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Ready-to-Use English Lessons by Sean Banville

Level 3

Stephen Hawking explained multiverses in final paper

21st March, 2018

https://breakingnewsenglish.com/180321-multiverse.html

Contents

Please try Levels 0, 1 and 2 (they are easier).

THE ARTICLE

From https://breakingnewsenglish.com/180321-multiverse.html

The world-famous physicist and cosmologist Stephen Hawking published an important paper before he died last week. Professor Hawking died on March 14, aged 76. Two weeks before his death, he published his final theory in a paper called "A Smooth Exit from Eternal Inflation". He explained two very important ideas. The first was how humans might be able to detect multiverses. These are parallel universes that were created at the same time as our universe after the Big Bang. The second theory is about how our universe will eventually end, when the stars finally run out of energy. Scientists say his paper could be his most important work ever, and that he could have won a Nobel Prize for it.

Stephen Hawking's new paper started by explaining an older theory of his called inflation. This is when our universe suddenly expanded from a tiny point in space into the billions of stars and solar systems we have today. Hawking suggested there were an infinite number of big bangs and each of them created its own separate universe. He called this collection of universes a multiverse. Hawking wrote that he believed scientists could find the multiverse by using sensors on space ships. Carlos Frenk, a professor of cosmology, said: "These ideas offer the breathtaking prospect of finding evidence for the existence of other universes." Hawking is also famous for his best-selling book "A Brief History of Time".

Sources: https://www.**telegraph.co.uk**/science/2018/03/18/stephen-hawking-leaves-behind-breathtaking-final-multiverse/
http://www.**independent.co.uk**/news/science/stephen-hawking-end-universe-world-death-smooth-exit-eternal-inflation-astrophysics-a8262611.html
http://**metro.co.uk**/2018/03/18/stephen-hawking-predicted-the-end-of-the-world-in-new-research-submitted-before-he-died-7396316/

WARM-UPS

1. OUR UNIVERSE: Students walk around the class and talk to other students about our universe. Change partners often and share your findings.

2. CHAT: In pairs / groups, talk about these topics or words from the article. What will the article say about them? What can you say about these words and your life?

famous / cosmologist / published / death / humans / parallel / universe / Nobel Prize / theory / inflation / space / billions of stars / infinite / sensors / breathtaking / book

Have a chat about the topics you liked. Change topics and partners frequently.

3. SPACE: Students A **strongly** believe there is an end to space; Students B **strongly** believe there isn't. Change partners again and talk about your conversations.

4. THE COSMOS: What do you know about these things in the cosmos? What do you want to know? Complete this table with your partner(s). Change partners often and share what you wrote.

	What I Know	What I Want to Know
Planets		
Stars		
Comets		
Black holes		
Asteroids		
Wormholes		

5. TIME: Spend one minute writing down all of the different words you associate with the word "time". Share your words with your partner(s) and talk about them. Together, put the words into different categories.

6. UNIVERSE: Rank these with your partner. Put the most interesting parts of the universe at the top. Change partners often and share your rankings.

- our moon
- Mars
- comets
- International Space Station
- the Sun
- the Milky Way
- Earth
- asteroids

VOCABULARY MATCHING

Paragraph 1

1.	physicist	a.	Side by side; happening at the same time in a similar way.
2.	cosmologist	b.	Someone who studies the beginnings of the universe and the planets and stars.
3.	published	c.	Very last.
4.	final	d.	An expert in or student of physics.
5.	detect	e.	In the end.
6.	parallel	f.	Prepared a book (or essay, magazine, etc.) and put it on sale.
7.	eventually	g.	Find, discover or identify the presence of something.

Paragraph 2

8.	theory	h.	A number of planets and their moons in orbit around a sun.
9.	inflation	i.	The number shown as 1,000,000,000.
10.	billions	j.	So amazing it makes you gasp and takes your breath away.
11.	solar system	k.	An idea someone has about something.
12.	separate	l.	The act of making something bigger.
13.	breathtaking	m.	The fact of being somewhere, or of living.
14.	existence	n.	Made or looked at as a unit apart or by itself.

