hawking published 'A Brief History of Time' that contained the newest development.

9. Fill in the blanks with the proper form of the Verbs as per the Subject :

- (1) Mother a good meal. (cook/cooks)
- (2) Mother and her daughter a good meal. (cook/cooks)
- (3) The rise and fall of the Empire recorded in History. (is/are)
- (4) Neither Ritesh nor Alok well. (play/plays)
- (5) Either of the two guilty. (is/are)



- (6) Everyone mistakes. (make/makes)
- (7) That news published today. (is/are)
- (8) Eight lakh rupees a big amount. (was/were)
- (9) The Committee approved of it. (has/have)
- (10) The cost of all the goods risen. (has/have)

10. From the following sentences, underline the Nouns and encircle their Determiners that specify the noun in a noun phrase.

(articles/possessive pronouns/demonstratives or quantifiers)

- (1) He lost his voice for good.
- (2) Over the years, Hawking has written 15 books.
- (3) These three books articulate his search for science's Holy Grail.
- (4) A few events prevented him from despondency.
- (5) That dream made him realize it.

11. Complete the information from following graphic organiser and prepare summary.

Summary Maker

Title of the text :

- (a) Name of the personality :
- (b) Age :
- (c) Books (As Author) :
- (d) Field of Excellence :
- (e) Achievements :

12. You have come to know from the text that 'The Theory of Everything' is a film describing the life and work of Stephen Hawking. Watch the film on internet and write a complete review of it. You can take help of the following points while writing the review of the film.

- (1) Title
- (2) Characters
- (3) Story
- (4) Dialogues
- (5) Picturisation
- (6) Music
- (7) Special features (if any)
- (8) Opinion / Views
- (9) Message/Moral values.

