

# Binary Arithmetic Operation





# Addition of Positive Numbers

$$0 + 0 = 0$$

$$0 + 1 = 1$$

$$1 + 0 = 1$$

$$1 + 1 = 10 \text{ with a carry-over of } 1$$

$$\begin{array}{r} 1 \\ (+) \quad 1 \\ \hline \end{array}$$

*Carry-overs of binary addition are performed in the same manner as in decimal addition.*

# Addition of Positive Numbers

$$0 + 0 = 0$$

$$0 + 1 = 1$$

$$1 + 0 = 1$$

$$1 + 1 = 10 \text{ with a carry-over of } 1$$

$$\begin{array}{r} 1 \\ (+) \ 1 \\ \hline 0 \end{array}$$

*Carry-overs of binary addition are performed in the same manner as in decimal addition.*

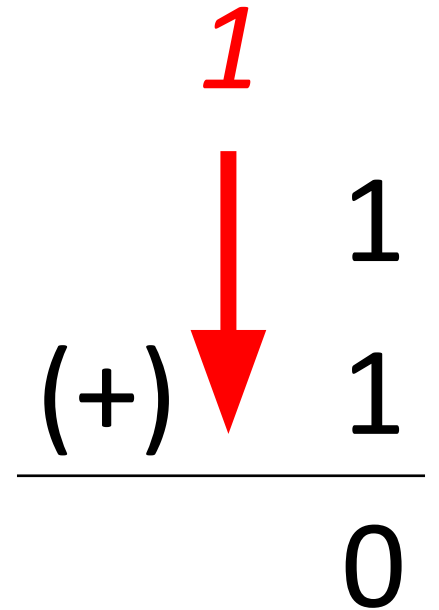
# Addition of Positive Numbers

$$0 + 0 = 0$$

$$0 + 1 = 1$$

$$1 + 0 = 1$$

$$1 + 1 = 10 \text{ with a carry-over of } 1$$



A diagram illustrating binary addition. It shows two columns of digits. The first column contains a '1' and a '1' separated by a horizontal line, with a '0' below the line. To the left of the first column is a red arrow pointing downwards, labeled with a red '1' above it and a black '(+)' to its left. The second column contains a '1' and a '1' separated by a horizontal line, with a '0' below the line.

*Carry-overs of binary addition are performed in the same manner as in decimal addition.*

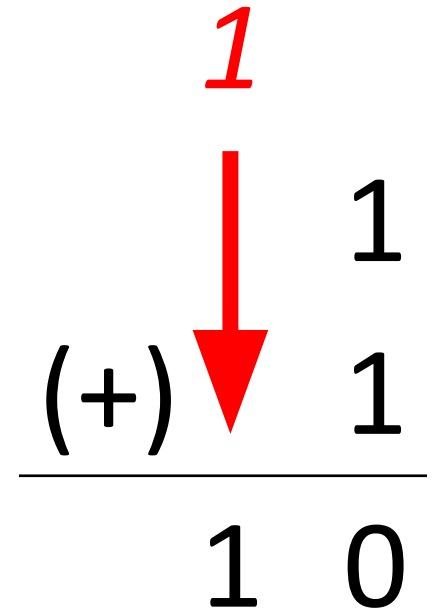
# Addition of Positive Numbers

$$0 + 0 = 0$$

$$0 + 1 = 1$$

$$1 + 0 = 1$$

$$1 + 1 = 10 \text{ with a carry-over of } 1$$



The diagram illustrates the binary addition of 1 and 1. It shows two columns of digits. The right column contains '1' and '1'. A horizontal line is drawn below the second '1'. Below the line, the result '10' is shown. A red arrow points from the top of the right column down to the first '1' of the result. Above the arrow, a red '1' indicates the carry-over value. To the left of the arrow, the text '(+)' is written.

*Carry-overs of binary addition are performed in the same manner as in decimal addition.*

# Addition of Positive Numbers

$$0 + 0 = 0$$

$$0 + 1 = 1$$

$$1 + 0 = 1$$

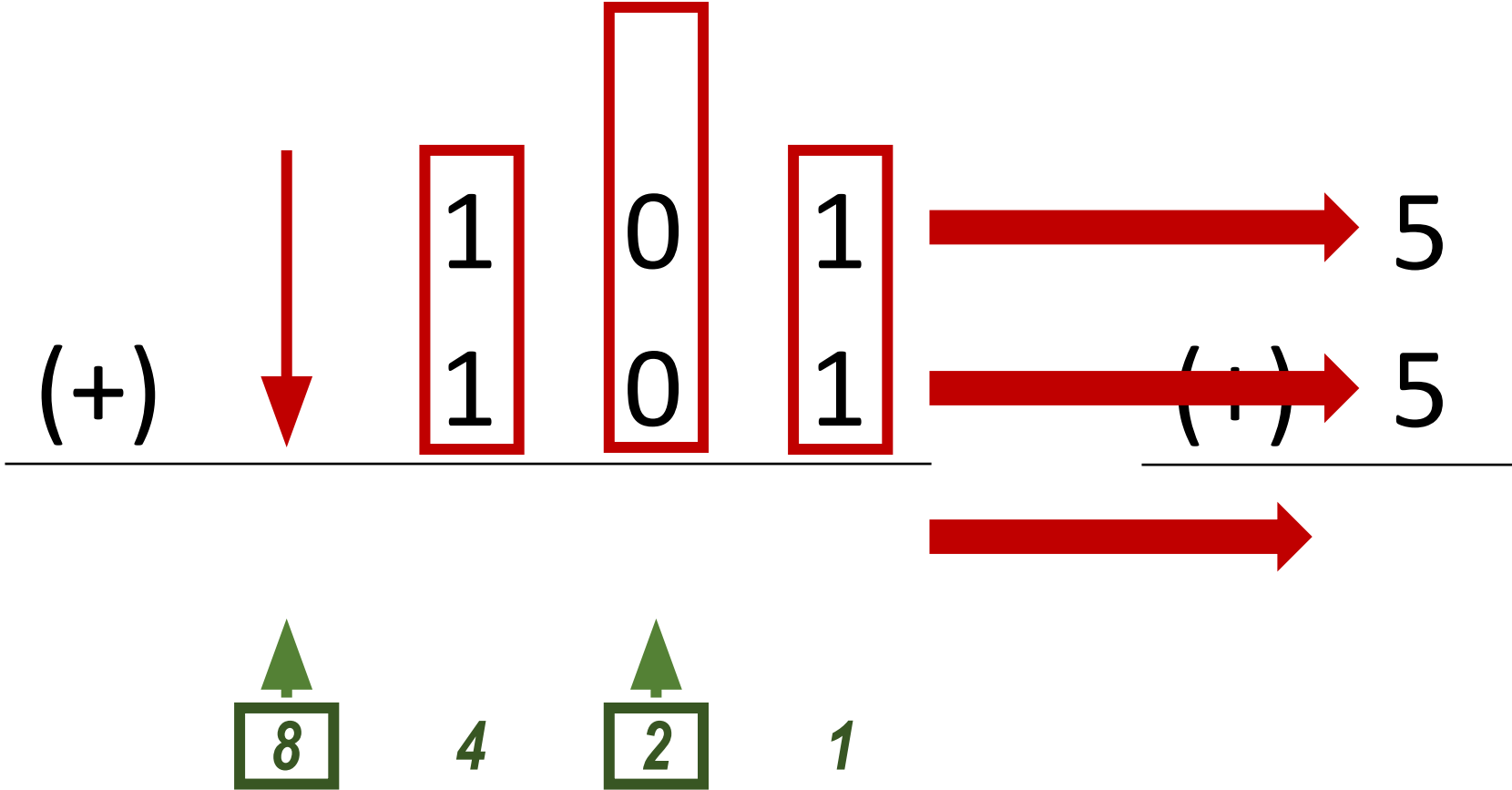
$$1 + 1 = 10 \text{ with a carry-over of } 1$$

$$\begin{array}{r} \textcolor{red}{1} \\ 1 \\ (+) 1 \\ \hline 10 \end{array}$$

*Carry-overs of binary addition are performed in the same manner as in decimal addition.*

