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| **The Physics of Baumgartner Skydiving** | |
| **Formulas and Constant** | |
| **Definitions** | |
| : The mass of Baumgartner and his equipment.  : The projected area of the Baumgartner.  : The drag coefficient of Baumgartner.  「baumgartner」的圖片搜尋結果**𝑔**: The acceleration due to gravity.  Figure 1: Baumgartner and his equipment  : the density of the atmosphere around Baumgartner.  : The velocity of Baumgartner.  : The time pass after Baumgartner began falling.  : The distance between ground and Baumgartner.  : The temperature of atmosphere around Baumgartner.  : The pressure of atmosphere around Baumgartner.  : A very short time. | kg  m2  m/s2  s |
| **Calculation of Constant** | |
| About seconds after Baumgartner began falling, he reached the terminal velocity(km/hrm/s) at a height of about meters.  We hypothesized that is constant. We found out is about kilogram and set m/s2. Reaching the terminal velocity signified that the resistance equals gravity, so we got .  We substituted meters into the function of density and got . Then find by  . | |
| **Simulation by Computer Program** | |
| **Flow Path** | |
| **Yes**  **No**  **Yes**  **No**  Original State  Find the Answer                        **Yes**  **No** | |
| **Program (made by phthon)** | |
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| **Result and Discussion** | |
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| **References** | |
| Natalie Wolchover. (2012). The Physics of the First-Ever Supersonic Skydive. Retrieved from <https://www.livescience.com/23710-physics-supersonic-skydive.html> (November 3, 2019)  Drag coefficient. (November 14, 2019). <https://en.wikipedia.org/wiki/Drag_coefficient> (November 3, 2019)  <https://www.zhihu.com/question/59208808>  <https://www.youtube.com/watch?v=raiFrxbHxV0>  <https://www.youtube.com/watch?v=vvbN-cWe0A0> | |