BEFORE READING / LISTENING

From https://breakingnewsenglish.com/180321-multiverse.html

1. TRUE / FALSE: Read the headline. Guess if a-h below are true (T) or false (F).

a. Stephen Hawking is a cosmologist and physician. **T / F**
b. Professor Hawking explained two important ideas in his theory. **T / F**
c. The second theory is about making the universe last forever. **T / F**
d. Stephen Hawking won a Nobel Prize for his theory. **T / F**
e. Hawking said our universe started from a tiny point in space. **T / F**
f. Professor Hawking said there were countless big bangs. **T / F**
g. A professor said sensors on drones could be used to find a multiverse. **T / F**
h. Stephen Hawking's book is called "A Brief History of Time". **T / F**

2. SYNONYM MATCH: (The words in **bold** are from the news article.)

1. died	a. co-existing
2. theory	b. spectacular
3. detect	c. unexpectedly
4. parallel	d. passed away
5. run out of	e. set
6. suddenly	f. unconnected
7. tiny	g. ideas
8. separate	h. minute
9. collection	i. find
10. breathtaking	j. use up

3. PHRASE MATCH: (Sometimes more than one choice is possible.)

1. The world-famous physicist	a. tiny point in space
2. parallel	b. out of energy
3. about how our universe will	c. by using sensors
4. when the stars finally run	d. selling book
5. could have won	e. and cosmologist
6. our universe suddenly expanded from a	f. number of big bangs
7. billions	g. universes
8. an infinite	h. a Nobel Prize
9. find the multiverse	i. of stars
10. Hawking is also famous for his best-	j. eventually end

GAP FILL

From https://breakingnewsenglish.com/180321-multiverse.html

The world-famous (1) _____ and cosmologist Stephen Hawking published an important (2) _____ before he died last week. Professor Hawking died on March 14, aged 76. Two weeks before his (3) _____, he published his final theory in a paper called "A Smooth Exit from Eternal Inflation". He explained two very important (4) _____. The first was how humans might be able to detect multiverses. These are parallel universes that were created at the (5) _____ time as our universe after the Big Bang. The (6) _____ theory is about how our universe will eventually end, when the stars (7) _____ run out of energy. Scientists say his paper could be his most important work ever, and that he could have (8) _____ a Nobel Prize for it.

finally

ideas

physicist

won

paper

second

death

same

Stephen Hawking's new paper started (9) _____ explaining an older theory of his called inflation. This is when our universe (10) _____ expanded from a tiny point in space into the (11) _____ of stars and solar systems we have today. Hawking suggested there were an infinite number of big bangs and (12) _____ of them created its own separate universe. He called this collection of universes a multiverse. Hawking wrote that he believed scientists could (13) _____ the multiverse by (14) _____ sensors on space ships. Carlos Frenk, a professor of cosmology, said: "These ideas offer the breathtaking prospect of finding evidence for the (15) _____ of other universes." Hawking is also famous for his best-(16) _____ book "A Brief History of Time".

existence

each

suddenly

billions

selling

using

by

find

LISTENING – Guess the answers. Listen to check.

From https://breakingnewsenglish.com/180321-multiverse.html

1) physicist and cosmologist Stephen Hawking published an important paper _____
   a. afore he died
   b. be for he died
   c. before he died
   d. fore he died
2) two very important ideas. The first was how humans might be _____ multiverses
   a. ability to detect
   b. abled to detect
   c. abler to detect
   d. able to detect
3) These are parallel universes that were created at _____
   a. the same times
   b. the same time
   c. the same timed
   d. the same timer
4) The second theory is about how our universe _____
   a. will event really end
   b. will event-chewer end
   c. will eventually end
   d. will even chewer end
5) Scientists say his paper could be his most _____
   a. important work ever
   b. importance work ever
   c. important works ever
   d. important work even
6) Stephen Hawking's new paper started by explaining an older theory of _____
   a. his called inflationary
   b. his called inflation
   c. his called deflation
   d. his called deflationary
7) This is when our universe suddenly expanded from _____
   a. a tinny point
   b. a tiny point
   c. a tie knee point
   d. a tied knee point
8) an infinite number of big bangs and each of them created its own _____
   a. separately universe
   b. separation universe
   c. separates universe
   d. separate universe
9) he believed scientists could find the multiverse by using _____ ships
   a. sensors on space
   b. sense yours on space
   c. sense ours on space
   d. sensor Earth on space
10) the breathtaking prospect of finding evidence for the existence _____
   a. of others universes
   b. of udder universes
   c. of another universes
   d. of other universes

LISTENING – Listen and fill in the gaps

From https://breakingnewsenglish.com/180321-multiverse.html

The world-(1) _____ cosmologist Stephen Hawking published an important paper before he (2) _____. Professor Hawking died on March 14, aged 76. Two weeks before his death, he published (3) _____ in a paper called "A Smooth Exit from Eternal Inflation". He explained two very important ideas. The first was how humans might be (4) _____ multiverses. These are parallel universes that were created at the same time as our universe after the Big Bang. The second theory is about how our universe (5) _____, when the stars finally run out of energy. Scientists say his paper could be his (6) _____ ever, and that he could have won a Nobel Prize for it.

