Top Ten Birthday Brainteasers for David Letterman
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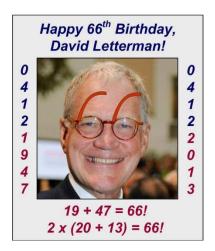(April 12, 2012; updated on April 12, 2013)

American late night television talk show host David Letterman (born April 12, 1947) turns 65 today, Thursday, April 12, 2012. The following are the top ten numerical birthday brainteasers that I constructed for him as a birthday gift for his 65th birthday:

1. If Letterman's birth year 1947 is split into numbers 19 and 47, the reverse of twice the difference of these two numbers yields 65.
2. Letterman's full birth date is 4-12-1947 or simply 4121947. The reverse of twice the sum of the digits of this number also equals 65.
3. The reverse of Valentine's Day (214) coincides with Letterman's birth date (412)! That is, Letterman's birth date coincides with "yaD s'enitnelaV"!
4. Number 412 (April 12) equals 4 times 103. Interestingly enough, April 12 (Letterman's birth date) happens to be the 103rd day of a leap year (e.g., 2012), what a coincidence!
5. The 412th prime number is 2837 where 28 plus 37 (which are the left- and right halves of 2837) yields Letterman's new age 65.
6. If numbers are assigned to the letters of Letterman's first name "David" according to the English alphabet (A being 1, B 2, etc.), the numbers of the letters of "David" add-up to 40. If Letterman's 65th birthday expressed as 4122012 is split into numbers 412 and 2012, the square-root of the difference of these two numbers results in "David"!
7. The numbers assigned to the letters of "Letterman" add-up to 108 where number 108 can be expressed as $1^1 2^2 3^3$. Also, the numbers of the letters of Letterman's middle name "Michael" add-up to 51 where twice 51 yields 102. Interestingly enough, Letterman was born on the 102nd day of 1947 because the 102nd day of each non-leap year like 1947 is April 12.
8. The numbers assigned to the letters of Letterman's full name "David Michael Letterman" add-up to 199. If Letterman's birth year 1947 is split as 19 and 47, half of the reverse of the product of these two numbers also yields 199. Wow!
9. Letterman's full birth date 4121947 equals 47 times 87701 where 87701 is the 8518th prime number. Interestingly enough, 85 and 18 (which make-up 8518) also add-up to number 103 (representing the 103rd day of a leap year, which is Letterman's birthday, April 12).
10. In addition, number 103 is the 27th prime number where the sum of the digits of 103 multiplied by 27 equal to the sum of the letters of "Letterman" (i.e., 108). Also, as an aside, 103 and its reverse (301) add-up to 404 where the prime factors of 404 (2 and 101) added-up yield back 103.

In addition to these top ten birthday brainteasers, I also found other interesting numerical brainteaser connections and coincidences with regards to some of Letterman's other birthdays:

11. Letterman's 16th birthday: The reverse of number 2837 (the 412th prime number) is twice 3691 where reverse of number 3691 (which is 1963) equals the sum of numbers 4, 12 and 1947 (which when put side-by-side make-up Letterman's full birth date 4121947). So, Letterman's 16th birthday in 1963 was special for this reason and I am just curious if he was in any way aware of this connection? ☺
12. Letterman's 66th birthday: Letterman's 66th birthday to occur next year (2013) is also special because 66 equals to 19 plus 47 (where 19 and 47 side-by-side make-up his birth year 1947). Also, twice the sum of numbers 20 and 13 (which make-up 2013) yields 66. In addition, reverse

of 2013 which is 3102 equals 66 (Letterman's new age) times 47, where 66 minus 47 yields 19 and 19 and 47 put together side-by-side results in 1947, that is, Letterman's birth year! Isn't this something?

Happy 66ᵗʰ Birthday, David Letterman!

19 + 47 = 66!
2 x (20 + 13) = 66!

13. <u>Letterman's 67th birthday puzzle:</u> Letterman's 67th birthday to occur in 2014 is a palindrome, why? (Answer: 4-12-14). Also, April 12 is the 102nd day of 2014 where one-third of reverse of 102 yields 67!

14. <u>Letterman's 68th birthday:</u> Letterman's 68th birthday to occur in 2015 is special since 2015 equals 56 (which is the sum of the numbers assigned to the letters of "April") plus 12 plus 1947 (that is, April 12, 1947).

15. <u>Letterman's 69th birthday puzzle:</u> Letterman's 69th birthday in 2016 is also special, why? Go ahead and multiply the digits of Letterman's full birth date 4121947, what is the result? (Answer: 2016!) In addition, twice 6 times 9 (which are the digits of 69) equals to the sum of the numbers assigned to the letters of his last name "Letterman".

16. <u>Letterman's 94th birthday puzzle:</u> Consider Letterman's birth year 1947. First, switch the places of the middle two digits (1497), second, rotate digit "9" around its axis by 180 degrees (1467), and then, insert digit "7" to the right-side of each digit, yielding 17476777. Now, split this number into two-digit numbers as 17, 47, 67 and 77 and multiply these four numbers, what comes out? (Answer: The full date of Letterman's 94th birthday, 4122041!) Note also that number 94 corresponds to the middle two-digits of 1947.

17. <u>Letterman's bicentennial birthday puzzle:</u> Assigning numbers to the letters of the English alphabet as A = 1, B = 2, etc., express Letterman's first name "David" as a single number as 412294. Now, if this number is split in the middle as 412 (April 12) and 294, 294 equals 2x147. If 412 and 2x147 are put back side-by-side as 4122x147 and the multiplication sign is removed, the leftover number represents what? (Answer: The full date number of Letterman's bicentennial (200th) birthday, 4122147.) Isn't this fun? Also, interestingly enough, the product of the digits of "David" number 412294 is equivalent to $1^2 2^2 3^2 4^2$, neat huh?

Happy 65th birthday, David Letterman!

Aziz S. Inan is a professor of electrical engineering teaching at University of Portland for 23 years. As a hobby, he enjoys finding interesting numerical properties associated with numbers, connections and coincidences between numbers, calendar dates, birthdays, historical dates, etc. He can be reached at 503-943-7429 or ainan@up.edu. (Note that the purpose of this article is solely recreational and for fun.)