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Scientists warn of space junk danger

http://www.breakingnewsenglish.com/1109/110904-space_junk.html

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4th September, 2011

THE ARTICLE

From http://www.BreakingNewsEnglish.com/1109/110904-space_junk.html

Scientists have warned that the volume of debris floating around in space is becoming a danger to the International Space Station (ISS). Experts say that the time has come to start cleaning it up. America's space agency NASA estimates that there are around 22,000 objects in orbit that are big enough to track. These include things like spent booster rockets and old satellites. They also say there are countless smaller pieces of scrap that could damage the ISS, space ships travelling to it, and multi-million-dollar satellites. It is such a big problem that the ISS occasionally has to move out of the way to avoid being hit. Donald Kessler, a retired NASA scientist said, "We've lost control of the environment."

Space agencies have come up with many plans over the past few decades to address this problem. Agreements to restrict the amount of new space junk had been working. These agreements are supposed to ensure that anything sent into orbit eventually falls back to Earth and burns up. However, in the past four years, the amount of space junk has doubled. In 2007, China blew up a satellite in a missile test, and in 2009 two satellites crashed while in orbit. These two events changed everything and effectively made previous agreements out of date. There have been several suggestions on how to clear the junk. These include launching large magnets or putting giant nets into space to catch dangerous items.

WARM-UPS

1. SPACE JUNK: Walk around the class and talk to other students about space junk. Change partners often. Sit with your first partner(s) and share your findings.

2. CHAT: In pairs / groups, decide which of these topics or words from the article are most interesting and which are most boring.

scientists / debris / NASA / rockets / satellites / damage / big problem / control / space / the past few decades / agreements / doubled / missile test / suggestions

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

3. JUNK: How much of a problem is it and what do we do with it? Complete this table with your partner(s). Change partners and share what you wrote. Change and share again.

	How much of a problem?	What do we do with it?
Space junk		
Junk in your room		
Junk mail		
Junk in the streets		
Junk in the countryside		
Junk on TV		

4. SPACE TRAVEL: Students A **strongly** believe space travel is a good thing; Students B **strongly** believe it isn't. Change partners again and talk about your conversations.

5. ENVIRONMENT: What should we protect? Rank these and share your rankings with your partner. Put the ones we should protect first at the top. Change partners and share your rankings again.

- space
- mountains
- rivers
- our streets
- online
- beaches
- coral reefs
- deserts

6. SPACE: Spend one minute writing down all of the different words you associate with the word 'space'. Share your words with your partner(s) and talk about them. Together, put the words into different categories.

BEFORE READING / LISTENING

From http://www.BreakingNewsEnglish.com/1109/110904-space_junk.html

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

- | | |
|--|-------|
| a. Scientists say space junk will fall onto our cities and kill thousands. | T / F |
| b. Space junk is a threat to the International Space Station (ISS). | T / F |
| c. There are 22,000 objects in space that could damage the ISS. | T / F |
| d. A scientist warned that we could no longer control our environment. | T / F |
| e. Space agencies have never agreed on a plan to keep space clean. | T / F |
| f. All space junk should fall to Earth and burn up. | T / F |
| g. The amount of space debris had trebled in the past decade. | T / F |
| h. One solution to clean up the debris is a huge magnet put in space. | T / F |

2. SYNONYM MATCH: Match the following synonyms from the article.

- | | |
|-----------------|----------------|
| 1. warned | a. bits |
| 2. experts | b. escape |
| 3. spent | c. thought of |
| 4. pieces | d. specialists |
| 5. avoid | e. meant |
| 6. come up with | f. pretty much |
| 7. address | g. cautioned |
| 8. supposed | h. a number of |
| 9. effectively | i. used |
| 10. several | j. deal with |

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

- | | |
|-----------------------------|-----------------------------|
| 1. the volume of debris | a. and burns up |
| 2. Experts say that the | b. objects in orbit |
| 3. there are around 22,000 | c. suggestions |
| 4. move out of the way to | d. of new space junk |
| 5. We've lost control | e. floating around in space |
| 6. agencies have come | f. space |
| 7. restrict the amount | g. time has come |
| 8. falls back to Earth | h. avoid being hit |
| 9. There have been several | i. of the environment |
| 10. putting giant nets into | j. up with many plans |

WHILE READING / LISTENING

From http://www.BreakingNewsEnglish.com/1109/110904-space_junk.html

GAP FILL: Put the words into the gaps in the text.

