

Ben Franklin Turns 310

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This Sunday, January 17, 2016 marks Benjamin Franklin's 310th birthday [1-6]. To remember this remarkable man and to celebrate his 310th birthday, I constructed the following birthday brainteasers:



Can you find Franklin's birthday number hidden in this picture?

1. If Franklin's 310th birthday is expressed as 1-17-2016, or simply as 1172016, the reverse of this number, namely 6102711, is equal to 153 (*Franklin number*) times 39887 [5]. Further, if 39887 is separated into its odd- and even-numbered digits as 387 and 98, these two numbers differ by 17 square where number 17 holds a unique place in Franklin's life [6].
2. Number 310 equals 2 times 155 where these two numbers differ by 153 (*Franklin number*).
3. If the digits of Franklin's birthday 1172016 are numbered from left to right as 1 to 7, the odd-numbered digits yield Franklin's birth year 1706. The even-numbered digits of 1172016 equal 121 and 121 minus the sum of the digits of 310 give 117 representing Franklin's birth date January 17. Also, 121 equals 11 square where 11 is the difference between the left- and right-halves of 1706.

4. If Franklin's birthday 1172016 is split as 117 and 2016, the sum of these two numbers is 2133 which is 3 times the reverse of 117, namely 711. Moreover, the sum of the digits of 1172016 yields 18 which equals the sum of the month and day numbers of Franklin's birth date.
5. If Franklin's birthday 1172016 is split into 1, 17, 20 and 16 twice the sum of these four numbers yield 108 and coincidentally, the 108th day of 2016 is the 226th anniversary of Franklin's death, April 17, 2016.
6. The sum of Franklin's birthday number 310 and its reverse, namely 13, result in 323 which equals 17 times 19. Interestingly enough, 17 and 19 put side by side make 1719, the year when Franklin turned 13. Moreover, note that 13 American colonies declared independence from Britain in July of 1776.
7. If 01172016 is split in the middle into 0117 and 2016, twice the difference of the reverses of these two numbers yield 2016. Wow!
8. This year (2016) also marks the 226th anniversary of Franklin's death. Interestingly enough, 226 equal twice 113 where the reverse of 113, namely 311, coincides with Franklin's next birthday number. Furthermore, the reverse of 2016, namely 6102, equals half of 108 times 113 where 108th day of 2016 is the 226th anniversary of Franklin's death (4-17-2016) and twice 113 equals 226.
9. Number 113 is the 30th prime, where 30 times the reverse of 30 yields 90. Franklin died 90 days after his 84th birthday.
10. Lastly, if 2016 is split into 01 (its middle two digits) and 26 (its leftmost and rightmost digits), half of the product of the reverses of these two numbers give Franklin's birthday number 310. Isn't this fun?

Happy 310th birthday, Ben Franklin!

[1] A. S. Inan, "Ben Franklin's 309th Birthday Add Up to 17," posted by M. Mangold, "NUMEROUS Franklin Birthday Greetings: Dr. Inan's 309th-Birthday Brain Teasers," *friendsoffranklin.org*, The Friends of Franklin, January 17, 2015.

[2] A. S. Inan, "Happy 308th Birthday, Ben Franklin!," posted by M. Mangold, "Franklin Numerology for his 308th Birthday," *friendsoffranklin.org*, The Friends of Franklin, January 14, 2014.

[3] A. S. Inan, "Ben Franklin's 307th Birthday Possesses a Unique Numerical Property," *Franklin Gazette*, Vol. 22, No. 2, p. 2, Winter, 2012-2013.

[4] A. S. Inan, "Happy 306th Birthday, Ben Franklin!," *Franklin Gazette*, Vol. 21, No. 4, p. 1 and p. 10, Winter, 2011/2012.

[5] A. S. Inan, "The Franklin Number and Other Numerical Oddities in Ben Franklin's Life," Vol. 21, No. 3, p. 9, Fall, 2011.

[6] A. S. Inan, "More 17's in Ben Franklin's Life," *Franklin Gazette*, Vol. 21, No. 2, pp. 7-8, Summer, 2011.