Binary!

00101001001100100101010

Why do computers use binary?

- Easy to detect the state of a switch – they're either on or off!

- Using another base makes computers more prone to error.

Counting

In decimal (base 10), we have digits 0-9. In binary, we only have digits 0 and 1.

0

Counting

In decimal (base 10), we have digits 0-9. In binary, we only have digits 0 and 1.

1

Counting

In decimal (base 10), we have digits 0-9. In binary, we only have digits 0 and 1.

10

Counting

In decimal (base 10), we have digits 0-9. In binary, we only have digits 0 and 1.

11

Counting

In decimal (base 10), we have digits 0-9. In binary, we only have digits 0 and 1.

100

Counting

In decimal (base 10), we have digits 0-9. In binary, we only have digits 0 and 1.

101

Counting

In decimal (base 10), we have digits 0-9. In binary, we only have digits 0 and 1.

110

Counting

In decimal (base 10), we have digits 0-9. In binary, we only have digits 0 and 1.

111

Counting

In decimal (base 10), we have digits 0-9. In binary, we only have digits 0 and 1.

1000

Places

1011

1’s

Places

1011

2’s

Places

1011

4’s

Places

1011

8’s

Places

4853

10^0

1011

2^0

Places

4853

10^1

1011

2^1

Places

4853

10^2

1011

2^2

Places

4853

10^3

1011

2^3

Translating Binary to Decimal

1011

1

Translating Binary to Decimal

1011

2 + 1

Translating Binary to Decimal

1011

0 + 2 + 1

Translating Binary to Decimal

1011

8 + 0 + 2 + 1

Translating Binary to Decimal

101100

Answer: 44

Translating Binary to Decimal

10001110

Answer: 142

Zorah's favorite things about Binary

Adding is the easiest. EVER.

1 0 0 1 0 1

1 1 0 1 1 0

1

Zorah's favorite things about Binary

Adding is the easiest. EVER.

1 0 0 1 0 1

1 1 0 1 1 0

1 1

Zorah's favorite things about Binary

Adding is the easiest. EVER.

100101

110110

011

Zorah's favorite things about Binary

Adding is the easiest. EVER.

100101

110110

1011

Zorah's favorite things about Binary

Adding is the easiest. EVER.

100101

110110

11011

Zorah's favorite things about Binary

Adding is the easiest. EVER.

1 0 0 1 0 1

1 1 0 1 1 0

0 1 1 0 1 1

Zorah's favorite things about Binary

Adding is the easiest. EVER.

100101	37
110110	54
1011011	91

Zorah's favorite things about Binary

Dividing by 2 is neat-o

101100

44

Zorah's favorite things about Binary

Dividing by 2 is neat-o

0 1 0 1 1 0

2 2

Zorah's favorite things about Binary

Dividing by 2 is neat-o

0 0 1 0 1 1

1 1

Zorah's favorite things about Binary

Dividing by 2 is neat-o

000101.1

5.5

Zorah's favorite things about Binary

Dividing by 2 is neat-o

00010.11

2.75

Zorah's favorite things about Binary

You can count to, like, a bajillion on your fingers in binary.

Try it. I know you want to.

“There are 10 types of people in the world: those who understand binary and those who don’t.”