

Q1. Can you find the other two ways of making a total of 747 in this way?

1. $225+522=747$
2. $324+423=747$

Q2. Can you find some other totals between 700 and 800 that can be made from a number plus its reversal? & Can you explain how you know you have found all the possible totals?

From question 1 I thought that the numbers in the hundreds place and the number in the ones place needs to be the same because if the number is reversed so the numbers added together are the same. Then I thought about the possibility of carrying over the 10. But then the number would become a 4 digit number.

Another idea I got was that the tens digit number is an even number because the same number is added so the number must be even.

So, the numbers can be 707, 727, 747, 767, 787.

Q3. How many totals between 300 and 400 can be made from a number plus its reversal? And between 800 and 900...?

If the number is between 300 and 400 the hundreds digit must be 3 so the number must be 3_3 and the middle number is even 303, 323, 343, 363, 383 so there can be 5 numbers that can be made from a number plus its reversal. Using the same method the number between 800 and 900 that can be made from a number plus its reversal are 808, 828, 848, 868 and 888. So there are 5 numbers that can be made from a number plus its reversal between 300 and 400, 800 and 900.

Q4. Can you work out how to make a total of 1251 by adding a 3-digit number to its reversal?

The numbers in the hundreds and ones place in the reversed number must add together to 11 because the 1251 ends with a 1 so the hundreds number plus the ones number is 11 because the biggest sum of the two numbers is 18. The ones place and hundreds added together carry over a one so the tens number in the reversed number must end with 4. Also the number needs to carry over a one so the number in the tens place must be 7. So the numbers can be 259, 925, 358, 385, 457, 754, 556, 655.

Q5. Can you find all the totals between 1200 and 1300 that can be made from a number plus its reversal? (*There are more than five...*) & And what about totals between 1900 and 2000?

There is no carrying over so the number in the ones and hundreds digit of the have to add up to 12 the number in the tens place must be an odd number because of the carrying over from the ones digit so the numbers can be 1212, 1232, 1252, 1272, 1292.

In the same way the numbers between 1900 and 2000 can be 1919, 1939, 1959, 1979, 1999.