Storyboard-BinaryKids

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Advanced Programming
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Screen 1

Welcome to Binary for Beginners!

Explanation of Application and Welcome Message

Begin Lesson

Screen 2

Welcome to Binary for Beginners!

How do you use computers?

(User enters text here)

Screen 3

Welcome to Binary for Beginners! Well, you'd be surprised to know none of → → → → → → → → would be possible without binary numbers! ……. Explanation of binary and its importance to computers: what are binary numbers? What are their practical uses?	How you use computers: (display text)

Screen 4

Welcome to Binary for Beginners!

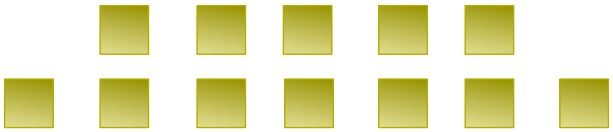
What would you like to learn first (click for tutorials)?

- Decimal→Binary
- Binary→Decimal
- Binary Addition
- Binary Subtraction

Decimal → Binary (1)

Let's learn how to convert by doing an example!

How many squares are there?

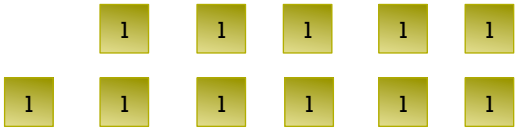


Submit Answer

Decimal → Binary (2)

Let's do an example!

How did we get to the number 11 ??



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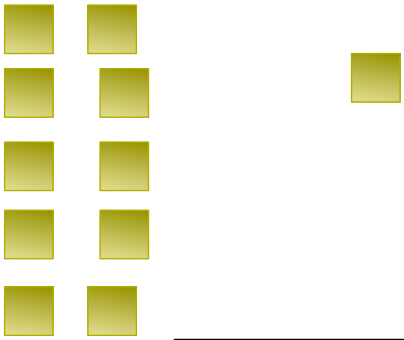
Decimal → Binary (3)

Let's do an example!

How did we get to the number 11 ??

10s column 1s column



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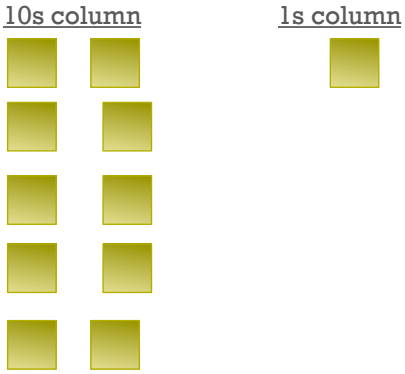
Decimal → Binary (4)

Let's do an example!

How did we get to the number 11 ??



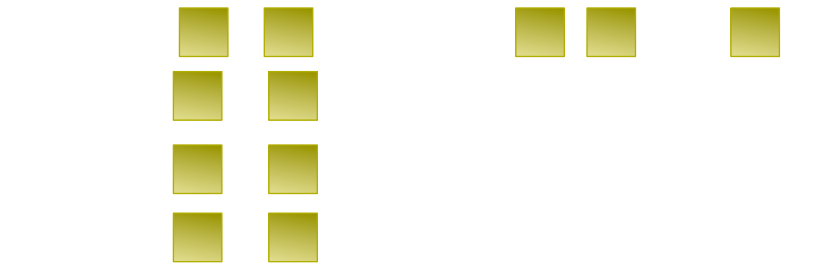
How many? 1 1 → 11 !

Next Page→

Decimal → Binary (5)

Let's do an example!

In Base 2...



How many? 1 0 1 1 → 1011

Next Page→

Decimal → Binary (6)

Get it?

11 in decimal = 1011 in binary!

Let's Review with some practice problems

Decimal → Binary Practice Problems(7)

Get it?

What is 29 in binary? ___ ___ ___ ___ ___

Need help? Click to show squares

Need a hint?

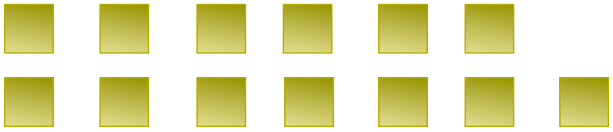
Go back to tutorial

Now Learn how to convert the other way

Binary → Decimal (1)

Let's learn how to convert by doing an example!

How many squares are there?



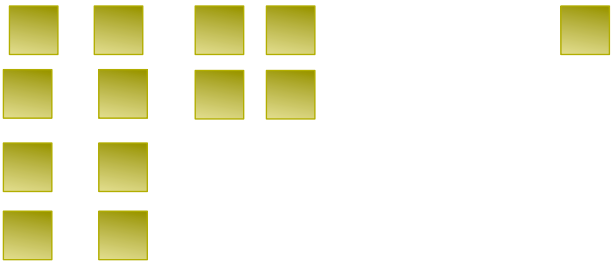
Submit Answer

Binary → Decimal (2)

Let's do an example!

In Base 2...

16s column	8s column	4s column	2s column	1s column



How many? 1 1 0 1 → 1101

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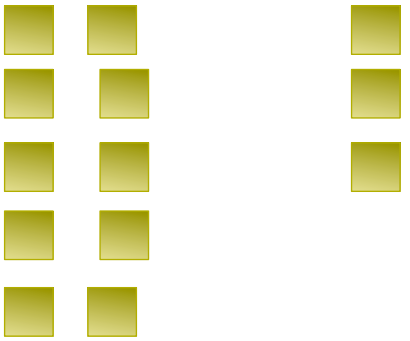
Binary → Decimal (3)

Let's do an example!