Stephen Hawking's new paper started by explaining (7) _____ of his called inflation. This is when our universe suddenly expanded from a (8) _____ space into the billions of stars and solar systems we have today. Hawking suggested there were an infinite (9) _____ bangs and each of them created its own separate universe. He called (10) _____ universes a multiverse. Hawking wrote that he believed scientists could find the multiverse (11) _____ on space ships. Carlos Frenk, a professor of cosmology, said: "These ideas offer the breathtaking prospect of finding evidence for (12) _____ other universes." Hawking is also famous for his best-selling book "A Brief History of Time".

COMPREHENSION QUESTIONS

From https://breakingnewsenglish.com/180321-multiverse.html

1. What job did Stephen Hawking do besides being a physicist?

2. How old was Stephen Hawking when he died?

3. How many important ideas did Stephen Hawking explain in his theory?

4. What happened just before our universe was created?

5. What could Stephen Hawking have won?

6. What was the older theory about that Stephen Hawking explained?

7. How many big bangs did Stephen Hawking say there were?

8. What could be used on space ships to find a multiverse?

9. What is Carlos Frenk a professor of?

10. What was Stephen Hawking's book a brief history of?

MULTIPLE CHOICE - QUIZ

From https://breakingnewsenglish.com/180321-multiverse.html

1) What job did Stephen Hawking do besides being a physicist?
a) company CEO
b) cosmologist
c) university dean
d) journalist

2) How old was Stephen Hawking when he died?
a) 73
b) 74
c) 75
d) 76

3) How many important ideas did Stephen Hawking explain in his theory?
a) 2
b) 23
c) 52
d) 291

4) What happened just before our universe was created?
a) there was a bright purple light
b) a spark
c) the Big Bang
d) a black hole collapsed

5) What could Stephen Hawking have won?
a) a billion dollars
b) a Nobel Prize
c) the freedom of the world
d) the top medal in astronomy

6) What was the older theory about that Stephen Hawking explained?
a) inflation
b) deflation
c) reflation
d) hyperinflation

7) How many big bangs did Stephen Hawking say their were?
a) a billion billion
b) 896
c) an infinite number
d) several billion

8) What could be used on space ships to find a multiverse?
a) sensors
b) hamsters
c) radiation
d) GPS

9) What is Carlos Frenk a professor of?
a) Cosmology
b) Physics
c) Astrophysics
d) Astronomy

10) What was Stephen Hawking's book a brief history of?
a) multiverses
b) the universe
c) space
d) time

ROLE PLAY

From https://breakingnewsenglish.com/180321-multiverse.html

Role A – Mars

You think Mars is the most interesting part of the universe. Tell the others three reasons why. Tell them what is wrong with their things. Also, tell the others which is the least interesting of these (and why): comets, Earth or the Milky Way.

Role B – Comets

You think comets are the most interesting part of the universe. Tell the others three reasons why. Tell them what is wrong with their things. Also, tell the others which is the least interesting of these (and why): Mars, Earth or the Milky Way.

Role C – Earth

You think Earth is the most interesting part of the universe. Tell the others three reasons why. Tell them what is wrong with their things. Also, tell the others which is the least interesting of these (and why): comets, Mars or the Milky Way.

Role D – The Milky Way

You think the Milky Way is the most interesting part of the universe. Tell the others three reasons why. Tell them what is wrong with their things. Also, tell the others which is the least interesting of these (and why): comets, Earth or Mars.

AFTER READING / LISTENING

From https://breakingnewsenglish.com/180321-multiverse.html

1. WORD SEARCH: Look in your dictionary / computer to find collocates, other meanings, information, synonyms … for the words 'universe' and 'space'.

universe	**space**

- Share your findings with your partners.
- Make questions using the words you found.
- Ask your partner / group your questions.

2. ARTICLE QUESTIONS: Look back at the article and write down some questions you would like to ask the class about the text.