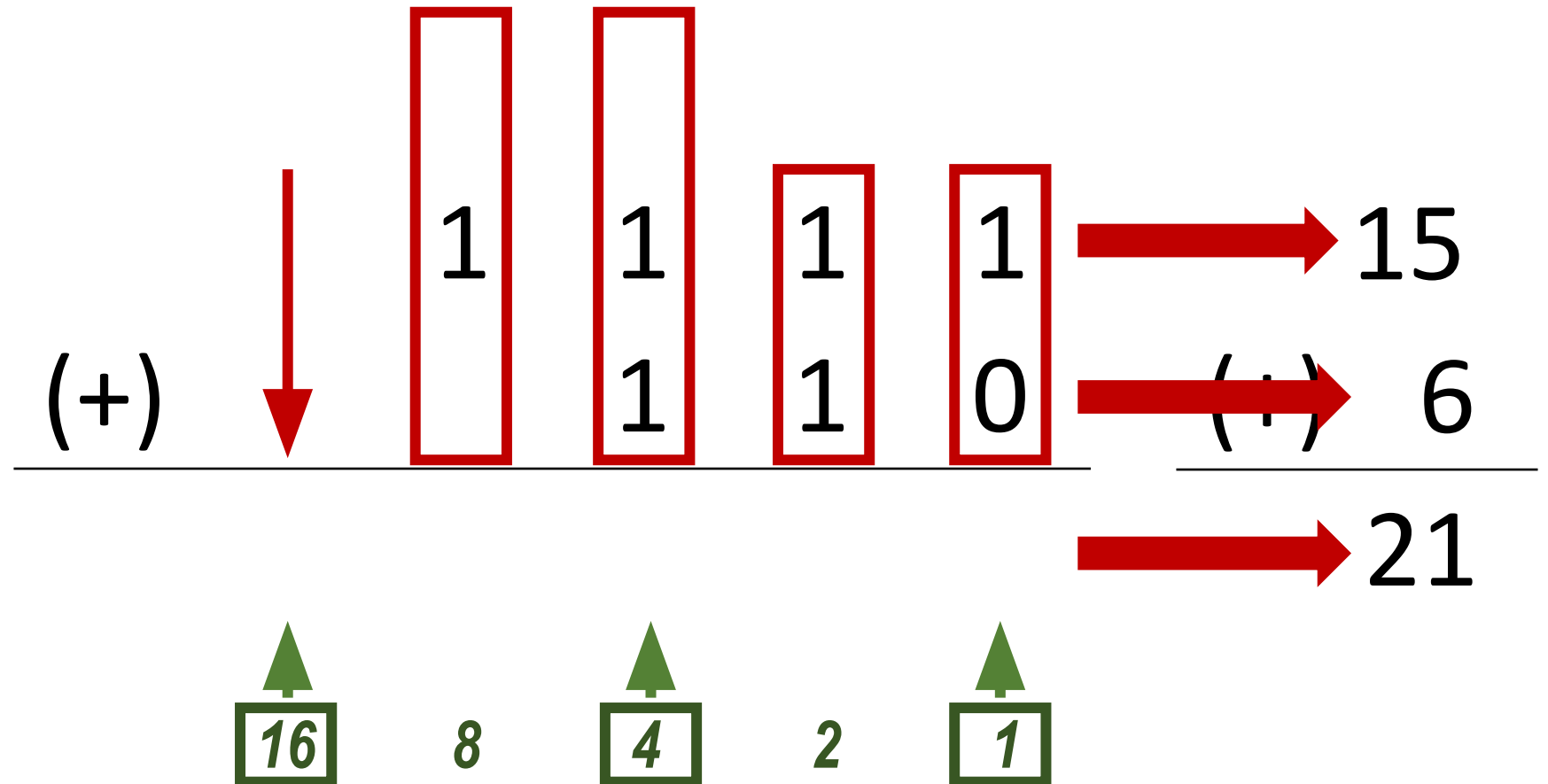
# Addition of Positive Numbers

## EXAMPLE #1



# Addition of Positive Numbers

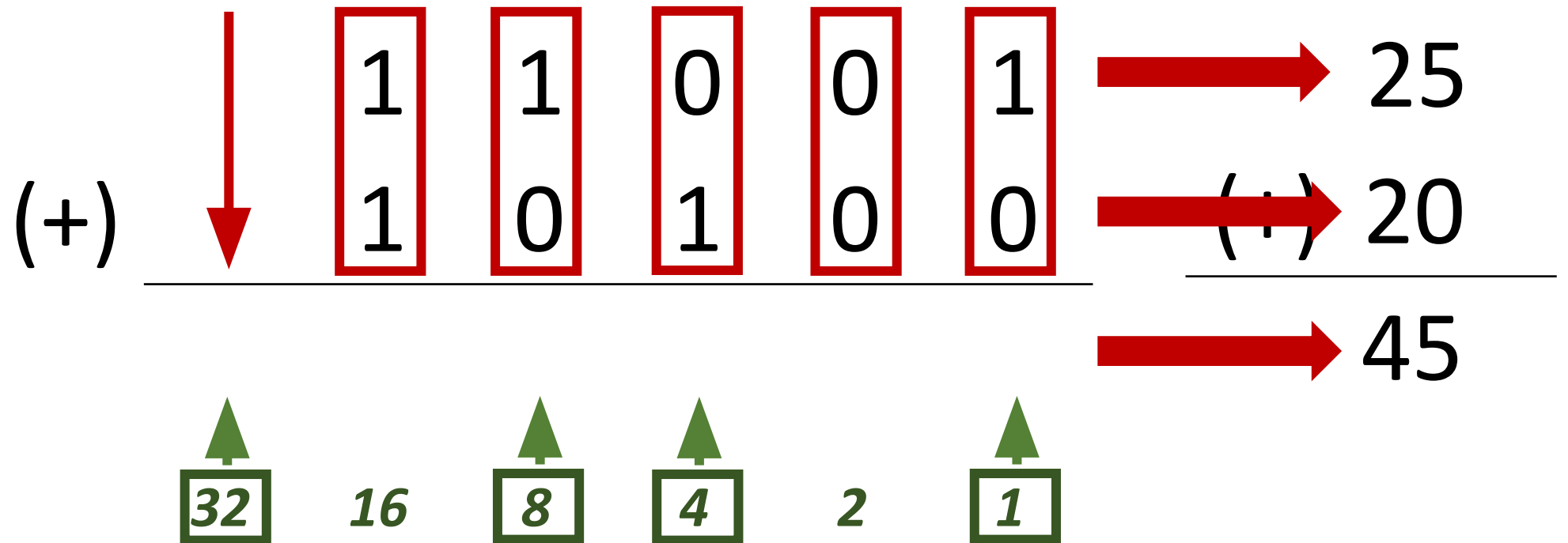
## EXAMPLE #2





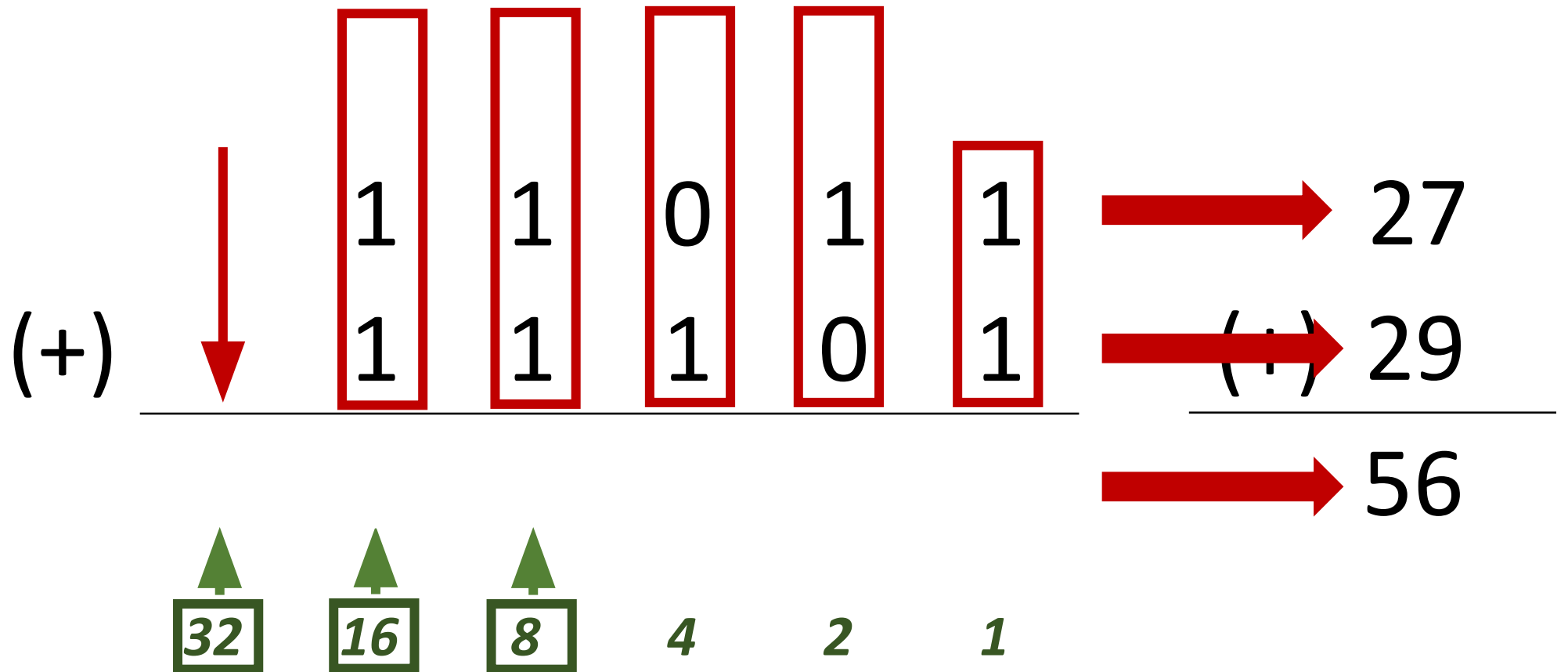
# Addition of Positive Numbers

## EXAMPLE #3



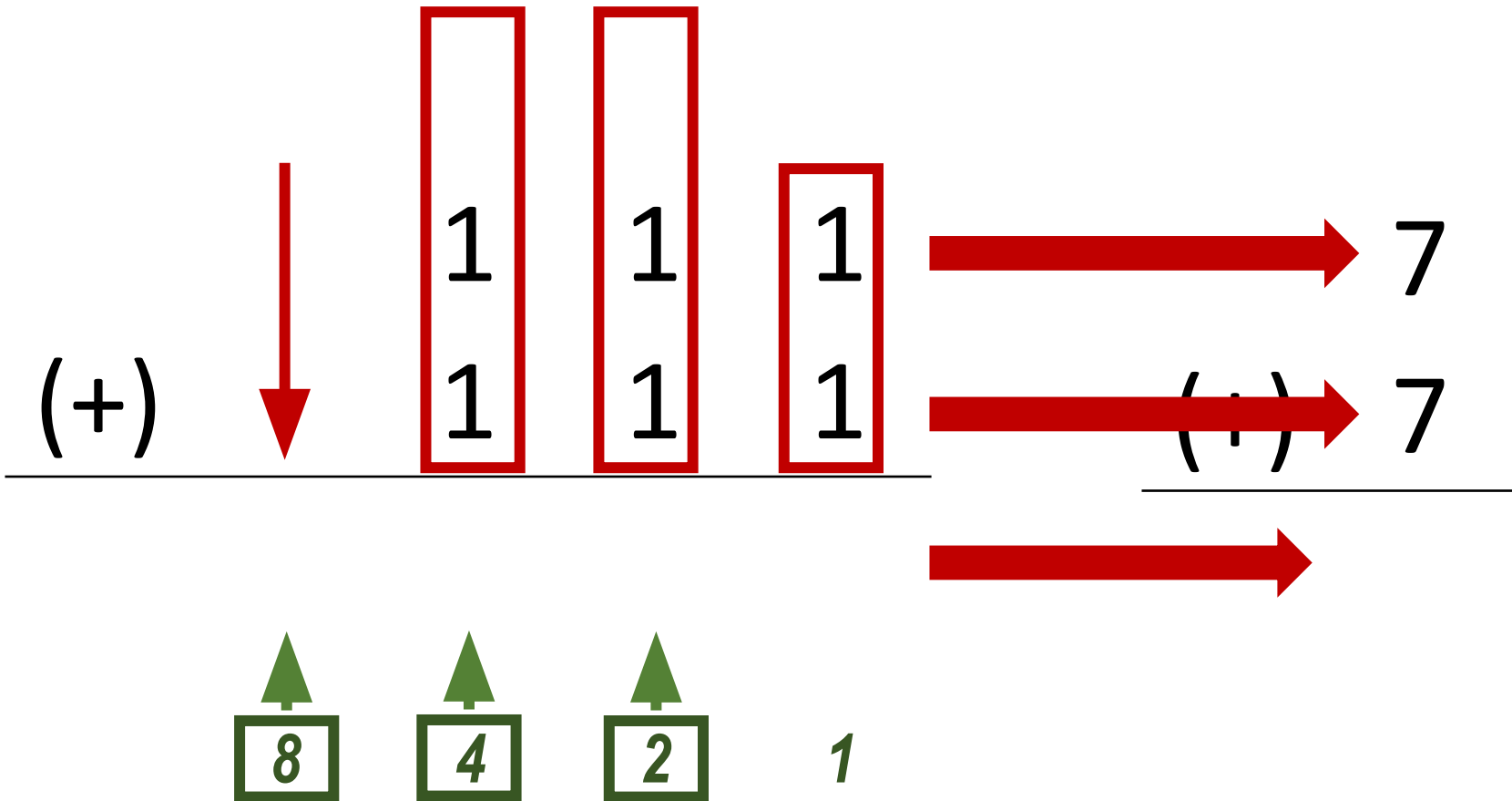
# Addition of Positive Numbers

## EXAMPLE #4



# Addition of Positive Numbers

## EXAMPLE #5



# Addition of Negative Numbers

To get 1's complement of a binary number, simply invert the given number.

- The number **0** represents the positive sign