Let's rearrange those squares back into columns of tens places..

10s column

1s column



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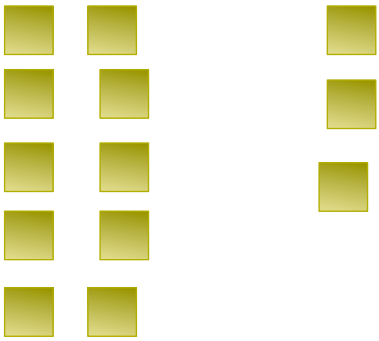
Binary → Decimal (4)

Let's do an example!

How did we get to the number 13 ??

10s column

1s column



How many? 1 3 → 13 !

Next Page→

Decimal → Binary (5)

Get it?

1101 in binary =13 in decimal !!

Let's Review with some practice problems

Binary → Decimal Practice Problems(6)

Get it?

What is 1001 in decimal? ___ ___ ___

Need help? Click to show squares

Need a hint?

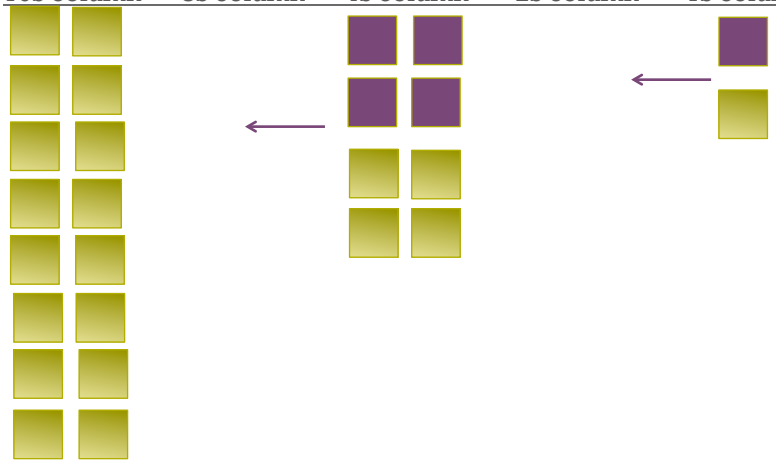
Go back to tutorial

Now Learn how to add!

Binary Addition Tutorial (1)

What is the sum of 101 + 10101? Let's find out….

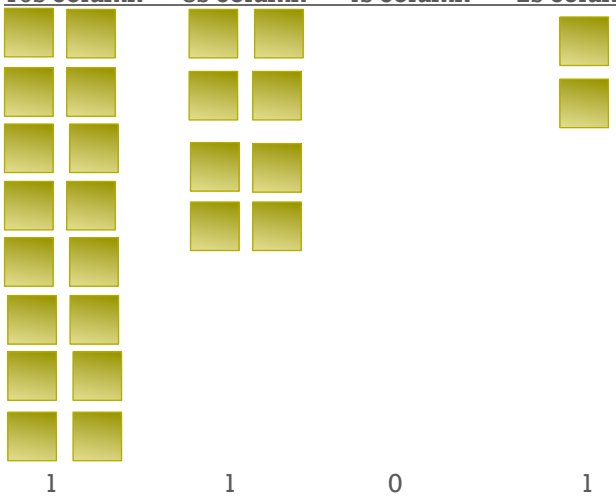
16s column 8s column 4s column 2s column 1s column



How can we move these around? Submit

Binary Addition Tutorial (2)

16s column 8s column 4s column 2s column 1s column



1 1 0 1 0

Adding these, what do you get? _ _ _ _ _ Submit

Binary Addition Tutorial (3)

Get it?

101 + 10101 = '11010' in binary!

Let's Review with some practice problems

Binary Addition Practice Problems(4)

Get it?

What is 110 +100 in binary? ___ ___ ___

Need help? Click to show squares

Need a hint?

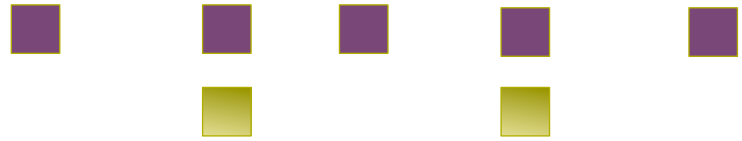
Go back to tutorial

Now Learn how to subtract

Binary Subtraction Tutorial (1)

What is the difference of 11111 - 1010? Let's find out….

16s column 8s column 4s column 2s column 1s column



What can we cross out??

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Binary Subtraction Tutorial (2)

What is the difference of 11111 - 1010? Let's find out….

16s column 8s column 4s column 2s column 1s column

What can we cross out??

Next Page→

Binary Subtraction Tutorial (3)

What is the difference of 11111 - 1010? Let's find out….

16s column	8s column	4s column	2s column	1s column
1	0	1	0	1

DIFFERENCE:

_____ _____ _____ _____ _____

Submit

Binary Subtraction Tutorial (4)

Get it?

11111 - 1010 = 10101 in binary!

Let's Review with some practice problems

Binary Subtraction Practice Problems(5)

Get it?

What is 111 – 101 in binary? ___ ___ ___

Need help? Click to show squares

Need a hint?

Go back to tutorial

Submit

Play a game!

Game (1)

Get it?

CONGRATULATIONS! You're a math whiz!
Celebrate by playing a fun binary snake game

Rules:

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Guidelines:

~~~~

Play game

Game (2)

Ex. What is 27 in binary? Move your blue piece around screen to fill in the digits! (Note: as questions are answered correctly, new are more difficult addition, subtraction, and conversion problems will display)