1. What is the last digit of 52,996,015 + 4,011,627?
2. What is the last digit of 3,924,078 × 4,011,627?
3. What is the last digit of 723^{199}?
4. Is the number 12,648,643,212 a perfect square? Explain.
5. Is the number 5,767,068 a perfect square? Explain.
6. Show that the product of two even numbers is even.
7. Show that the product of one even number and one odd number is even.
8. Show that the sum of two even numbers is even.
9. Show that the sum of one even number and one odd number is odd.
10. Show that the sum of two odd numbers is even.
11. What day of the week was your birthday in 2019? Use cyclic arithmetic (mod 7) to justify your answer. (Hints: What day of the week is it today? How many days ago was your birthday? Don’t forget that we had leap years in 2008, 2012, 2016, and 2020.)
12. What day of the week were you born?
13. How many 2-digit numbers are there?
14. How many 2-digit numbers are 0-step palindromes?
15. How many 2-digit numbers with tens digit 1 are 1-step palindromes?
16. How many 2-digit numbers with tens digit 2 are 1-step palindromes?
17. How many 2-digit numbers with tens digit 3 are 1-step palindromes?
18. How many 2-digit numbers with tens digit 4 are 1-step palindromes?
19. How many 2-digit numbers with tens digit 5 are 1-step palindromes?
20. How many 2-digit numbers with tens digit 6 are 1-step palindromes?
21. How many 2-digit numbers with tens digit 7 are 1-step palindromes?
22. How many 2-digit numbers with tens digit 8 are 1-step palindromes?
23. How many 2-digit numbers with tens digit 9 are 1-step palindromes?
24. How many 2-digit numbers are 2-step palindromes?
25. How many 2-digit numbers are 3-step palindromes?
26. How many 2-digit numbers are 4-step palindromes?
27. How many 2-digit numbers are 5-step palindromes?
28. How many 2-digit numbers are 6-step palindromes?