- The number **1** represents the negative sign

To get 1's complement of a binary number, simply **invert** the given number. You can simply implement logic circuit using only NOT gate for each bit of Binary number input.

# Addition of Negative Numbers

- 1's complement binary numbers are very useful in Signed number representation (-5)
- Positive numbers are simply represented as Binary number (5)

If the number is negative then it is represented using 1's complement.

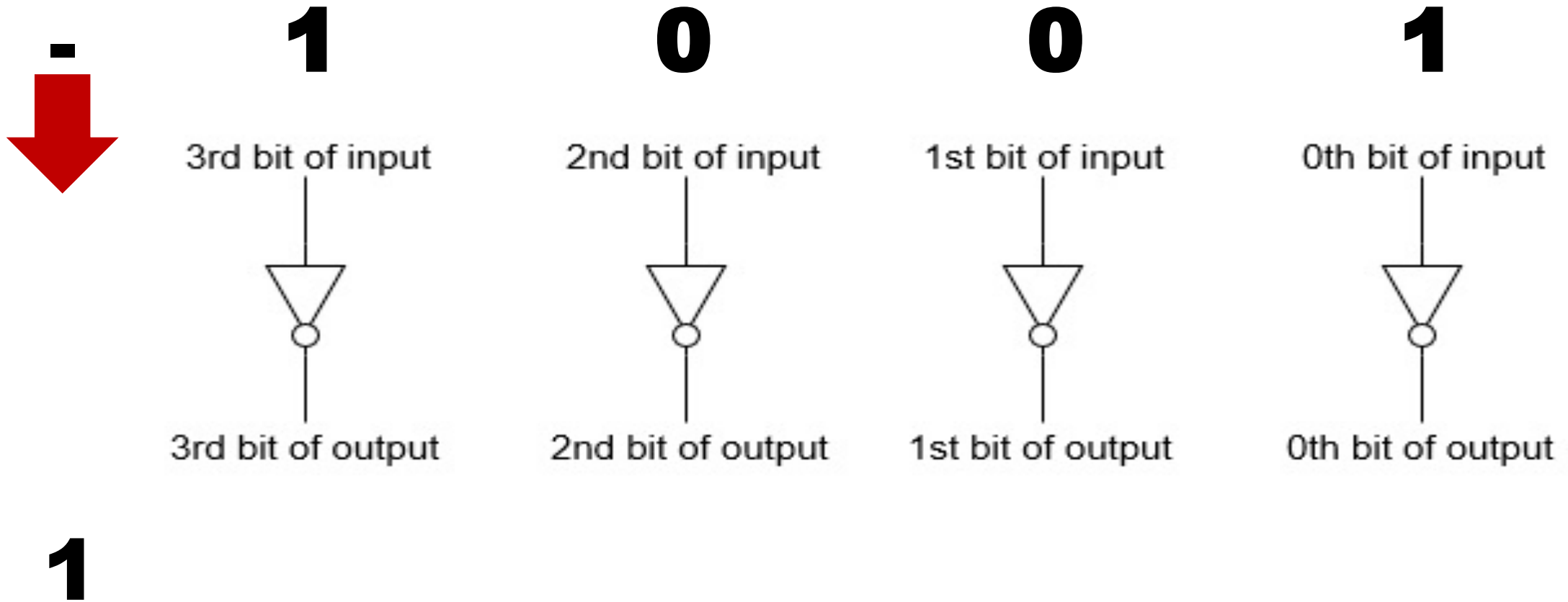
+5 is **101** and written as **0**101 wherein **0** represent positive sign

