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Level 1 – 20th October, 2020

A zeptosecond - the shortest unit of time ever measured

FREE online quizzes, mp3 listening and more for this lesson here:

<https://breakingnewsenglish.com/2010/201020-zeptosecond-1.html>

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Please try Levels 0, 2 and 3. They are (a little) harder.

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THE READING

From <https://breakingnewsenglish.com/2010/201020-zeptosecond-1.html>

Today, things are getting shorter. Scientists just measured the shortest unit of time ever recorded. It is a zeptosecond. This is tiny - a trillionth of a billionth of a second. It is a decimal point followed by 20 zeros and then a 1. The scientists study atomic physics. They used special tools to measure how long it takes a photon to cross a hydrogen molecule. The scientists said it took 247 zeptoseconds for this to happen. This is too fast for humans to see.

In 1999, a scientist measured the speed at which molecules change their shape. He found this was one femtosecond, which is a millionth of a billionth of one second. One millisecond is a thousandth of one second. This is the time it takes a neuron in our brain to fire. One nanosecond is one billionth of one second. The shortest unit of time it may be possible to measure is one Planck. This is a decimal point followed by 44 zeros and a 1.

Sources: <https://interestingengineering.com/new-smallest-time-measurement-how-long-it-takes-a-photon-to-cross-a-hydrogen-molecule>
<https://www.livescience.com/zeptosecond-shortest-time-unit-measured.html>
[https://en.wikipedia.org/wiki/Orders_of_magnitude_\(time\)](https://en.wikipedia.org/wiki/Orders_of_magnitude_(time))

PHRASE MATCHING

From <https://breakingnewsenglish.com/2010/201020-septosecond-1.html>

PARAGRAPH ONE:

- | | |
|---------------------------------|-------------------|
| 1. things are getting | a. tools |
| 2. the shortest unit of time | b. this to happen |
| 3. a trillionth of a billionth | c. point |
| 4. a decimal | d. humans to see |
| 5. The scientists study atomic | e. of a second |
| 6. They used special | f. ever recorded |
| 7. it took 247 zeptoseconds for | g. physics |
| 8. This is too fast for | h. shorter |

PARAGRAPH TWO:

- | | |
|---------------------------------------|------------------|
| 1. molecules change | a. one second |
| 2. a millionth of a | b. to measure |
| 3. One millisecond is a thousandth of | c. point |
| 4. One nanosecond is one billionth | d. their shape |
| 5. The shortest unit | e. zeros and a 1 |
| 6. it may be possible | f. billionth |
| 7. This is a decimal | g. of one second |
| 8. followed by 44 | h. of time |

LISTEN AND FILL IN THE GAPS

From <https://breakingnewsenglish.com/2010/201020-septosecond-1.html>

Today, (1) _____ shorter. Scientists just measured the shortest (2) _____ ever recorded. It is a zeptosecond. This is tiny - a trillionth (3) _____ of a second. It is a decimal point followed by 20 zeros and then a 1. The scientists study atomic physics. They used (4) _____ measure how long it takes a photon (5) _____ hydrogen molecule. The scientists said it took 247 zeptoseconds for this to happen. This is (6) _____ humans to see.

In 1999, a scientist measured (7) _____ which molecules (8) _____. He found this was one femtosecond, which is (9) _____ a billionth of one second. One millisecond is a thousandth of one second. This is the time it takes a neuron in our (10) _____. One nanosecond is one billionth of one second. The shortest unit of time it may (11) _____ measure is one Planck. This is (12) _____ followed by 44 zeros and a 1.

PUT A SLASH (/) WHERE THE SPACES ARE

From <https://breakingnewsenglish.com/2010/201020-zeptosecond-1.html>

Today, things are getting shorter. Scientists just measured the shortest unit of time ever recorded. It is a zeptosecond. This is tiny - a trillionth of a billionth of a second. It is a decimal point followed by 20 zeros and then a 1. These scientists study atomic physics. They used special tools to measure how long it takes a photon to cross a hydrogen molecule. These scientists said it took 247 zeptoseconds for this to happen. This is too fast for human sense. In 1999, a scientist measured the speed at which molecules change their shape. He found this was one femtosecond, which is a millionth of a billionth of a second. One millisecond is a thousandth of a second. This is the time it takes a neuron in our brain to fire. One nanosecond is one billionth of a second. The shortest unit of time it may be possible to measure is one Planck. This is a decimal point followed by 44 zeros and a 1.

ONE ZEPTOSECOND SURVEY

From <https://breakingnewsenglish.com/2010/201020-septosecond-4.html>

Write five GOOD questions about one zeptosecond 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.

Level · 1 A zeptosecond – the shortest unit of time ever measured – *20th October, 2020*

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WRITE QUESTIONS & ASK YOUR PARTNER(S)

Student A: Do not show these to your speaking partner(s).

a) _____

b) _____

c) _____

d) _____

e) _____

f) _____

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WRITE QUESTIONS & ASK YOUR PARTNER(S)

Student B: Do not show these to your speaking partner(s).

a) _____

b) _____

c) _____

d) _____

e) _____

f) _____

