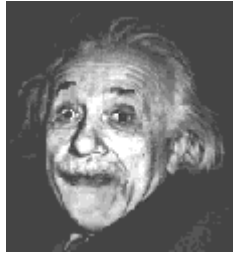


## Einstein Revealed Worksheet



**This video will give you an insight not only into Einstein's great theories, but also his**

1. How old was Einstein when he had the thought, "What would it be like to ride a beam of light" ?

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2. In what year was he born ? What was his ethnic origin ?

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3. Who taught Einstein geometry ?

>

4. Did he like school ?

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5. Einstein's Theory of Relativity dealt with electromagnetism. Where did he first learn about electricity ?

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6. Why did he renounce his German citizenship ?

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7. When Einstein enrolled at the Polytechnic (ETH) in Zurich (one of the best colleges in Europe), was he studying to become a professional scientist or a high school physics teacher ?

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8. What was he reprimanded for in college ?

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9. It was thought that all waves, including light waves, needed some medium to travel through (like ripples on a pond). Since earth is moving through space, should light moving in the same direction as the earth have a higher velocity ?

>

Should light moving in the opposite direction have a lower velocity ?

Was any difference detected ?

>

What did this indicate to the scientists of the time ? (in reality, it only truly means that there is no such thing as the ether--light doesn't need a medium to travel through)

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10. In what year was Albert and Mileva's daughter born ?

What happened to her ?

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11. After getting married in 1903, what job did Einstein have ?

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When he completed his work early, what did he then work on the rest of the time at the office ?

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Why did he actually like this job better than working as a professor at a university ?

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12. Using the juggling twins from the video, briefly explain what relativity means.

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13. Describe Einstein's Railroad thought experiment. In other words, why did it make him state that "Time is relative." ?

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14. From the moment he realized that time must vary for different observers, how long did it take him to develop his Special Theory of Relativity ?

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15. As we travel faster and faster, what happens to the flow of time ?

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>

16. Which runs slower, a clock at the equator, or a clock at one of the poles ? Why ?

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17. As we move faster, what happens to the size of objects ?

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18. If you could travel at the speed of light ( $3 \times 10^8$  m/s), what happens to length ?

>

(what length will all objects have ?)

>

What happens to time ?

?

19. In what year did Einstein publish his Relativity paper : "On the Electrodynamics of Moving Bodies" ?

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Why do you think Einstein had no references to anyone else's prior work in his paper ?

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20. How many MAJOR papers did Einstein publish in 1905, his "Miracle Year" ?

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21. What does his famous  $E = mc^2$  equation mean ?

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Every second, how many pounds of sunlight strike earth ?

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22. In 1907, he was asked to write a summary of all that was known at that time about Special Relativity. What did he discover was unexplained by Special Relativity ?

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23. Who proved long ago that the orbits of the planets are governed by gravity ?

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Was this scientist, or anyone else, able to explain how gravity worked ?

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24. Describe Einstein's Rocketship thought experiment. What did it tell him about acceleration and gravity ?

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25. What job did he assume when he moved to Prague in 1911 ?

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26. In his second Rocketship thought experiment, why did the light beam hit the opposite wall lower than where it started from when it came in through the window ?

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Therefore, what did he conclude that gravity could do to light ?

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27. Who is Elsa Einstein ?

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28. In 1912, he became a full professor at what university ?

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29. Who is Minkowski, and what did he think of Einstein ?

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30. How many dimensions does space-time have ?

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31. If space-time is allowed to curve, what is created ?

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Therefore, who was the first person to explain how gravity works ?

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32. According to Einstein, what does mass do to space-time ?

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With this new understanding, how can we explain why the planets go around the sun ?

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33. Was Einstein a good father to his 2 sons ?

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34. Was he in favor of Germany's aggression in WW1 ?

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35. Who was Marcel Grossman ? What did he do for Einstein both as a student and as a scientist ?

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36. Did Einstein have problems with complex math ?

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37. Which planet's orbit shifts each year ? Was this explainable ? Could Einstein explain it ?

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38. How does the bending of starlight affect our predictions of the true positions of stars and other distant objects in the universe ?

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39. What was Einstein quoted as saying when asked what he'd think if the solar eclipse results did not verify his theory of gravity?

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40. In regards to Quantum Mechanics, which has a randomness to it, what was he quoted as saying ?

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41. What was Einstein's grand ambition ?

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42. When did Albert and Elsa immigrate to the US ? Why ?

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43. What became of his 2 sons ?

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44. Did Einstein actually help build the atom bomb ?

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45. Einstein was offered the Presidency of what country ? Did he accept ?

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46. In what year did he die ?