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Scientists say water is on the Moon

<http://www.breakingnewsenglish.com/0909/090925-moon.html>

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25th September, 2009

THE ARTICLE

From <http://www.BreakingNewsEnglish.com/0909/090925-moon.html>

Space scientists have surprised the world by announcing there is water on the Moon. Newly released documents reveal that three different missions to the Moon found water particles on the surface. Two probes sent by NASA and one by India's space agency found evidence of H₂O. This is a very exciting discovery and one that could change the way we explore the heavens in the future. The Apollo missions in the 1960s found rocks that looked like they contained water, but scientists thought it was moisture from their spacecraft. Since then, scientists believed the Moon was dry. However, India's Chandrayaan-1 craft recently found molecules of oxygen and hydrogen in moon rocks. These are the two chemicals necessary for water to exist.

Researchers told journalists not to get too excited about their news. Carle Pieters from America's Brown University said: "When we say 'water on the moon', we are not talking about lakes, oceans or even puddles." Scientists believe hydrogen contained in a solar wind joins with oxygen locked in moon dust to form water. This could revolutionize space exploration. If the tiny water droplets could be produced in larger quantities, scientists could build a base on the Moon. A lunar settlement may be able to generate enough water for drinking and growing plants and crops. Geologist Dr. Jon Clarke said: "Finding a usable supply of water on the moon makes the difference between going there to visit and going there to stay."

WARM-UPS

1. MOON: Walk around the class and talk to other students about the Moon water. 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 / water / documents / space agencies / moon rocks / moisture / molecules / journalists / lakes / oceans / puddles / exploration / Moon base / staying on the Moon

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

3. SCIENCE SURPRISES: Imagine scientists have found the answers to these things. Complete the table with your partner(s). Change partners and share what you heard. Vote as a class on how our lives will change.

Things	What do you think the answer is	How will it change life?
Water on the Moon		
Life on Mars		
Life after death		
The missing link		
The meaning of life		
Legal downloads		

4. MOON BASE: Students A **strongly** believe it's a great idea for people to live on the Moon; Students B **strongly** disagree. Change partners again and talk about your conversations.

5. MOON PLAN: You are going to the Moon on a scientific mission. Make a plan of what you're going to do / take / eat / bring back... Write about your possible feelings.

One week before the trip	Arriving in space
The day before the trip	First hour on the Moon
The morning of the trip	Last day on the Moon
10 seconds before blastoff	First Day back on Earth

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/0909/090925-moon.html>

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

- | | |
|---|-------|
| a. Scientists have surprised the world by saying the Moon has water. | T / F |
| b. U.S. and Indian teams found water on the surface of the Moon. | T / F |
| c. Scientists also said they found the way to heaven. | T / F |
| d. The two chemicals necessary for water are hydrogen and carbon. | T / F |
| e. Space scientists found small puddles of water in the Moon's craters. | T / F |
| f. Water exists on the Moon because of a solar wind. | T / F |
| g. Scientists believe people could live on the Moon and grow food. | T / F |
| h. A geologist said he is going to the Moon and will stay there. | T / F |

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

- | | |
|----------------|------------------|
| 1. announcing | a. produce |
| 2. missions | b. space |
| 3. evidence | c. trapped |
| 4. the heavens | d. journeys |
| 5. moisture | e. making public |
| 6. locked | f. proof |
| 7. form | g. community |
| 8. settlement | h. stock |
| 9. generate | i. make |
| 10. supply | j. wetness |

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

- | | |
|-----------------------------------|-----------------------|
| 1. scientists have surprised | a. sent by NASA |
| 2. three different missions | b. of water |
| 3. Two probes | c. to exist |
| 4. change the way we explore the | d. solar wind |
| 5. chemicals necessary for water | e. the world |
| 6. get too excited | f. water for drinking |
| 7. hydrogen contained in a | g. to the Moon |
| 8. This could revolutionize space | h. heavens |
| 9. generate enough | i. about their news |
| 10. a usable supply | j. exploration |

WHILE READING / LISTENING

From <http://www.BreakingNewsEnglish.com/0909/090925-moon.html>

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

Space scientists have surprised the world _____ announcing there is water on the Moon. Newly released documents _____ that three different missions to the Moon found water _____ on the surface. Two probes sent by NASA and one by India's space agency found evidence of H₂O. This is a very exciting _____ and one that could change the way we _____ the heavens in the future. The Apollo missions in the 1960s found rocks that looked like they contained water, but scientists thought it was _____ from their spacecraft. Since then, scientists believed the Moon was _____. However, India's Chandrayaan-1 craft recently found molecules of oxygen and hydrogen in moon rocks. These are the two chemicals _____ for water to exist.