Scientists have warned that the (1) _____ of debris floating around in space is becoming a (2) _____ to the International Space Station (ISS). Experts say that the time has (3) _____ to start cleaning it up. America's space agency NASA estimates that there are around 22,000 (4) _____ in orbit that are big enough to track. These include things like spent booster rockets and old satellites. They also say there are (5) _____ smaller pieces of scrap that could damage the ISS, space ships travelling to it, and (6) _____ -million-dollar satellites. It is such a big problem that the ISS occasionally has to (7) _____ out of the way to avoid being hit. Donald Kessler, a retired NASA scientist said, "We've lost (8) _____ of the environment."

countless
come
move
volume
control
objects
danger
multi

Space agencies have come up with many plans over the (9) _____ few decades to address this problem. Agreements to (10) _____ the amount of new space junk had been working. These agreements are supposed to (11) _____ that anything sent into orbit eventually falls back to Earth and (12) _____ up. However, in the past four years, the amount of space junk has (13) _____. In 2007, China blew up a satellite in a missile test, and in 2009 two satellites crashed while in orbit. These two events changed everything and effectively made (14) _____ agreements out of date. There have been (15) _____ suggestions on how to clear the junk. These include launching large magnets or putting (16) _____ nets into space to catch dangerous items.

previous
restrict
giant
ensure
doubled
past
several
burns

LISTENING – Listen and fill in the gaps

From http://www.BreakingNewsEnglish.com/1109/110904-space_junk.html

Scientists have warned that _____ floating around in space is becoming a danger to the International Space Station (ISS). Experts say that the time has come _____. America's space agency NASA estimates that there are _____ in orbit that are big enough to track. These include things like spent booster rockets and old satellites. They also say there are _____ of scrap that could damage the ISS, space ships travelling to it, and multi-million-dollar satellites. It is such a big problem that the ISS occasionally _____ the way to avoid being hit. Donald Kessler, a retired NASA scientist said, "_____ the environment."

Space agencies _____ many plans over the past few decades to address this problem. Agreements to _____ of new space junk had been working. These agreements are supposed to ensure that anything sent into _____ back to Earth and burns up. However, in the past four years, _____ junk has doubled. In 2007, China blew up a satellite in a missile test, and in 2009 two satellites crashed while in orbit. These two events changed everything and effectively made _____ of date. There have been several suggestions on how to clear the junk. These include launching large magnets _____ into space to catch dangerous items.

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AFTER READING / LISTENING

From http://www.BreakingNewsEnglish.com/1109/110904-space_junk.html

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

space	junk

- 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:

<ul style="list-style-type: none">• volume• time• estimates• old• multi• retired	<ul style="list-style-type: none">• come up with• restrict• burns• doubled• previous• catch
---	--

STUDENT SPACE JUNK SURVEY

From http://www.BreakingNewsEnglish.com/1109/110904-space_junk.html

Write five GOOD questions about space junk 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.

SPACE JUNK DISCUSSION

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

- a) What did you think when you read the headline?
- b) What springs to mind when you hear the word 'junk'?
- c) What do you think about what you read?
- d) How much of a danger do you think space junk is?
- e) How did the situation become this bad?
- f) Should countries be made to pay if they pollute space?
- g) What does the polluting of space say about us?
- h) Who would have to pay if the ISS was destroyed?
- i) What do you think of space debris?
- j) What do you think of Donald Kessler's comment?

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SPACE JUNK DISCUSSION

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

- a) Did you like reading this article?
- b) What do you think could address this problem?
- c) How important is space to us?
- d) How important is it to keep space clean?
- e) What do you think of China's missile test that resulted in lots more space debris?
- f) Do you think companies will eventually be created to clean up space?
- g) What is the danger of us getting hit by space debris?
- h) Do you think it'll be too dangerous to fly into space one day?
- i) What do we do with all the collected space junk?
- j) What questions would you like to ask a space debris expert?

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LANGUAGE – MULTIPLE CHOICE

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Scientists have warned that the (1) _____ of debris floating around in space is becoming a danger to the International Space Station (ISS). Experts say that the time has (2) _____ to start cleaning it up. America's space agency NASA estimates that there are around 22,000 objects (3) _____ orbit that are big enough to track. These include things (4) _____ spent booster rockets and old satellites. They also say there are countless smaller pieces of scrap that could damage the ISS, space ships travelling to it, and multi-million-dollar satellites. It is (5) _____ a big problem that the ISS occasionally has to move (6) _____ of the way to avoid being hit. Donald Kessler, a retired NASA scientist said, "We've lost control of the environment."