- Share your questions with other classmates / groups.
- Ask your partner / group your questions.

3. GAP FILL: In pairs / groups, compare your answers to this exercise. Check your answers. Talk about the words from the activity. Were they new, interesting, worth learning…?

4. VOCABULARY: Circle any words you do not understand. In groups, pool unknown words and use dictionaries to find their meanings.

5. TEST EACH OTHER: Look at the words below. With your partner, try to recall how they were used in the text:

• world • 14 • final • detect • second • won	• older • tiny • number • each • offer • book

OUR UNIVERSE SURVEY

From https://breakingnewsenglish.com/180321-multiverse.html

Write five GOOD questions about our universe in the table. Do this in pairs. Each student must write the questions on his / her own paper.
When you have finished, interview other students. Write down their answers.

	STUDENT 1 _____	STUDENT 2 _____	STUDENT 3 _____
Q.1.			
Q.2.			
Q.3.			
Q.4.			
Q.5.			

- Now return to your original partner and share and talk about what you found out. Change partners often.
- Make mini-presentations to other groups on your findings.

OUR UNIVERSE DISCUSSION

STUDENT A's QUESTIONS (Do not show these to student B)

1. What did you think when you read the headline?
2. What images are in your mind when you hear the word 'universe'?
3. What do you know about Stephen Hawking?
4. Would you like to be a physicist?
5. What does a cosmologist do every day?
6. What is a multiverse?
7. How would our world change if we found a multiverse?
8. What would you do if our universe was about to end?
9. What do you know about the Big Bang?
10. How interested are you in space?

Stephen Hawking explained multiverses in final paper – 21st March, 2018
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OUR UNIVERSE DISCUSSION

STUDENT B's QUESTIONS (Do not show these to student A)

11. Did you like reading this article? Why/not?
12. What do you think of when you hear the word 'space'?
13. What do you think about what you read?
14. What do you know about our universe?
15. What would you like to know about our universe?
16. Is there life on other planets?
17. What would be most exciting about space travel?
18. What is the future of Earth?
19. What will we know about space in 1,000 years from now?
20. What questions would you like to ask a cosmologist?

DISCUSSION (Write your own questions)

STUDENT A's QUESTIONS (Do not show these to student B)

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

DISCUSSION (Write your own questions)

STUDENT B's QUESTIONS (Do not show these to student A)

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

LANGUAGE - CLOZE

From https://breakingnewsenglish.com/180321-multiverse.html

The world-famous (1) _____ and cosmologist Stephen Hawking published an important paper before he (2) _____ last week. Professor Hawking died on March 14, aged 76. Two weeks before his death, he published his (3) _____ theory in a paper called "A Smooth Exit from Eternal Inflation". He explained two very important ideas. The first was how humans might be able to (4) _____ multiverses. These are parallel universes that were created at the same time as our universe after the Big Bang. The second theory is about how our universe will eventually (5) _____, when the stars finally run out of energy. Scientists say his paper could be his most important work ever, and that he could (6) _____ won a Nobel Prize for it.

Stephen Hawking's new paper started (7) _____ explaining an older theory of his called inflation. This is when our universe suddenly expanded from a (8) _____ point in space into the billions of stars and solar systems we have today. Hawking suggested there were an infinite number of big bangs and (9) _____ of them created its own separate universe. He called this collection of universes a multiverse. Hawking wrote that he believed scientists could find the multiverse by (10) _____ sensors on space ships. Carlos Frenk, a professor of cosmology, said: "These ideas offer the (11) _____ prospect of finding evidence for the existence of other universes." Hawking is (12) _____ famous for his best-selling book "A Brief History of Time".

Put the correct words from the table below in the above article.

1.	(a)	physics	(b)	physical	(c)	physicist	(d)	physicians
2.	(a)	died	(b)	death	(c)	dead	(d)	die
3.	(a)	final	(b)	finally	(c)	finalize	(d)	finality
4.	(a)	detect	(b)	defect	(c)	infect	(d)	disinfect
5.	(a)	quit	(b)	retire	(c)	close	(d)	end
6.	(a)	done	(b)	got	(c)	been	(d)	have
7.	(a)	by	(b)	to	(c)	as	(d)	do
8.	(a)	teen	(b)	tinted	(c)	tinny	(d)	tiny
9.	(a)	each	(b)	as	(c)	every	(d)	per
10.	(a)	use	(b)	using	(c)	used	(d)	uses
11.	(a)	breather	(b)	breathtaking	(c)	breathy	(d)	out of breath
12.	(a)	also	(b)	and	(c)	addition	(d)	plus