discovery
necessary
reveal
moisture
particles
by
dry
explore

Researchers told journalists not to get too _____ about their news. Carle Pieters from America's Brown University said: "When we say 'water on the moon', we are not _____ about lakes, oceans or even _____." Scientists believe hydrogen contained in a solar wind joins with oxygen _____ in moon dust to form water. This could revolutionize space exploration. If the _____ water droplets could be produced in larger quantities, scientists could build a base on the Moon. A lunar settlement may be able to _____ enough water for drinking and growing plants and crops. Geologist Dr. Jon Clarke said: "Finding a usable _____ of water on the moon makes the _____ between going there to visit and going there to stay."

generate
talking
difference
excited
tiny
puddles
supply
locked

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LISTENING – Listen and fill in the gaps

From <http://www.BreakingNewsEnglish.com/0909/090925-moon.html>

Space scientists have surprised _____ announcing there is water on the Moon. Newly released documents _____ different missions to the Moon found water particles on the surface. Two probes sent by NASA _____ India's space agency found evidence of H₂O. This is a very exciting discovery _____ could change the way we explore the heavens in the future. The Apollo missions _____ found rocks that looked like they contained water, but scientists thought _____ from their spacecraft. Since then, scientists believed the Moon was dry. However, India's Chandrayaan-1 _____ found molecules of oxygen and hydrogen in moon rocks. These are the two chemicals necessary for _____.

Researchers told journalists _____ too excited about their news. Carle Pieters from America's Brown University said: "When we say 'water on the moon', we are not talking about lakes, oceans _____." Scientists believe hydrogen contained in a _____ with oxygen locked in moon dust _____. This could revolutionize space exploration. _____ water droplets could be produced in larger quantities, scientists could build _____ the Moon. A lunar settlement _____ generate enough water for drinking and growing plants and crops. Geologist Dr. Jon Clarke said: "Finding a usable supply of water on the moon makes the difference between _____ visit and going there to stay."

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AFTER READING / LISTENING

From <http://www.BreakingNewsEnglish.com/0909/090925-moon.html>

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

moon	water
-------------	--------------

- 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">• surprised• reveal• evidence• 1960s• dry• chemicals	<ul style="list-style-type: none">• excited• puddles• wind• tiny• plants• difference
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STUDENT MOON WATER SURVEY

From <http://www.BreakingNewsEnglish.com/0909/090925-moon.html>

Write five GOOD questions about Moon water 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.

MOON WATER 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 'Moon'?
- c) Would you like to visit the Moon? (Why?)
- d) How surprised are you at this news?
- e) What does water on the Moon mean for us and our future?
- f) Why do you think scientists waited months before telling us this news?
- g) What would you do if you went on a mission to the Moon?
- h) Are you more interested in heaven or the heavens?
- i) How could this discovery change space exploration?
- j) What next?

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MOON WATER DISCUSSION

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

- a) Did you like reading this article?
- b) How excited are you about this news? (Try to be very excited)
- c) There was a teaspoon of water in all the moon rocks collected by the Apollo missions. Is this enough to get excited about?
- d) What would you call a new moon base?
- e) Would you accept a job to work on a settlement on the Moon?
- f) What would be difficult about living on the Moon?
- g) Do you think scientists will build communities on the Moon?
- h) What does the Moon mean to you / your culture?
- i) What was the last news you heard about this story?
- j) What questions would you like to ask Carle Pieters?

LANGUAGE – MULTIPLE CHOICE

From <http://www.BreakingNewsEnglish.com/0909/090925-moon.html>

Space scientists have surprised the world (1) ____ announcing there is water on the Moon. (2) ____ released documents reveal that three different missions to the Moon found water particles on the surface. Two probes sent by NASA and one by India's space agency found evidence of H₂O. This is a very exciting discovery and (3) ____ that could change the way we explore the (4) ____ in the future. The Apollo missions in the 1960s found rocks that looked like they contained water, but scientists thought it was (5) ____ from their spacecraft. Since then, scientists believed the Moon was dry. However, India's Chandrayyan-1 craft recently found molecules of oxygen and hydrogen in moon rocks. These are the two chemicals necessary for water to (6) ____.