Space agencies have come (7) _____ with many plans over the past few decades to address this problem. Agreements to (8) _____ the amount of new space junk had been working. These agreements are supposed to ensure that anything sent into orbit eventually falls back to Earth and (9) _____ up. However, in the past four years, the amount of space junk has (10) _____. In 2007, China blew up a satellite in a missile test, and in 2009 two satellites crashed while in orbit. These two events changed everything and (11) _____ made previous agreements out of date. There have been several suggestions on how to clear the junk. These (12) _____ launching large magnets or putting giant nets into space to catch dangerous items.

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

- | | | | | |
|-----|---------------|-------------------|-----------------|----------------|
| 1. | (a) button | (b) power | (c) sound | (d) volume |
| 2. | (a) come | (b) arrive | (c) here | (d) now |
| 3. | (a) by | (b) in | (c) at | (d) of |
| 4. | (a) likes | (b) likely | (c) like | (d) likelihood |
| 5. | (a) so | (b) many | (c) such | (d) much |
| 6. | (a) in | (b) out | (c) up | (d) to |
| 7. | (a) down | (b) over | (c) in | (d) up |
| 8. | (a) restrict | (b) strict | (c) constrict | (d) district |
| 9. | (a) fires | (b) burns | (c) flames | (d) explodes |
| 10. | (a) doubles | (b) doubted | (c) doubling | (d) doubled |
| 11. | (a) effective | (b) effectiveness | (c) effectively | (d) effects |
| 12. | (a) include | (b) includes | (c) including | (d) inclusive |

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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 space junk. Share what you discover with your partner(s) in the next lesson.

3. SPACE JUNK: Make a poster about space junk. Show your work to your classmates in the next lesson. Did you all have similar things?

4. DEBRIS: Write a magazine article about the problem of space junk. Include imaginary interviews with scientists.

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. LETTER: Write a letter to a space junk expert. Ask him/her three questions about space junk. Give him/her three of your opinions on how to deal with it. Read your letter to your partner(s) in your next lesson. Your partner(s) will answer your questions.

ANSWERS

TRUE / FALSE:

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

SYNONYM MATCH:

- | | |
|-----------------|----------------|
| 1. warned | a. cautioned |
| 2. experts | b. specialists |
| 3. spent | c. used |
| 4. pieces | d. bits |
| 5. avoid | e. escape |
| 6. come up with | f. thought of |
| 7. address | g. deal with |
| 8. supposed | h. meant |
| 9. effectively | i. pretty much |
| 10. several | j. a number of |

PHRASE MATCH:

- | | |
|-----------------------------|-----------------------------|
| 1. the volume of debris | a. floating around in space |
| 2. Experts say that the | b. time has come |
| 3. there are around 22,000 | c. objects in orbit |
| 4. move out of the way to | d. avoid being hit |
| 5. We've lost control | e. of the environment |
| 6. agencies have come | f. up with many plans |
| 7. restrict the amount | g. of new space junk |
| 8. falls back to Earth | h. and burns up |
| 9. There have been several | i. suggestions |
| 10. putting giant nets into | j. space |

GAP FILL:

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Scientists have warned that the (1) **volume** of debris floating around in space is becoming a (2) **danger** to the International Space Station (ISS). Experts say that the time has (3) **come** to start cleaning it up. America's space agency NASA estimates that there are around 22,000 (4) **objects** in orbit that are big enough to track. These include things like spent booster rockets and old satellites. They also say there are (5) **countless** smaller pieces of scrap that could damage the ISS, space ships travelling to it, and (6) **multi-million-dollar** satellites. It is such a big problem that the ISS occasionally has to (7) **move** out of the way to avoid being hit. Donald Kessler, a retired NASA scientist said, "We've lost (8) **control** of the environment."

Space agencies have come up with many plans over the (9) **past** few decades to address this problem. Agreements to (10) **restrict** the amount of new space junk had been working. These agreements are supposed to (11) **ensure** that anything sent into orbit eventually falls back to Earth and (12) **burns** up. However, in the past four years, the amount of space junk has (13) **doubled**. In 2007, China blew up a satellite in a missile test, and in 2009 two satellites crashed while in orbit. These two events changed everything and effectively made (14) **previous** agreements out of date. There have been (15) **several** suggestions on how to clear the junk. These include launching large magnets or putting (16) **giant** nets into space to catch dangerous items.

LANGUAGE WORK

- 1 - d 2 - a 3 - b 4 - c 5 - c 6 - b 7 - d 8 - a 9 - b 10 - d 11 - c 12 - a