

1.

2.

3.

4.

5. All the years from 2000 - 2999 have 2 in the thousands digit so they look like  $2ABC$ . If we want the digital sum to be 10, we want  $2 + A + B + C = 10$  or  $A + B + C = 8$ .

$$0 + 0 + 8 = 8 \quad (1)$$

$$0 + 1 + 7 = 8 \quad (2)$$

$$0 + 2 + 6 = 8 \quad (3)$$

$$0 + 3 + 5 = 8 \quad (4)$$

$$0 + 4 + 4 = 8 \quad (5)$$

$$0 + 5 + 3 = 8 \quad (6)$$

$$0 + 6 + 2 = 8 \quad (7)$$

$$0 + 7 + 1 = 8 \quad (8)$$

$$0 + 8 + 0 = 8 \quad (9)$$

$$1 + 0 + 7 = 8 \quad (10)$$

$$1 + 1 + 6 = 8 \quad (11)$$

$$1 + 2 + 5 = 8 \quad (12)$$

$$1 + 3 + 4 = 8 \quad (13)$$

$$1 + 4 + 3 = 8 \quad (14)$$

$$1 + 5 + 2 = 8 \quad (15)$$

$$1 + 6 + 1 = 8 \quad (16)$$

$$1 + 7 + 0 = 8 \quad (17)$$

⋮

Notice that if the first digit is 0, there are 9 different years, if the first digit is 1, there are 8 different years, and so on so that we have  $9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1 = \boxed{45}$  years between 2000 - 2999 that have a digital sum of 10.



Math Olympiad and Problem Solving Program

F130 - Advanced Problem Solving

Problem Set 10.2: Review

Name:

Date:

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6.

7.

8.

9.

10.