

**Arithmetics**  
**Addition base 10**  
**[calculator-algebra.org](http://calculator-algebra.org)**

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## Example

Add the one-digit numbers.

$$1 + 2 =$$

$$2 + 2 =$$

$$2 + 5 =$$

$$9 + 2 =$$

$$7 + 5 =$$

$$9 + 7 =$$

$$0 + 9 =$$

## Example

Add the one-digit numbers.

$$1 + 2 = ?$$

$$2 + 2 =$$

$$2 + 5 =$$

$$9 + 2 =$$

$$7 + 5 =$$

$$9 + 7 =$$

$$0 + 9 =$$

## Example

Add the one-digit numbers.

$$1 + 2 = 3$$

$$2 + 2 =$$

$$2 + 5 =$$

$$9 + 2 =$$

$$7 + 5 =$$

$$9 + 7 =$$

$$0 + 9 =$$

## Example

Add the one-digit numbers.

$$1 + 2 = 3$$

$$2 + 2 = ?$$

$$2 + 5 =$$

$$9 + 2 =$$

$$7 + 5 =$$

$$9 + 7 =$$

$$0 + 9 =$$

## Example

Add the one-digit numbers.

$$1 + 2 = 3$$

$$2 + 2 = 4$$

$$2 + 5 =$$

$$9 + 2 =$$

$$7 + 5 =$$

$$9 + 7 =$$

$$0 + 9 =$$

## Example

Add the one-digit numbers.

$$1 + 2 = 3$$

$$2 + 2 = 4$$

$$2 + 5 = ?$$

$$9 + 2 =$$

$$7 + 5 =$$

$$9 + 7 =$$

$$0 + 9 =$$

## Example

Add the one-digit numbers.

$$1 + 2 = 3$$

$$2 + 2 = 4$$

$$2 + 5 = 7$$

$$9 + 2 =$$

$$7 + 5 =$$

$$9 + 7 =$$

$$0 + 9 =$$



## Example

Add the one-digit numbers.

$$1 + 2 = 3$$

$$2 + 2 = 4$$

$$2 + 5 = 7$$

$$9 + 2 = ?$$

$$7 + 5 =$$

$$9 + 7 =$$

$$0 + 9 =$$

## Example

Add the one-digit numbers.

$$1 + 2 = 3$$

$$2 + 2 = 4$$

$$2 + 5 = 7$$

$$9 + 2 = 11$$

$$7 + 5 =$$

$$9 + 7 =$$

$$0 + 9 =$$

## Example

Add the one-digit numbers.

$$1 + 2 = 3$$

$$2 + 2 = 4$$

$$2 + 5 = 7$$

$$9 + 2 = 11$$

$$7 + 5 = ?$$

$$9 + 7 =$$

$$0 + 9 =$$

## Example

Add the one-digit numbers.

$$1 + 2 = 3$$

$$2 + 2 = 4$$

$$2 + 5 = 7$$

$$9 + 2 = 11$$

$$7 + 5 = 12$$

$$9 + 7 =$$

$$0 + 9 =$$

## Example

Add the one-digit numbers.

$$1 + 2 = 3$$

$$2 + 2 = 4$$

$$2 + 5 = 7$$

$$9 + 2 = 11$$

$$7 + 5 = 12$$

$$9 + 7 = ?$$

$$0 + 9 =$$

## Example

Add the one-digit numbers.

$$1 + 2 = 3$$

$$2 + 2 = 4$$

$$2 + 5 = 7$$

$$9 + 2 = 11$$

$$7 + 5 = 12$$

$$9 + 7 = 16$$

$$0 + 9 =$$

## Example

Add the one-digit numbers.

$$1 + 2 = 3$$

$$2 + 2 = 4$$

$$2 + 5 = 7$$

$$9 + 2 = 11$$

$$7 + 5 = 12$$

$$9 + 7 = 16$$

$$0 + 9 = ?$$

## Example

Add the one-digit numbers.

$$1 + 2 = 3$$

$$2 + 2 = 4$$

$$2 + 5 = 7$$

$$9 + 2 = 11$$

$$7 + 5 = 12$$

$$9 + 7 = 16$$

$$0 + 9 = 9$$



## Example

Add the one-digit numbers.

$$1 + 3 =$$

$$4 + 7 =$$

$$2 + 8 =$$

$$9 + 8 =$$

$$5 + 5 =$$

## Example

Add the one-digit numbers.

$$1 + 3 =$$

$$4 + 7 =$$

$$2 + 8 =$$

$$9 + 8 =$$

$$5 + 5 =$$

+	0	1	2	3	4	5	6	7	8	9
0										
1										
2										
3										
4										
5										
6										
7										
8										
9										

- To do one-digit addition quickly: make table with all possibilities.