-5 is **010** and written as **1**010 wherein **1** represent negative sign



**1's complement**

# Addition of Negative Numbers





# Addition of Negative Numbers

Binary number	1's complement
-000	<b>1111</b>
-001	<b>1110</b>
-010	<b>1101</b>
-011	<b>1100</b>
-100	<b>1011</b>
-101	<b>1010</b>
-110	<b>1001</b>
-111	<b>1000</b>

# Addition of Negative Numbers

Case 1: Addition of the positive number with a negative number when the **positive number has a greater magnitude**.

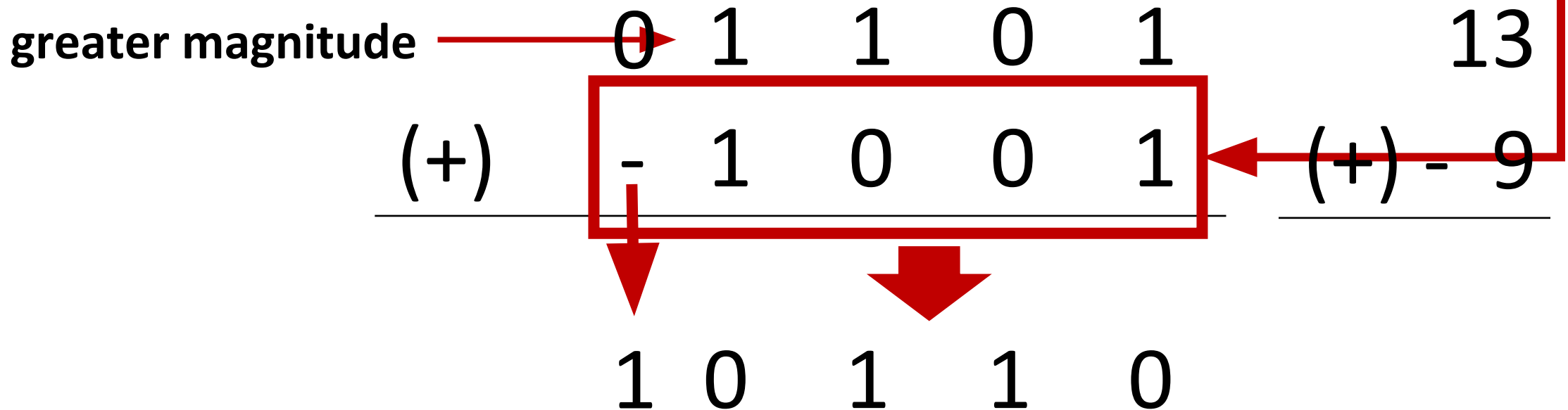
Case 2: Adding a positive value with a negative value in case the **negative number has a higher magnitude**.

Case 3: Addition of **two negative numbers**.

# Addition of Negative Numbers (Case 1)

Add **1101** and **-1001** → **10110**

**STEP 1. Find the 1's complement of the negative number 1001.**



# Addition of Negative Numbers (Case 1)

Add **1101** and **-1001**

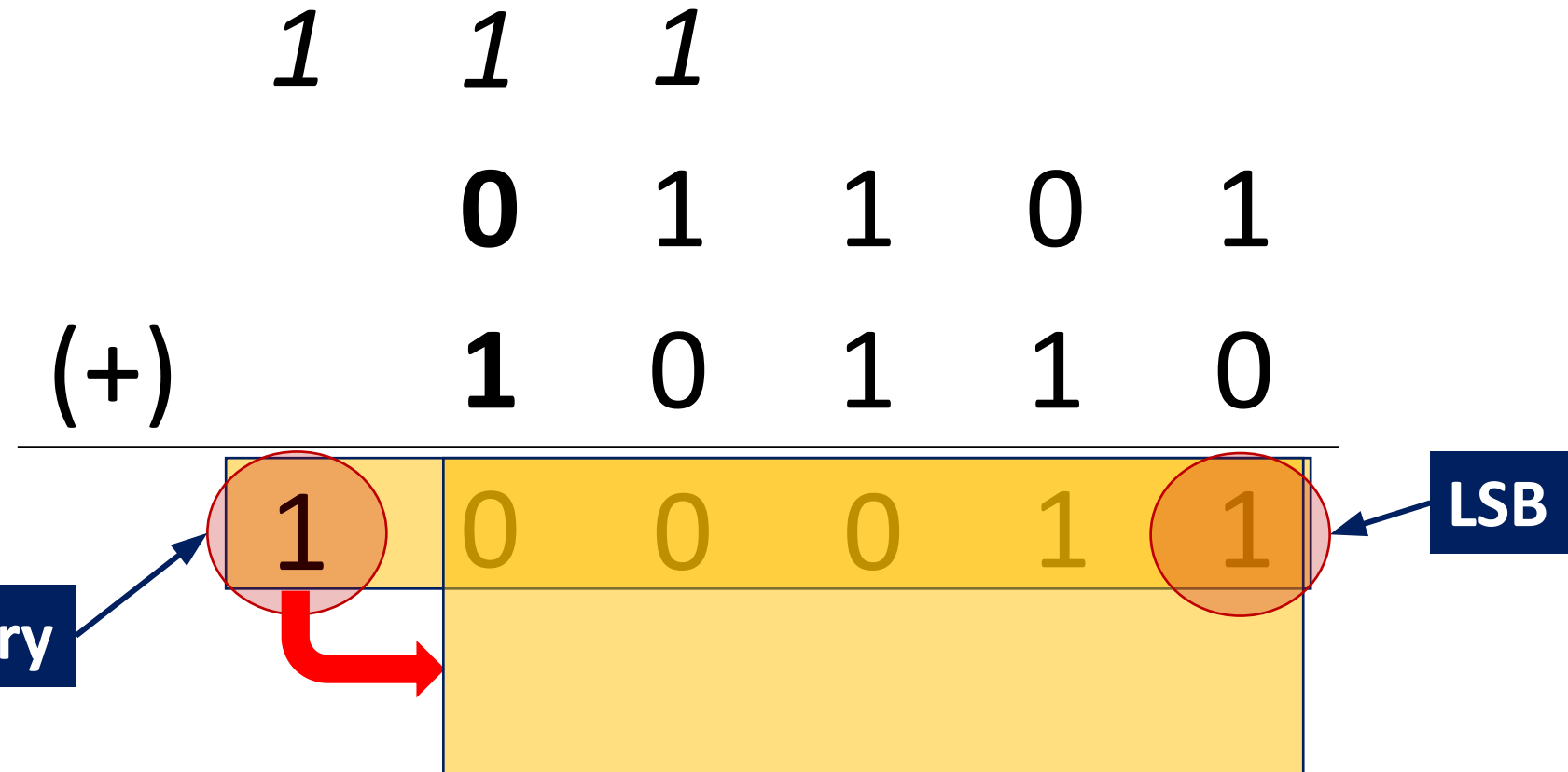
**STEP 2. Add both the numbers.**

$$\begin{array}{r} \phantom{11}111 \\ \phantom{11}01101 \\ (+) \phantom{11}10110 \\ \hline 100011 \end{array}$$

# Addition of Negative Numbers (Case 1)

Add **1101** and **-1001**

**Step 3. By adding both numbers, an end-around carry 1 will be get. Add this end-around carry to the LSB of the result..**



