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Level 0 – 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-0.html>

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Please try Levels 1, 2 and 3. They are (a little) harder.

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THE READING

From <https://breakingnewsenglish.com/2010/201020-zeptosecond-0.html>

Scientists just measured the shortest unit of time ever. It is a zeptosecond - a trillionth of a billionth of a second. It is a decimal point followed by 20 zeros and then a 1. The scientists used special tools to measure how long it takes a photon to cross a hydrogen molecule. It took 247 zeptoseconds. This is too fast for us to see.

In 1999, a scientist measured how fast molecules change their shape. This was one femtosecond - a millionth of a billionth of one second. One millisecond is a thousandth 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-0.html>

PARAGRAPH ONE:

- | | |
|--------------------------------|---------------------|
| 1. the shortest unit | a. molecule |
| 2. a decimal | b. of time ever |
| 3. followed by 20 zeros | c. us to see |
| 4. The scientists used special | d. and then a 1 |
| 5. measure how | e. 247 zeptoseconds |
| 6. a hydrogen | f. point |
| 7. It took | g. long it takes |
| 8. too fast for | h. tools |

PARAGRAPH TWO:

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

LISTEN AND FILL IN THE GAPS

From <https://breakingnewsenglish.com/2010/201020-septosecond-0.html>

Scientists (1) _____ shortest unit of time ever. It is a zeptosecond - (2) _____ a billionth of a second. It is (3) _____ followed by 20 zeros and then a 1. The scientists (4) _____ to measure how (5) _____ a photon to cross a hydrogen molecule. It took 247 zeptoseconds. This is (6) _____ us to see.

In 1999, a scientist (7) _____ molecules change their shape. (8) _____ femtosecond - a millionth of a billionth (9) _____. One millisecond is a thousandth of one second. The (10) _____ time it may be possible (11) _____ one Planck. This is a decimal point (12) _____ zeros and a 1.

PUT A SLASH (/) WHERE THE SPACES ARE

From <https://breakingnewsenglish.com/2010/201020-septosecond-0.html>

Scientists just measured the shortest unit of time ever. It is a zeptosecond - a trillionth of a billionth of a second. It is a decimal point followed by 20 zeros and then a 1. The scientists used special tools to measure how long it takes a photon to cross a hydrogen molecule. It took 247 zeptoseconds. This is so fast for us to see. In 1999, a scientist measured how fast molecules change their shape. This was one femtosecond - a millionth of a billionth of a second. One millisecond is a thousandth 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-0.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.

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) _____