SPELLING

From https://breakingnewsenglish.com/180321-multiverse.html

Paragraph 1

1. The world-mfosau physicist
2. Hawking pesldihbu an important paper
3. Two weeks before his tdhea
4. his final rhtoey
5. how our universe will enltueylva end
6. the stars niylfla run out of energy

Paragraph 2

7. expanded from a nity point in space
8. iilslbno of stars
9. its own teaspear universe
10. using srnsose on space ships
11. a ssfreopor of cosmology
12. finding enivcdee

PUT THE TEXT BACK TOGETHER

From https://breakingnewsenglish.com/180321-multiverse.html

Number these lines in the correct order.

( ) universes that were created at the same time as our universe after the Big Bang. The second

( ) died last week. Professor Hawking died on March 14, aged 76. Two weeks before his death, he published his final

( ) very important ideas. The first was how humans might be able to detect multiverses. These are parallel

( ) theory is about how our universe will eventually end, when the stars finally run out of

( ) today. Hawking suggested there were an infinite number of big bangs and each of

( ) could find the multiverse by using sensors on space ships. Carlos Frenk, a professor

( ) theory in a paper called "A Smooth Exit from Eternal Inflation". He explained two

( ) universe suddenly expanded from a tiny point in space into the billions of stars and solar systems we have

( ) of cosmology, said: "These ideas offer the breathtaking prospect of finding evidence for the existence

( ) energy. Scientists say his paper could be his most important work ever, and that he could have won a Nobel Prize for it.

( ) them created its own separate universe. He called this collection of universes a multiverse. Hawking wrote that he believed scientists

( ) of other universes." Hawking is also famous for his best-selling book "A Brief History of Time".

( ) Stephen Hawking's new paper started by explaining an older theory of his called inflation. This is when our

(***1***) The world-famous physicist and cosmologist Stephen Hawking published an important paper before he

PUT THE WORDS IN THE RIGHT ORDER

From https://breakingnewsenglish.com/180321-multiverse.html

1. before published paper an he died . Hawking important

2. explained important two very He ideas .

3. multiverses . detect might be to How able humans

4. same as Created at universe . the time our

5. work . most paper be his important could His

6. older Explaining an his theory of inflation . called

7. our This universe expanded . is suddenly when

8. number bangs . infinite of an There were big

9. space using the on ships . sensors Find multiverse

10. best-selling famous also Hawking for is book . his

CIRCLE THE CORRECT WORD (20 PAIRS)

From https://breakingnewsenglish.com/180321-multiverse.html

The world-famous *physicist / physics* and cosmologist Stephen Hawking published an *important / importance* paper before he died last week. Professor Hawking died on March 14, aged 76. Two weeks before his death, he published his *finally / final* theory in a paper called "A Smooth Exit from Eternal Inflation". He *explanation / explained* two very important ideas. The first was *how / what* humans might be able to *defect / detect* multiverses. These are parallel universes that were *created / creation* at the same time as our universe after the Big Bang. The second theory is *about / because* how our universe will eventually *end / ending*, when the stars finally run out of energy. Scientists say his paper could be his most important work ever, and that he could *have / be* won a Nobel Prize for it.

Stephen Hawking's new paper started *by / as* explaining an older theory of his called inflation. This is when our universe *sudden / suddenly* expanded from a *tiny / tinny* point in space into the billions of stars and solar systems we *have / use* today. Hawking suggested there were an infinite number *for / of* big bangs and each of them created its own separate universe. He called this collection of universes a multiverse. Hawking *wrote / writing* that he believed scientists could find the multiverse by *use / using* sensors on space ships. Carlos Frenk, a professor of cosmology, said: "*These / Them* ideas offer the breathtaking prospect of finding evidence for the *exist / existence* of other universes." Hawking is *also / and* famous for his best-selling book "A Brief History of Time".

Talk about the connection between each pair of words in italics, and why the correct word is correct.