## Example

Add the one-digit numbers.

$$1 + 3 = ?$$

$$4 + 7 =$$

$$2 + 8 =$$

$$9 + 8 =$$

$$5 + 5 =$$

+	0	1	2	3	4	5	6	7	8	9
0										
1				?						
2										
3										
4										
5										
6										
7										
8										
9										

- To do one-digit addition quickly: make table with all possibilities.

## Example

Add the one-digit numbers.

$$1 + 3 = 4$$

$$4 + 7 =$$

$$2 + 8 =$$

$$9 + 8 =$$

$$5 + 5 =$$

+	0	1	2	3	4	5	6	7	8	9
0										
1				4						
2										
3										
4										
5										
6										
7										
8										
9										

- To do one-digit addition quickly: make table with all possibilities.

## Example

Add the one-digit numbers.

$$1 + 3 = 4$$

$$4 + 7 = ?$$

$$2 + 8 =$$

$$9 + 8 =$$

$$5 + 5 =$$

+	0	1	2	3	4	5	6	7	8	9
0										
1				4						
2										
3										
4								?		
5										
6										
7										
8										
9										

- To do one-digit addition quickly: make table with all possibilities.

## Example

Add the one-digit numbers.

$$1 + 3 = 4$$

$$4 + 7 = 11$$

$$2 + 8 =$$

$$9 + 8 =$$

$$5 + 5 =$$

+	0	1	2	3	4	5	6	7	8	9
0										
1				4						
2										
3										
4								11		
5										
6										
7										
8										
9										

- To do one-digit addition quickly: make table with all possibilities.

## Example

Add the one-digit numbers.

$$1 + 3 = 4$$

$$4 + 7 = 11$$

$$2 + 8 = ?$$

$$9 + 8 =$$

$$5 + 5 =$$

+	0	1	2	3	4	5	6	7	8	9
0										
1				4						
2									?	
3										
4								11		
5										
6										
7										
8										
9										

- To do one-digit addition quickly: make table with all possibilities.

## Example

Add the one-digit numbers.

$$1 + 3 = 4$$

$$4 + 7 = 11$$

$$2 + 8 = 10$$

$$9 + 8 =$$

$$5 + 5 =$$

+	0	1	2	3	4	5	6	7	8	9
0										
1				4						
2									10	
3										
4								11		
5										
6										
7										
8										
9										

- To do one-digit addition quickly: make table with all possibilities.



## Example

Add the one-digit numbers.

$$1 + 3 = 4$$

$$4 + 7 = 11$$

$$2 + 8 = 10$$

$$9 + 8 = ?$$

$$5 + 5 =$$

+	0	1	2	3	4	5	6	7	8	9
0										
1				4						
2									10	
3										
4								11		
5										
6										
7										
8										
9									?	

- To do one-digit addition quickly: make table with all possibilities.

## Example

Add the one-digit numbers.

$$1 + 3 = 4$$

$$4 + 7 = 11$$

$$2 + 8 = 10$$

$$9 + 8 = 17$$

$$5 + 5 =$$

+	0	1	2	3	4	5	6	7	8	9
0										
1				4						
2									10	
3										
4								11		
5										
6										
7										
8										
9									17	

- To do one-digit addition quickly: make table with all possibilities.

## Example

Add the one-digit numbers.

$$1 + 3 = 4$$

$$4 + 7 = 11$$

$$2 + 8 = 10$$

$$9 + 8 = 17$$

$$5 + 5 = ?$$

+	0	1	2	3	4	5	6	7	8	9
0										
1				4						
2									10	
3										
4								11		
5						?				
6										
7										
8										
9									17	

- To do one-digit addition quickly: make table with all possibilities.

## Example

Add the one-digit numbers.

$$1 + 3 = 4$$

$$4 + 7 = 11$$

$$2 + 8 = 10$$

$$9 + 8 = 17$$

$$5 + 5 = 10$$

+	0	1	2	3	4	5	6	7	8	9
0										
1				4						
2									10	
3										
4								11		
5						10				
6										
7										
8										
9									17	

- To do one-digit addition quickly: make table with all possibilities.

## Example

Add the one-digit numbers.

$$1 + 3 = 4$$

$$4 + 7 = 11$$

$$2 + 8 = 10$$

$$9 + 8 = 17$$

$$5 + 5 = 10$$

+	0	1	2	3	4	5	6	7	8	9
0	?	?	?	?	?	?	?	?	?	?
1	?	?	?	4	?	?	?	?	?	?
2	?	?	?	?	?	?	?	?	10	?
3	?	?	?	?	?	?	?	?	?	?
4	?	?	?	?	?	?	?	11	?	?
5	?	?	?	?	?	10	?	?	?	?
6	?	?	?	?	?	?	?	?	?	?
7	?	?	?	?	?	?	?	?	?	?
8	?	?	?	?	?	?	?	?	?	?
9	?	?	?	?	?	?	?	?	17	?