# Addition of Negative Numbers (Case 1)

Add **1101** and **-1001**

**STEP 4. Add both the numbers.**

$$\begin{array}{r} \phantom{000}11 \\ 00011 \\ (+) \phantom{000}1 \\ \hline 00100 \end{array}$$

13
(+) - 9
4




# Addition of Negative Numbers (Case 1)

Example #1:

Add **11101** and **-10101**

	0	1	1	1	0	1
(+)	-	1	0	1	0	1
<hr/>						



	0	1	1	1	0	1
(+)	1	0	1	0	1	0
<hr/>						

# Addition of Negative Numbers (Case 1)

Add **11101** and **-10101**

	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>1</b>
<b>(+)</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>

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# Addition of Negative Numbers (Case 1)

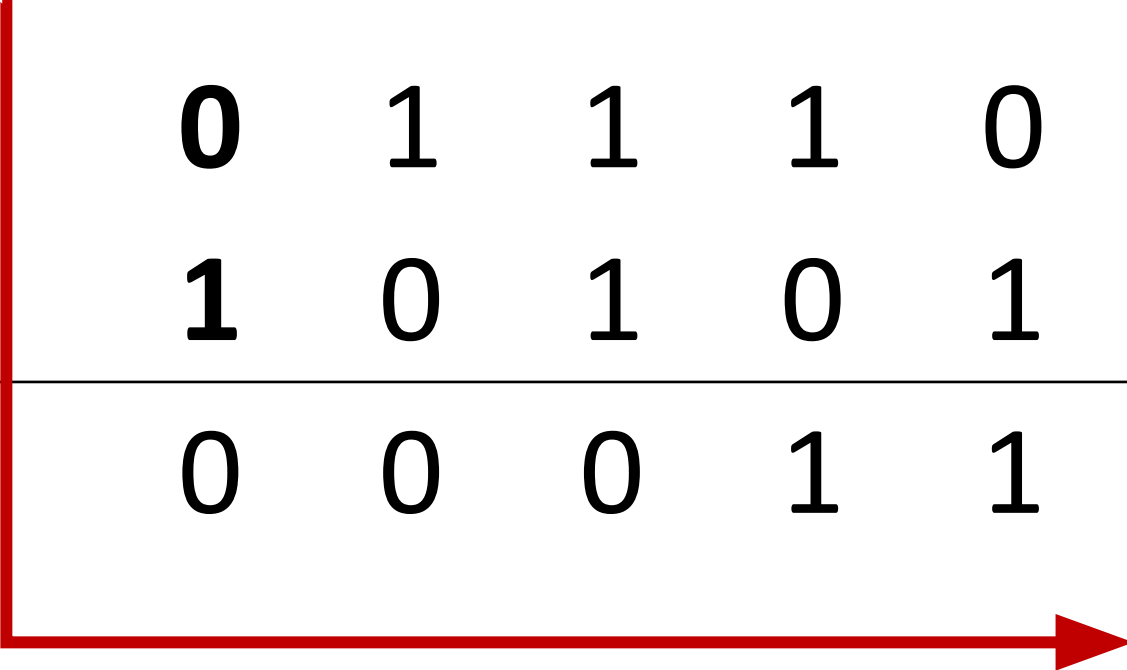
Add **11101** and **-10101**

	<i>1</i>	<i>1</i>	<i>1</i>				
		0	1	1	1	0	1
(+)		1	0	1	0	1	0
<hr/>							
		0	0	0	1	1	1

# Addition of Negative Numbers (Case 1)

Add **11101** and **-10101**

	<i>1</i>	<i>1</i>	<i>1</i>				
		0	1	1	1	0	1
(+)		1	0	1	0	1	0
<hr/>							
		0	0	0	1	1	1
		<hr/>					



The diagram illustrates the addition of two 7-bit numbers. The first number is 11101, and the second number is -10101. The addition is performed using two's complement. The first column shows a carry of 1 from the second column. The second column shows a carry of 1 from the third column. The third column shows a carry of 1 from the fourth column. The fourth column shows a carry of 1 from the fifth column. The fifth column shows a carry of 1 from the sixth column. The sixth column shows a carry of 1 from the seventh column. The seventh column shows a carry of 1 from the eighth column. The final result is 000111.

# Addition of Negative Numbers (Case 1)

Add **11101** and **-10101**  **29 + (-21) = 8**

*1 1 1*

	0	1	1	1	0	1
(+)	1	0	1	0	1	0
<hr/>						
	0	0	0	1	1	1
						1

<hr/>						
0	0	1	0	0	0	

 **8**

# Addition of Negative Numbers (Case 1)

Example #2:

Add **11001** and **-1010**

$$25 + -10 = 15$$

	<i>1</i>	<i>1</i>			<i>1</i>	
	0	1	1	0	0	1
(+)	1	1	0	1	0	1
<hr/>						
	0	0	1	1	1	0
						<i>1</i>
<hr/>						
	0	0	1	1	1	1



# Addition of Negative Numbers (Case 2)

Add **1101** and **-1110**

**STEP 1: First find the 1's complement of the negative number 1110. So, for finding 1's complement, we change all 0 to 1, and all 1 to 0.**

		0	1	1	0	1		13
greater magnitude ➡ (+)	-	1	1	1	1	0	(+) -	14
		1	0	0	0	1		

## Addition of Negative Numbers (Case 2)

## Add **1101** and **-1110**

**STEP 2: Add both the numbers.**

				<i>1</i>		
	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>1</b>	
(+)	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	
		<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	

# Addition of Negative Numbers (Case 2)

Add **1101** and **-1110**

**STEP 3: Find the 1's complement of the result then add a negative sign before the number to identify that it is a negative number.**

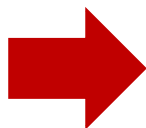
$$\begin{array}{rcccccc} & & & & & 1 & \\ & & & & & & \\ & & 0 & 1 & 1 & 0 & 1 & \\ (+) & 1 & 0 & 0 & 0 & 0 & 1 & \\ \hline & 1 & 1 & 1 & 1 & 0 & & \end{array}$$

# Addition of Negative Numbers (Case 2)

Add **1101** and **-1110**

**STEP 3: Find the 1's complement of the result then add a negative sign before the number to identify that it is a negative number.**

$$\begin{array}{r} \phantom{(+)} \phantom{0} \phantom{0} \phantom{0} \phantom{0} \phantom{0} \\ \phantom{(+)} \phantom{0} \phantom{0} \phantom{0} \phantom{0} \phantom{0} \\ \phantom{(+)} \phantom{0} \phantom{0} \phantom{0} \phantom{0} \phantom{0} \\ \phantom{(+)} \phantom{0} \phantom{0} \phantom{0} \phantom{0} \phantom{0} \\ \phantom{(+)} \phantom{0} \phantom{0} \phantom{0} \phantom{0} \phantom{0} \\ \hline \phantom{(+)} \phantom{0} \phantom{0} \phantom{0} \phantom{0} \phantom{0} \end{array}$$



13	1101
(+) - 14	-1110
-1	-00001

## Addition of Negative Numbers (Case 2)

## Example #1:

## Add 0101 and -1011

$$\begin{array}{r}
 \phantom{(+)} \phantom{0} \phantom{1} \phantom{0} \phantom{1} \\
 (+) \phantom{0} \boxed{- \phantom{0} \phantom{1} \phantom{0} \phantom{1} \phantom{1}} \\
 \hline
 \phantom{0} \phantom{1} \phantom{0} \phantom{1} \phantom{0}
 \end{array}$$

# Addition of Negative Numbers (Case 2)

Example #1:

Add **0101** and **-1011**

	0	0	1	0	1
(+)	1	0	1	0	0
<hr/>					



# Addition of Negative Numbers (Case 2)

Example #1:

Add **0101** and **-1011**

$$\begin{array}{r} \phantom{00000}1 \\ 00101 \\ (+) 10100 \\ \hline 11001 \end{array}$$

# Addition of Negative Numbers (Case 2)

Example #1:

Add **0101** and **-1011**

**5 + -11 = -6**

		<i>1</i>			
	0	0	1	0	1
(+)	1	0	1	0	0
	<hr/>				
	1	1	0	0	1
	-	0	1	1	0

## Addition of Negative Numbers (Case 2)

## Example #2:

## Add -110111 and 101

Diagram illustrating the addition of two 7-bit numbers:

-	1	1	0	1	1	1
(+)				1	0	1
<hr/>						
↓						
1	0	0	1	0	0	0

# Addition of Negative Numbers (Case 2)

Example #2:

Add **-110111** and **101**

$$\begin{array}{rccccccc} & 1 & 0 & 0 & 1 & 0 & 0 & 0 \\ (+) & & & & & 1 & 0 & 1 \\ \hline & 1 & 0 & 0 & 1 & 1 & 0 & 1 \end{array}$$

# Addition of Negative Numbers (Case 2)

Example #2:

Add **-110111** and **101**

**-55 + 5 = -50**

(+)

1001000

101

---

1001101

-110010

## Addition of Negative Numbers (Case 2)

## Example #3:

## Add 1011 and -10111

(+)

		1	0	1	1
	-	1	0	1	1

---

↓

1	0	1	0	0	0
---	---	---	---	---	---

# Addition of Negative Numbers (Case 2)

Example #3:

Add **1011** and **-10111**

	0	0	1	0	1	1
(+)	1	0	1	0	0	0
<hr/>						

## Addition of Negative Numbers (Case 2)

## Example #3:

## Add 1011 and -10111

$$11 + -23 = -12$$

$$(+)$$

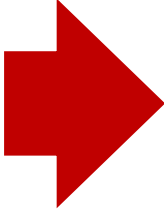
	<i>1</i>				
0	0	1	0	1	1
1	0	1	0	0	0
<hr/>					
1	1	0	0	1	1
-	0	1	1	0	0



# Addition of Negative Numbers (Case 3)

Add -1101 and -1110

**STEP 1: Find the 1's complement of the negative numbers then add 1 as MSB to represent negative sign.**

	-	1	1	0	1			1	0	0	1	0
(+)	-	1	1	1	0		(+)	1	0	0	0	1
<hr/>							<hr/>					

# Addition of Negative Numbers (Case 3)

Add -1101 and -1110

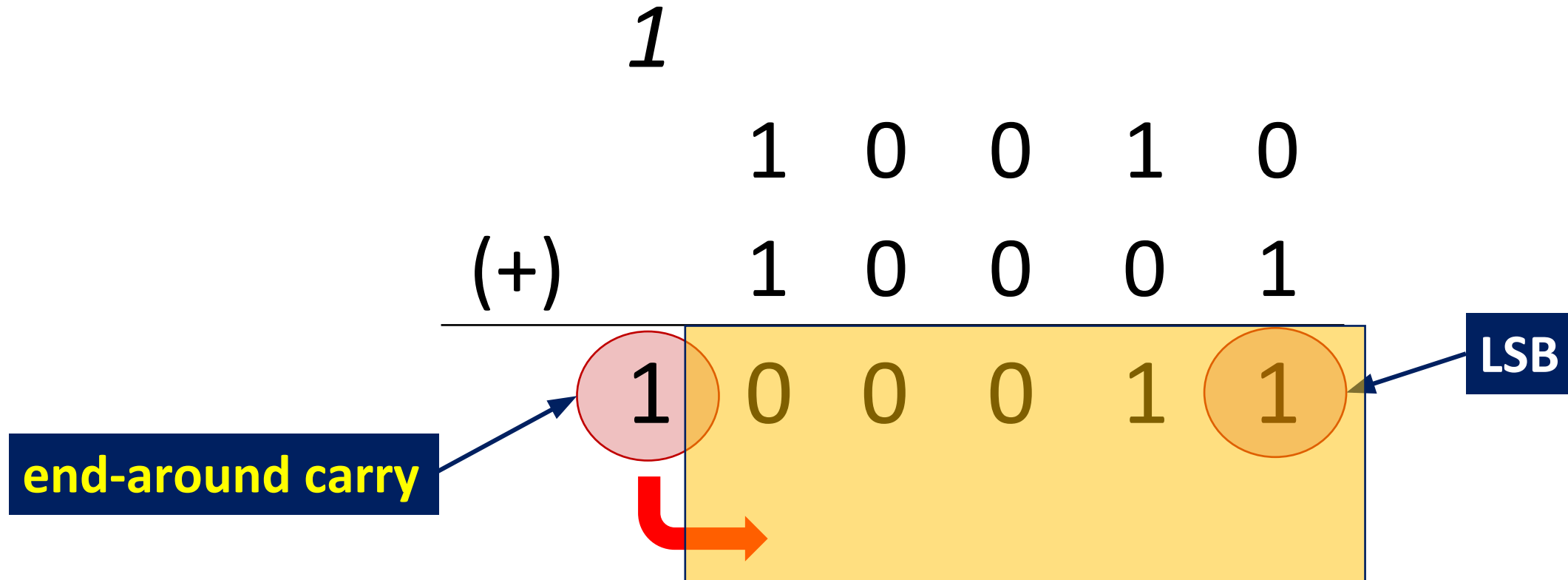
**STEP 2: Add both the complement numbers.**

$$\begin{array}{r} \phantom{1} \phantom{1} \phantom{0} \phantom{0} \phantom{1} \phantom{0} \\ \phantom{1} \phantom{1} \phantom{0} \phantom{0} \phantom{1} \phantom{0} \\ (+) \phantom{1} \phantom{1} \phantom{0} \phantom{0} \phantom{1} \phantom{0} \\ \hline 1 \phantom{0} \phantom{0} \phantom{0} \phantom{0} \phantom{1} \phantom{1} \end{array}$$

# Addition of Negative Numbers (Case 3)

Add -1101 and -1110

**STEP 3: By adding both numbers, we get the end-around carry 1. We add this end-around carry to the LSB**



# Addition of Negative Numbers (Case 3)

Add -**1101** and -**1110**

**STEP 4: Add both the numbers.**

$$\begin{array}{r} \phantom{000}11 \\ \phantom{00}00011 \\ (+) \phantom{00000}1 \\ \hline 00100 \end{array}$$

# Addition of Negative Numbers (Case 3)

Add -1101 and -1110

**STEP 5: Find the 1's complement of the result to get final answer.**

$$\begin{array}{rcccccc} & & & & 1 & 1 & \\ & & & & 0 & 0 & 0 & 1 & 1 & \\ (+) & & & & & & & & & 1 & \\ \hline & & & & 0 & 0 & 1 & 0 & 0 & \end{array}$$

## Addition of Negative Numbers (Case 3)

## Add -1101 and -1110

**STEP 5: Find the 1's complement of the result to get final answer.**

$$\begin{array}{r}
 \phantom{00000}11 \\
 \phantom{00}00011 \\
 (+) \phantom{00000}1 \\
 \hline
 00100 \rightarrow 11011
 \end{array}$$

# Addition of Negative Numbers (Case 3)

-13

-14

Add -1101 and -1110

**STEP 6: Add a negative sign before the number so that we can identify that it is a negative number.**

$$\begin{array}{rcccccc} & & & 1 & 1 & & \\ & & & & & & \\ & 0 & 0 & 0 & 1 & 1 & \\ (+) & & & & & 1 & \\ \hline & 0 & 0 & 1 & 0 & 0 & \end{array}$$

-27

- 1 1 0 1 1

# Addition of Negative Numbers (Case 3)

Example #1:

Add **-1011** and **-1101**

	-	1	0	1	1
(+)	-	1	1	0	1
<hr/>					
<hr/>					
<hr/>					



# Addition of Negative Numbers (Case 3)

Example #1:

Add **-1011** and **-1101**

	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>
(+)	-	1	1	0	1
<hr/>					
<hr/>					
<hr/>					

# Addition of Negative Numbers (Case 3)

Example #1:

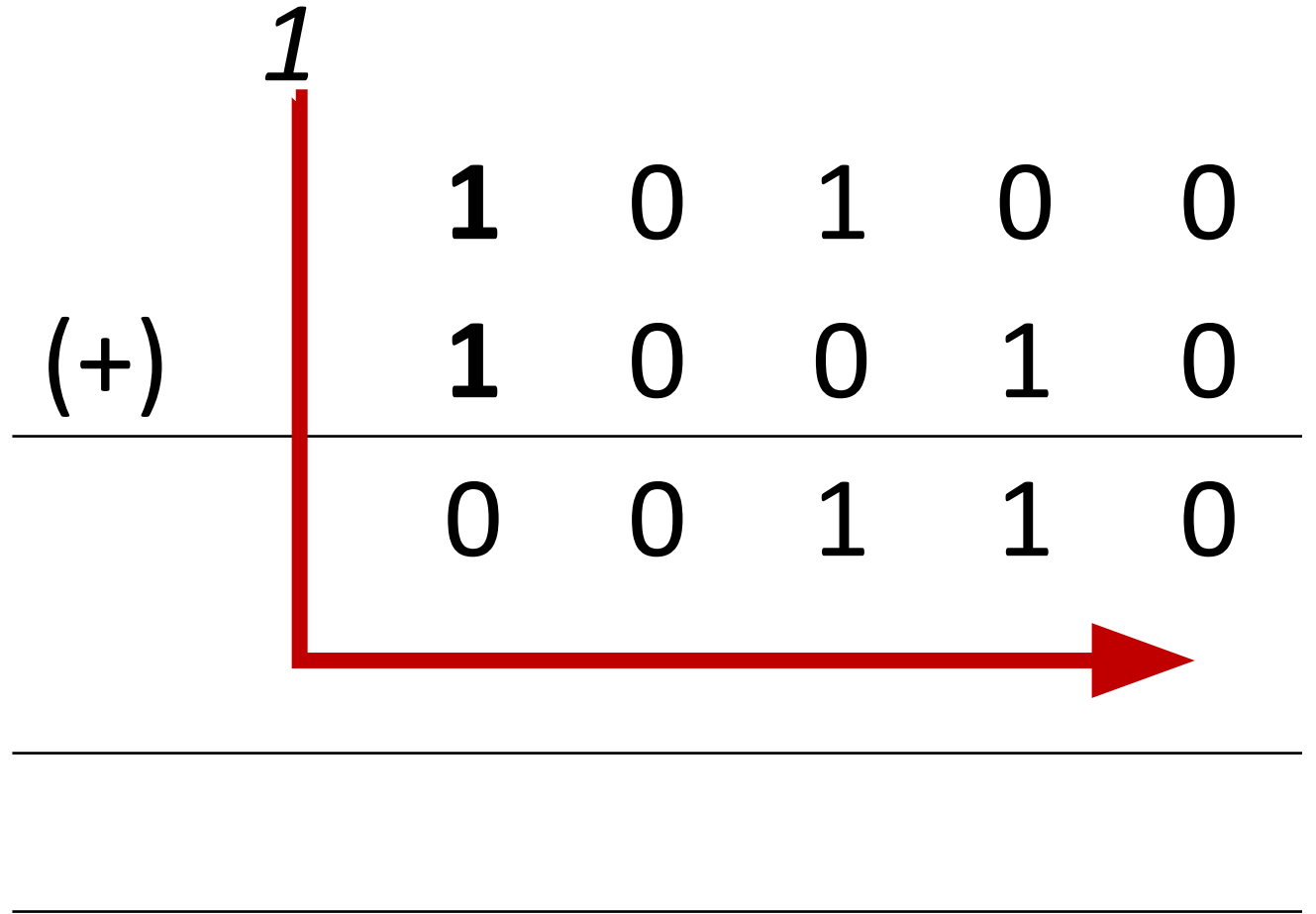
Add **-1011** and **-1101**

	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>
<b>(+)</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>
<hr/>					
<hr/>					
<hr/>					

# Addition of Negative Numbers (Case 3)

Example #1:

Add **-1011** and **-1101**



# Addition of Negative Numbers (Case 3)

Example #1:

Add -1011 and -1101

	<i>1</i>					
	1	0	1	0	0	
(+)	1	0	0	1	0	
	<hr/>					
	0	0	1	1	0	
						1
	<hr/>					
	<hr/>					

# Addition of Negative Numbers (Case 3)

Example #1:

Add **-1011** and **-1101**

	<i>1</i>				
	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>
(+)	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>
<hr/>					
	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>
					<b>1</b>
<hr/>					
	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>
<hr/>					

# Addition of Negative Numbers (Case 3)

Example #1:

Add -**1011** and -**1101**

	<i>1</i>				
	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>
(+)	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>
<hr/>					
	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>
					<b>1</b>
<hr/>					
	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>
<hr/>					
	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>

# Addition of Negative Numbers (Case 3)

Example #1:

Add **-1011** and **-1101**

**-11 + -13 = -24**

	<i>1</i>					
		<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>
		<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>
		<hr/>				
		<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>
						<b>1</b>
		<hr/>				
		<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>
		<hr/>				
	<b>-</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>

# Addition of Negative Numbers (Case 3)

Exercise #2:

Add **-1100** and **-0101**

	-	1	1	0	0
(+)	-	0	1	0	1
<hr/>					
<hr/>					
<hr/>					



# Addition of Negative Numbers (Case 3)

Exercise #2:

Add **-1100** and **-0101**

	1	0	0	1	1
(+)	-	0	1	0	1
<hr/>					
<hr/>					
<hr/>					

# Addition of Negative Numbers (Case 3)

Exercise #2:

Add **-1100** and **-0101**

	1	0	0	1	1
(+)	-	0	1	0	1
<hr/>					
<hr/>					
<hr/>					

# Addition of Negative Numbers (Case 3)

Exercise #2:

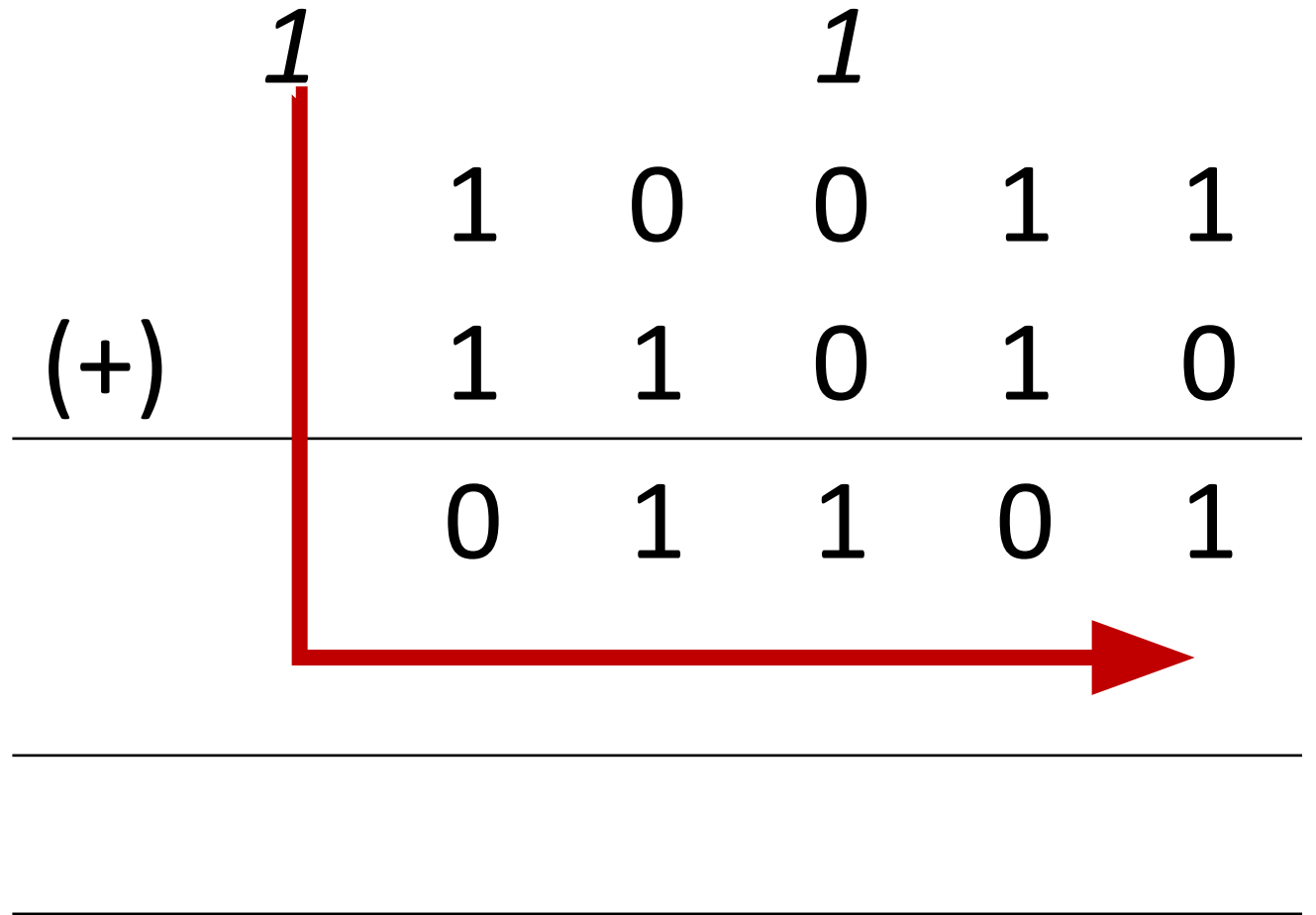
Add **-1100** and **-0101**

	1	0	0	1	1
(+)	1	1	0	1	0
<hr/>					
<hr/>					
<hr/>					

# Addition of Negative Numbers (Case 3)

Exercise #2:

