**Binary Addition Guide**

**Introduction**

In this report, I will be doing a guide with examples of how binary addition works. I will explain what binary addition is and how to add 8-digit two binary together.

**Binary Addition**

Binary addition is adding two digit binary together. This sounds simple, but it is hard to do and they are a few rules which you need to learn in order to get it right. This is used to crack codes or words that are used within a computer to recognise it. For example, they will be an 8 digit binary code and a table with it. You have to add it together and convert it to denary and crack the code using the table. We got TOKYO. We added 00010011 + 00000001 = 00010100. We converted it to denary and got 20. By looking at the table, 20 is T. We done it for each one and got the answer TOKYO. Every single time you add the binary together, you need to remember them rules.

**EXAMPLE**

  1001101 01110101  
+ 0010010 01011001  
  1011111 11001110

111 1

This is a simple version of binary addition. All you do is follow the rules and add it. However, when it gets harder is the carrying part. Every single time you see, 1+1 = 1 with carry 1. As you can see for the second example, they are carries which follows on to the other one. Therefore, if it is 1+1 = 0 carry the 1, you add it to the other one; which makes 0+0+1= 1. If it is 1+1+1= 1 carry the 1. It is simple once you keep practicing it.

**RULES**

**0\*0 = 0**

**0\*1= 1**

**1\*0= 1**

**1\*1= 0 carry 1**

Carry bits

**EXAMPLES**

There is a simpler and easier way to do binary addition. If you see the binary code, you can convert it to binary. This is easy. Look at this picture. It examples all of it. All you do is use the place values as it. For example, this one would be 5 because 8 4 2 1

0 1 0 1, you add the ones that have 1 behind it. 4+1 is five. You do the same for the other binary code and add them together to get 8. If the question requires you answer it in binary code, you convert it back to binary; which is 1000 by using the place values again.