- To do one-digit addition quickly: make table with all possibilities.

## Example

Add the one-digit numbers.

$$1 + 3 = 4$$

$$4 + 7 = 11$$

$$2 + 8 = 10$$

$$9 + 8 = 17$$

$$5 + 5 = 10$$

+	0	1	2	3	4	5	6	7	8	9
0	0	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9	10
2	2	3	4	5	6	7	8	9	10	11
3	3	4	5	6	7	8	9	10	11	12
4	4	5	6	7	8	9	10	11	12	13
5	5	6	7	8	9	10	11	12	13	14
6	6	7	8	9	10	11	12	13	14	15
7	7	8	9	10	11	12	13	14	15	16
8	8	9	10	11	12	13	14	15	16	17
9	9	10	11	12	13	14	15	16	17	18

- To do one-digit addition quickly: make table with all possibilities.

## Example

Add the one-digit numbers.

$$\begin{array}{r} + 3 \\ 5 \\ \hline \end{array}$$

$$\begin{array}{r} + 7 \\ 6 \\ \hline \end{array}$$

$$\begin{array}{r} + 9 \\ 2 \\ \hline \end{array}$$

+	0	1	2	3	4	5	6	7	8	9
0										
1										
2										
3										
4										
5										
6										
7										
8										
9										

- Addition can also be written in columns.

## Example

Add the one-digit numbers.

$$\begin{array}{r} + 3 \\ + 5 \\ \hline ? \end{array}$$

$$\begin{array}{r} + 7 \\ + 6 \\ \hline \end{array}$$

$$\begin{array}{r} + 9 \\ + 2 \\ \hline \end{array}$$

$$3 + 5 = ?$$

+	0	1	2	3	4	5	6	7	8	9
0										
1										
2										
3						?				
4										
5										
6										
7										
8										
9										

- Addition can also be written in columns.



## Example

Add the one-digit numbers.

$$\begin{array}{r} + 3 \\ + 5 \\ \hline 8 \end{array}$$

$$\begin{array}{r} + 7 \\ + 6 \\ \hline \end{array}$$

$$\begin{array}{r} + 9 \\ + 2 \\ \hline \end{array}$$

$$3 + 5 = 8$$

+	0	1	2	3	4	5	6	7	8	9
0										
1										
2										
3						8				
4										
5										
6										
7										
8										
9										

- Addition can also be written in columns.

## Example

Add the one-digit numbers.

$$\begin{array}{r} + 3 \\ + 5 \\ \hline 8 \end{array}$$

$$\begin{array}{r} + 7 \\ + 6 \\ \hline \end{array}$$

$$\begin{array}{r} + 9 \\ + 2 \\ \hline \end{array}$$

$$3 + 5 = 8$$

+	0	1	2	3	4	5	6	7	8	9
0										
1										
2										
3						8				
4										
5										
6										
7										
8										
9										

- Addition can also be written in columns.

## Example

Add the one-digit numbers.

$$\begin{array}{r} + 3 \\ 5 \\ \hline 8 \end{array}$$

$$\begin{array}{r} + 7 \\ 6 \\ \hline \end{array}$$

$$\begin{array}{r} + 9 \\ 2 \\ \hline \end{array}$$

+	0	1	2	3	4	5	6	7	8	9
0										
1										
2										
3						8				
4										
5										
6										
7										
8										
9										

- Addition can also be written in columns.

## Example

Add the one-digit numbers.

$$\begin{array}{r} + 3 \\ + 5 \\ \hline 8 \end{array}$$

$$\begin{array}{r} + 7 \\ + 6 \\ \hline \end{array}$$

$$\begin{array}{r} + 9 \\ + 2 \\ \hline \end{array}$$

+	0	1	2	3	4	5	6	7	8	9
0										
1										
2										
3						8				
4										
5										
6										
7										
8										
9										

- Addition can also be written in columns.

## Example

Add the one-digit numbers.

$$\begin{array}{r} + 3 \\ 5 \\ \hline 8 \end{array}$$

$$\begin{array}{r} ? \\ + 7 \\ 6 \\ \hline ? \end{array}$$

$$\begin{array}{r} + 9 \\ 2 \\ \hline \end{array}$$

$$7 + 6 = ?$$

+	0	1	2	3	4	5	6	7	8	9
0										
1										
2										
3						8				
4										
5										
6										
7							?			
8										
9										

- Addition can also be written in columns.