Add **-1100** and **-0101**



# Addition of Negative Numbers (Case 3)

Exercise #2:

Add **-1100** and **-0101**

	<i>1</i>			<i>1</i>		
		1	0	0	1	1
(+)		1	1	0	1	0
		0	1	1	0	1
						<b>1</b>

# Addition of Negative Numbers (Case 3)

Exercise #2:

Add **-1100** and **-0101**

	<i>1</i>			<i>1</i>	
		1	0	0	1
(+)		1	1	0	1
		0	1	1	0
					<b>1</b>
		0	1	1	0

# Addition of Negative Numbers (Case 3)

Exercise #2:

Add **-1100** and **-0101**

	<i>1</i>			<i>1</i>	
	1	0	0	1	1
(+)	1	1	0	1	0
<hr/>					
	0	1	1	0	1
					<b>1</b>
<hr/>					
	0	1	1	1	0
<hr/>					
	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>





# Addition of Negative Numbers (Case 3)

Exercise #3:

Add **-1001** and **-0100**

(+)

-	1	0	0	1
---	---	---	---	---

-	0	1	0	0
---	---	---	---	---

---

---

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# Addition of Negative Numbers (Case 3)

Exercise #3:

Add **-1001** and **-0100**

	1	0	1	1	0
(+)	-	0	1	0	0
<hr/>					
<hr/>					
<hr/>					

# Addition of Negative Numbers (Case 3)

Exercise #3:

Add **-1001** and **-0100**

	1	0	1	1	0
(+)	-	0	1	0	0
<hr/>					
<hr/>					
<hr/>					

# Addition of Negative Numbers (Case 3)

Exercise #3:

Add **-1001** and **-0100**

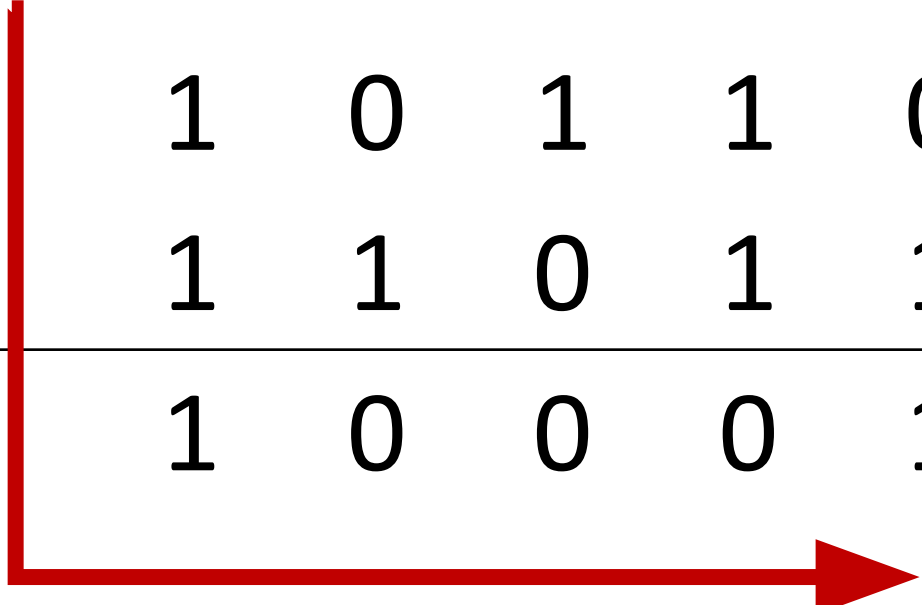
	1	0	1	1	0
(+)	1	1	0	1	1
<hr/>					
<hr/>					
<hr/>					

# Addition of Negative Numbers (Case 3)

Exercise #3:

Add **-1001** and **-0100**

	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>		
		1	0	1	1	0
(+)		1	1	0	1	1
		1	0	0	0	1



# Addition of Negative Numbers (Case 3)

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Add **-1001** and **-0100**

	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>		
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(+)		1	1	0	1	1
		1	0	0	0	1
						<b>1</b>

# Addition of Negative Numbers (Case 3)

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Add **-1001** and **-0100**

	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>		
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		1	0	0	0	1
						<b>1</b>
		1	0	0	1	0

# Addition of Negative Numbers (Case 3)

Exercise #3:

Add **-1001** and **-0100**

	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>		
		1	0	1	1	0
(+)		1	1	0	1	1
		1	0	0	0	1
						<b>1</b>
		1	0	0	1	0
		<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>1</b>



# Addition of Negative Numbers (Case 3)

Exercise #3:

Add **-1001** and **-0100**

**-9 + -4 = -13**

	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>		
		1	0	1	1	0
(+)		1	1	0	1	1
		1	0	0	0	1
						<b>1</b>
		1	0	0	1	0
-	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>1</b>	

# Subtraction of Positive Numbers

$$0 - 0 = 0$$

$$0 - 1 = 1 \text{ borrowed from next higher order digit}$$

$$\boxed{?} \ 10 - 1 = 1$$

$$1 - 0 = 1$$

$$1 - 1 = 0$$

# Subtraction of Positive Numbers

## EXAMPLE #1

Diagram illustrating the addition of two numbers in base 10:

$$\begin{array}{r}
 101 \\
 + 010 \\
 \hline
 111
 \end{array}$$

Red arrows indicate the carry from the units place to the tens place, and from the tens place to the hundreds place.

# Subtraction of Positive Numbers

## EXAMPLE #2

Diagram illustrating the subtraction of 1010 from 0101 using the 2's complement method:

		1	1	
0	<del>1</del> 0	<del>1</del> 0	<del>1</del> 0	
<del>1</del>	<del>0</del>	<del>0</del>	0	
(-)			1	
<hr/>				
0	1	1	1	

The diagram shows the binary subtraction of 1010 from 0101. The top row shows the minuend 0101 and the subtrahend 1010. The second row shows the result of the subtraction, with the first three digits (010) crossed out and the final digit (1) remaining. Red arrows indicate the borrowing process from the first digit (0) to the second digit (1), and from the second digit (1) to the third digit (1). The third row shows the result of the subtraction, with the first three digits (010) crossed out and the final digit (1) remaining. The fourth row shows the result of the subtraction, with the first three digits (010) crossed out and the final digit (1) remaining. The fifth row shows the result of the subtraction, with the first three digits (010) crossed out and the final digit (1) remaining.

$$\begin{array}{r} 8 \\ (-) 1 \\ \hline 7 \end{array}$$

# Subtraction of Positive Numbers

## EXAMPLE #3

			<i>1</i>	<i>1</i>	
	<i>0</i>	<del>1</del> 0	<del>1</del> 0	<del>1</del> 0	
		↗	→	→	
	<del>1</del>	<del>0</del>	<del>0</del>	0	
(-)			1	1	
<hr/>					
	0	1	0	1	

	8
(-)	3
<hr/>	
	5

# Subtraction of Positive Numbers

## *EXAMPLE #4*

$$\begin{array}{r} 1101 \\ (-) \quad 100 \\ \hline 1001 \end{array}$$

$$\begin{array}{r} 13 \\ (-) \quad 4 \\ \hline 9 \end{array}$$

# Subtraction of Positive Numbers

## *EXAMPLE #5*

$$\begin{array}{r} 1011 \\ (-) \quad 101 \\ \hline 0110 \end{array}$$

$$\begin{array}{r} 11 \\ (-) \quad 5 \\ \hline 6 \end{array}$$