INSERT THE VOWELS (a, e, i, o, u)

From https://breakingnewsenglish.com/180321-multiverse.html

T h_ w_r l d - f_m__ s p h y s_c_s t _n d c_s m_l_g_s t S t_p h_n H_w k_n g p_b l_s h_d _n _m p_r t_n t p_p_r b_f_r_ h_ d__ d l_s t w__ k . P r_f_s s_r H_w k_n g d__ d _n M_r c h 1 4 , _g_d 7 6 . T w_ w__ k s b_f_r_ h_s d__ t h , h_ p_b l_s h_d h_s f_n_l t h__ r y _n _ p_p_r c_l l_d " A S m__ t h E x_t f r_m E t_r n_l I n f l_t__ n " . H_ _x p l__ n_d t w_ v_r y _m p_r t_n t _d__ s . T h_ f_r s t w_s h_w h_m_n s m_g h t b_ _b l_ t_ d_t_c t m_l t_v_r s_s . T h_s_ _r_ p_r_l l_l _n_v_r s_s t h_t w_r_ c r__ t_d _t t h_ s_m_ t_m_ _s __ r _n_v_r s_ _f t_r t h_ B_g B_n g . T h_ s_c_n d t h__ r y _s _b__ t h_w __ r _n_v_r s_ w_l l _v_n t__ l l y _n d , w h_n t h_ s t_r s f_n_l l y r_n __ t _f _n_r g y . S c__ n t_s t s s_y h_s p_p_r c__ l d b_ h_s m_s t _m p_r t_n t w_r k _v_r , _n d t h_t h_ c__ l d h_v_ w_n _ N_b_l P r_z_ f_r _t .

S t_p h_n H_w k_n g ' s n_w p_p_r s t_r t_d b y _x p l__ n_n g _n _l d_r t h__ r y _f h_s c_l l_d _n f l_t__ n . T h_s _s w h_n __ r _n_v_r s_ s_d d_n l y _x p_n d_d f r_m _ t_n y p__ n t _n s p_c_ _n t_ t h_ b_l l__ n s _f s t_r s _n d s_l_r s y s t_m s w_ h_v_ t_d_y . H_w k_n g s_g g_s t_d t h_r_ w_r_ _n _n f_n_t_ n_m b_r _f b_g b_n g s _n d __ c h _f t h_m c r__ t_d _t s _w n s_p_r_t_ _n_v_r s_. H_ c_l l_d t h_s c_l l_c t__ n _f _n_v_r s_s _ m_l t_v_r s_. H_w k_n g w r_t_ t h_t h_ b_l__ v_d s c__ n t_s t s c__ l d f_n d t h_ m_l t_v_r s_ b y _s_n g s_n s_r s _n s p_c_ s h_p s . C_r l_s F r_n k , _ p r_f_s s_r _f c_s m_l_g y , s__ d : " T h_s_ _d__ s _f f_r t h_ b r__ t h t_k_n g p r_s p_c t _f f_n d_n g _v_d_n c_ f_r t h_ _x_s t_n c_ _f _t h_r _n_v_r s_s . " H_w k_n g _s _l s_ f_m__ s f_r h_s b_s t - s_l l_n g b__ k " A B r__ f H_s t_r y _f T_m_" .

PUNCTUATE THE TEXT AND ADD CAPITALS

From https://breakingnewsenglish.com/180321-multiverse.html

the worldfamous physicist and cosmologist stephen hawking published an important paper before he died last week professor hawking died on march 14 aged 76 two weeks before his death he published his final theory in a paper called a smooth exit from eternal inflation he explained two very important ideas the first was how humans might be able to detect multiverses these are parallel universes that were created at the same time as our universe after the big bang the second theory is about how our universe will eventually end when the stars finally run out of energy scientists say his paper could be his most important work ever and that he could have won a nobel prize for it

stephen hawkings new paper started by explaining an older theory of his called inflation this is when our universe suddenly expanded from a tiny point in space into the billions of stars and solar systems we have today hawking suggested there were an infinite number of big bangs and each of them created its own separate universe he called this collection of universes a multiverse hawking wrote that he believed scientists could find the multiverse by using sensors on space ships carlos frenk a professor of cosmology said these ideas offer the breathtaking prospect of finding evidence for the existence of other universes hawking is also famous for his bestselling book a brief history of time

