

September 9, 2016 is a Special Perfect Square Date

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This Friday, September 9, 2016 expressed as 9/9/2016 is a perfect square date since 992016 is a perfect square number which equals the square of 996.

A perfect square date is defined as a full date number that is a perfect square [1-3]. Note that perfect square dates are rare because they can only occur in years ending with double zeros, 1, 4, 6, 9 or 25. Additionally, if the year number ends with 00, the preceding digits of the perfect square date must be a square number; if it ends with 1, the preceding (ten's) digit of the perfect square date must be divisible by 4; if it ends with 4, the preceding digit must be an even number; if it ends with 6, the preceding digit must be an odd number; if it ends with 9, the preceding digit must be divisible by 4; and if it ends with 25, the preceding digits must be 0, 2, 06, or 56. Wow!

This year 2016 contains three perfect square dates in each date format. In the month/day/year date format used in the US, these perfect square dates are February 26 expressed as 2/26/2016, September 9 written as 9/9/2016, and December 22 as 12/22/2016. In the day/month/year date format used by most other countries in the world, these dates are 16 March written as 16/03/2016, 22 June as 22/6/2016, and 9 September as 9/9/2016.

What makes 992016 special is the fact that it falls on the same day of the calendar in both date formats. Last time such a common perfect square date occurred was 175 years ago in the 19th century on February 2, 1841, expressed as 2/2/1841.

After 2016, perfect square dates will not occur until 2025 during which there will be an abundance of them. Year 2025 contains eight perfect square dates in the month/day/year date format and six in the day/month/year date format. In the month/day/year format, the perfect square dates are 1/09/2025, 3/22/2025, 4/18/2025, 6/3/2025, 9/1/2025, 9/27/2025, 10/9/2025, and 10/27/2025. In the day/month/year date format, they are 9/1/2025, 6/3/2025, 14/5/2025, 1/09/2025, 10/9/2025, and 27/09/2025.

This century has a total of 39 such perfect square dates in the month/day/year date format and 43 in the day/month/year date format. Among these, only eight of them will coincide with the same day of the calendar in both date formats. The first will be September 9 expressed as 9/9/2016 followed by the other seven that are January 9, September 1 and 27, 2025, January 1, 2036 written as 1/01/2036, May 5, 2049 as 5/5/2049, February 2, 2084 as 2/02/2084, and May 21, 2089. Four of these eight perfect square dates corresponding to January 9, September 1 and 27, 2025, and May 21, 2089 are unique because unlike the other four shared perfect square dates, they are expressed as different date numbers in each date format: 1/09/2025, 9/1/2025, 9/27/2025, and 5/21/2089 in month/day/year date format versus 9/1/2025, 1/09/2025, 27/09/2025, and 21/5/2089 in day/month/year date format.

Perfect square dates can sometimes be challenging to keep track of but they are always fun to share. They definitely possess the magic power to tease our brains particularly because they involve large square numbers. This Friday, in recognition of this special perfect square date 9/9/2016, I invite you to spend some time to pay attention to other squares you encounter in your surroundings.

Happy perfect square date 9/9/2016!

[1] A. S. Inan, "A Numerical Milestone, No Foolin'," *The Beacon*, Vol. 110, Issue No. 22, p. 13, University of Portland, Portland, Oregon, April 2, 2009. (Correction: In the sixth paragraph, second sentence, the second "year" should be "date".)

<http://www.upbeacon.com/2009/04/02/a-numerical-milestone-no-foolin/>

[2] A. S. Inan, "Century of Squares," *The Beacon*, Vol. 110, Issue No. 18, p. 14, University of Portland, Portland, Oregon, February 26, 2009. (Correction: In the last paragraph, "third" should be "fourth".)

<http://www.upbeacon.com/2009/03/26/century-of-squares/>

[3] A. S. Inan, "Perfect Square Dates in 2016," *The Beacon Online*, University of Portland, Portland, Oregon, February 26, 2016.

<http://www.upbeacon.com/2016/02/26/perfect-square-dates-in-2016/>

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