Researchers told journalists not to get too (7) ____ about their news. Carle Pieters from America's Brown University said: "When we say 'water on the moon', we are not talking about lakes, oceans or (8) ____ puddles." Scientists believe hydrogen contained in a solar wind joins (9) ____ oxygen locked in moon dust to form water. This could revolutionize space exploration. If the tiny water droplets could be produced in larger (10) ____, scientists could build a base on the Moon. A lunar settlement may be able to generate enough water for drinking and (11) ____ plants and crops. Geologist Dr. Jon Clarke said: "Finding a usable supply of water on the moon makes the (12) ____ between going there to visit and going there to stay."

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

- | | | | | |
|-----|-----------------|----------------|----------------|---------------|
| 1. | (a) by | (b) so | (c) at | (d) for |
| 2. | (a) New | (b) Newish | (c) Newly | (d) News |
| 3. | (a) this | (b) some | (c) then | (d) one |
| 4. | (a) heaven | (b) heavens | (c) heavenly | (d) heathens |
| 5. | (a) moisturizer | (b) moist | (c) moisten | (d) moisture |
| 6. | (a) exists | (b) existence | (c) exist | (d) existed |
| 7. | (a) excite | (b) excited | (c) excitement | (d) exciting |
| 8. | (a) even | (b) ever | (c) heaven | (d) never |
| 9. | (a) with | (b) to | (c) at | (d) on |
| 10. | (a) volume | (b) amount | (c) quantities | (d) qualities |
| 11. | (a) growth | (b) grown | (c) grew | (d) growing |
| 12. | (a) differ | (b) difference | (c) different | (d) differs |

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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 the Moon and water. Share what you discover with your partner(s) in the next lesson.

3. MOON: Make a poster about the Moon. Focus on what it means in your culture. Show your work to your classmates in the next lesson. Did you all have similar things?

4. SURPRISE! Write a magazine article about a new settlement on the Moon. Include imaginary interviews with a Moon settler and someone who has just won a competition to spend a year on the settlement.

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 the head of a space agency. Ask him/her three questions about Moon water. Give him/her your three opinions on what we should use the Moon for in the future. Read your letter to your partner(s) in your next lesson. Your partner(s) will answer your questions.

ANSWERS

TRUE / FALSE:

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

SYNONYM MATCH:

- | | |
|----------------|------------------|
| 1. announcing | a. making public |
| 2. missions | b. journeys |
| 3. evidence | c. proof |
| 4. the heavens | d. space |
| 5. moisture | e. wetness |
| 6. locked | f. trapped |
| 7. form | g. make |
| 8. settlement | h. community |
| 9. generate | i. produce |
| 10. supply | j. stock |

PHRASE MATCH:

- | | |
|-----------------------------------|-----------------------|
| 1. scientists have surprised | a. the world |
| 2. three different missions | b. to the Moon |
| 3. Two probes | c. sent by NASA |
| 4. change the way we explore the | d. heavens |
| 5. chemicals necessary for water | e. to exist |
| 6. get too excited | f. about their news |
| 7. hydrogen contained in a | g. solar wind |
| 8. This could revolutionize space | h. exploration |
| 9. generate enough | i. water for drinking |
| 10. a usable supply | j. of water |

GAP FILL:

Scientists say water is on the Moon

Space scientists have surprised the world **by** announcing there is water on the Moon. Newly released documents **reveal** that three different missions to the Moon found water **particles** on the surface. Two probes sent by NASA and one by India's space agency found evidence of H₂O. This is a very exciting **discovery** and one that could change the way we **explore** the heavens in the future. The Apollo missions in the 1960s found rocks that looked like they contained water, but scientists thought it was **moisture** from their spacecraft. Since then, scientists believed the Moon was **dry**. However, India's Chandrayaan-1 craft recently found molecules of oxygen and hydrogen in moon rocks. These are the two chemicals **necessary** for water to exist.

Researchers told journalists not to get too **excited** about their news. Carle Pieters from America's Brown University said: "When we say 'water on the moon', we are not **talking** about lakes, oceans or even **puddles**." Scientists believe hydrogen contained in a solar wind joins with oxygen **locked** in moon dust to form water. This could revolutionize space exploration. If the **tiny** water droplets could be produced in larger quantities, scientists could build a base on the Moon. A lunar settlement may be able to **generate** enough water for drinking and growing plants and crops. Geologist Dr. Jon Clarke said: "Finding a usable **supply** of water on the moon makes the **difference** between going there to visit and going there to stay."

LANGUAGE WORK

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