PUT A SLASH (/) WHERE THE SPACES ARE

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Theworld-famousphysicistandcosmologistStephenHawkingpublishedanimportantpaperbeforehediedlastweek.ProfessorHawkingdiedonMarch14,aged76.Twoweeksbeforehisdeath,hepublishedhisfinaltheoryinapapercalled"ASmoothExitfromEternalInflation".Heexplainedtwoveryimportantideas.Thefirstwashowhumansmightbeabletodetectmultiverses.Theseareparalleluniversesthatwerecreatedatthesametimeasouruniverseaftertheb igBang.Thesecondtheoryisabouthowouruniversewilleventuallyend,whenthestarsfinallyrunoutofenergy.Scientistssayhispapercouldbehismostimportantworkever,andthathecouldhavewonaNobelPrizeforit.StephenHawking'snewpaperstartedbyexplaininganoldertheoryofhiscalledinflation.Thisiswhenouruniversesuddenlyexpandedfromatinypointinspaceintothebillionsofstarsandsolarsystemswehavetoday.Hawkingsuggestedtherewereaninfinitenumberofbigbangsandeachofthemcreateditsownseparateuniverse.Hecalledthiscollectionofuniversesamultiverse.Hawkingwrotethathebelievedscientistscouldfindthemultiversebyusingsensorsonspaceships.CarlosFrenk,aprofessorofcosmology,said:"Theseideasoffertthebreathtakingprospectoffindingevidencefortheexistenceofotheruniverses."Hawkingisalsofamousforhisbest-sellingbook"ABriefHistoryofTime".

FREE WRITING

From https://breakingnewsenglish.com/180321-multiverse.html

Write about **our universe** for 10 minutes. Comment on your partner's paper.

ACADEMIC WRITING

From https://breakingnewsenglish.com/180321-multiverse.html

It would be great if there were more universes. Discuss.

HOMEWORK

1. VOCABULARY EXTENSION: Choose several of the words from the text. Use a dictionary or Google's search field (or another search engine) to build up more associations / collocations of each word.

2. INTERNET: Search the Internet and find out more about this news story. Share what you discover with your partner(s) in the next lesson.

3. OUR UNIVERSE: Make a poster about our universe. Show your work to your classmates in the next lesson. Did you all have similar things?

4. MULTIVERS: Write a magazine article about spending money on looking for the multiverse. Include imaginary interviews with people who are for and against this.

Read what you wrote to your classmates in the next lesson. Write down any new words and expressions you hear from your partner(s).

5. WHAT HAPPENED NEXT? Write a newspaper article about the next stage in this news story. Read what you wrote to your classmates in the next lesson. Give each other feedback on your articles.

6. LETTER: Write a letter to an expert on our universe. Ask him/her three questions about it. Give him/her three of your ideas on how we can use it to make our lives better. Read your letter to your partner(s) in your next lesson. Your partner(s) will answer your questions.

ANSWERS

VOCABULARY (p.4)

1.	d	2.	b	3.	f	4.	c	5.	g	6.	a	7.	e
8.	k	9.	l	10.	i	11.	h	12.	n	13.	j	14.	m

TRUE / FALSE (p.5)

a	F	b	T	c	F	d	F	e	T	f	T	g	F	h	T

SYNONYM MATCH (p.5)

1.	**died**	a.	passed away
2.	**theory**	b.	ideas
3.	**detect**	c.	find
4.	**parallel**	d.	co-existing
5.	**run out of**	e.	use up
6.	**suddenly**	f.	unexpectedly
7.	**tiny**	g.	minute
8.	**separate**	h.	unconnected
9.	**collection**	i.	set
10.	**breathtaking**	j.	spectacular

COMPREHENSION QUESTIONS (p.9)

1. Cosmologist
2. 76
3. Two
4. The Big Bang
5. A Nobel Prize
6. Inflation
7. An infinite number
8. Sensors
9. Cosmology
10. Time

WORDS IN THE RIGHT ORDER (p.20)

1. Hawking published an important paper before he died.
2. He explained two very important ideas.
3. How humans might be able to detect multiverses.
4. Created at the same time as our universe.
5. His paper could be his most important work.
6. Explaining an older theory of his called inflation.
7. This is when our universe suddenly expanded.
8. There were an infinite number of big bangs.
9. Find the multiverse using sensors on space ships.
10. Hawking is also famous for his best-selling book.

MULTIPLE CHOICE - QUIZ (p.10)

1.	b	2.	d	3.	a	4.	c	5.	b	6.	a	7.	c	8.	a	9.	a	10.	d

ALL OTHER EXERCISES

Please check for yourself by looking at the Article on page 2.
(It's good for your English ;-)