**Binary**

1. Decimal number system:

**30156** = **3** × \_\_\_\_\_ + \_\_\_ × 1000 + \_\_\_ × 100 + **5** × \_\_\_\_ + **6** × \_\_\_

1. Binary number system:
2. Convert a number from binary to decimal:

**1100101** = **1** × \_\_\_\_ + \_\_\_ × 32 + \_\_\_ × 16 + **0** × \_\_\_\_ + **1** × \_\_\_ + \_\_\_ × 2 + \_\_\_ × 1 = \_\_\_\_\_

1. Convert a number from decimal to binary:

1 == 0001, 2 == 00 \_ \_ , 3 == 0011 , 4 == \_ \_ \_ \_ , 5 == \_ \_ \_ \_ ,

6 == 0110, 7 == \_ \_ \_ \_ , 8 == 1000, 9 == \_ \_ \_ \_ , 10 == \_ \_ \_ \_ .

100 = **\_\_** × 64 + \_\_ × 32 + \_\_ × 16 + **\_\_** × 8 + **\_\_** × 4 + \_\_ × 2 + \_\_ × 1 = \_ \_ \_ \_ \_ \_ \_

1. Magnet Activity:
2. Write a three letters message in ASCII Table (one letter per row)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Your letter | Your letter in ASCII code | Your letter in Binary |
| First letter |  |  |  |
| Second letter |  |  |  |
| Third letter |  |  |  |

1. Use magnet to encode your letters. (Make sure you know which side of magnet represents 1. Recommend that everyone regard the side with a hole as 1.)
2. Let your partner to decode your letters.
3. Switch. Let your partner encode letters and you decode.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Partner’s letter in Binary | Letter in ASCII code | Partner’s letter |
| First letter |  |  |  |
| Second letter |  |  |  |
| Third letter |  |  |  |