## Example

Add the one-digit numbers.

$$\begin{array}{r} + 3 \\ 5 \\ \hline 8 \end{array}$$

$$\begin{array}{r} & 1 \\ + & 7 \\ & 6 \\ \hline & 3 \end{array}$$

$$\begin{array}{r} + 9 \\ 2 \\ \hline \end{array}$$

$$7 + 6 = 13$$

+	0	1	2	3	4	5	6	7	8	9
0										
1										
2										
3						8				
4										
5										
6										
7							13			
8										
9										

- Addition can also be written in columns.

## Example

Add the one-digit numbers.

$$\begin{array}{r} + 3 \\ + 5 \\ \hline 8 \end{array}$$

$$\begin{array}{r} \phantom{1} \\ + 7 \\ + 6 \\ \hline 13 \end{array}$$

$$\begin{array}{r} + 9 \\ + 2 \\ \hline \end{array}$$

$$7 + 6 = 13$$

+	0	1	2	3	4	5	6	7	8	9
0										
1										
2										
3						8				
4										
5										
6										
7							13			
8										
9										

- Addition can also be written in columns.

## Example

Add the one-digit numbers.

$$\begin{array}{r} + 3 \\ + 5 \\ \hline 8 \end{array}$$

$$\begin{array}{r} \overset{1}{+ 7} \\ + 6 \\ \hline 13 \end{array}$$

$$\begin{array}{r} + 9 \\ + 2 \\ \hline \end{array}$$

$$7 + 6 = 13$$

+	0	1	2	3	4	5	6	7	8	9
0										
1										
2										
3						8				
4										
5										
6										
7							13			
8										
9										

- Addition can also be written in columns.



## Example

Add the one-digit numbers.

$$\begin{array}{r} + 3 \\ + 5 \\ \hline 8 \end{array}$$

$$\begin{array}{r} \textcolor{red}{1} \\ + 7 \\ + 6 \\ \hline \textcolor{red}{1}3 \end{array}$$

$$\begin{array}{r} + 9 \\ + 2 \\ \hline \end{array}$$

+	0	1	2	3	4	5	6	7	8	9
0										
1										
2										
3						8				
4										
5										
6										
7							13			
8										
9										

- Addition can also be written in columns.

## Example

Add the one-digit numbers.

$$\begin{array}{r} + 3 \\ + 5 \\ \hline 8 \end{array}$$

$$\begin{array}{r} \phantom{1} \\ + 7 \\ + 6 \\ \hline 13 \end{array}$$

$$\begin{array}{r} + 9 \\ + 2 \\ \hline \end{array}$$

+	0	1	2	3	4	5	6	7	8	9
0										
1										
2										
3						8				
4										
5										
6										
7							13			
8										
9										

- Addition can also be written in columns.

## Example

Add the one-digit numbers.

$$\begin{array}{r} 3 \\ + 5 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 1 \\ 7 \\ + 6 \\ \hline 13 \end{array}$$

$$\begin{array}{r} ? \\ 9 \\ + 2 \\ \hline ? \end{array}$$

$$9 + 2 = ?$$

+	0	1	2	3	4	5	6	7	8	9
0										
1										
2										
3						8				
4										
5										
6										
7							13			
8										
9			?							

- Addition can also be written in columns.

## Example

Add the one-digit numbers.

$$\begin{array}{r} 3 \\ + 5 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 1 \\ 7 \\ + 6 \\ \hline 13 \end{array}$$

$$\begin{array}{r} 1 \\ 9 \\ + 2 \\ \hline 11 \end{array}$$

$$9 + 2 = 11$$

+	0	1	2	3	4	5	6	7	8	9
0										
1										
2										
3						8				
4										
5										
6										
7							13			
8										
9			11							

- Addition can also be written in columns.

## Example

Add the one-digit numbers.

$$\begin{array}{r} 3 \\ + 5 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 1 \\ 7 \\ + 6 \\ \hline 13 \end{array}$$

$$\begin{array}{r} 1 \\ 9 \\ + 2 \\ \hline 11 \end{array}$$

$$9 + 2 = 11$$

+	0	1	2	3	4	5	6	7	8	9
0										
1										
2										
3						8				
4										
5										
6										
7							13			
8										
9			11							

- Addition can also be written in columns.

## Example

Add the one-digit numbers.

$$\begin{array}{r} 3 \\ + 5 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 1 \\ 7 \\ + 6 \\ \hline 13 \end{array}$$

$$\begin{array}{r} 1 \\ 9 \\ + 2 \\ \hline 11 \end{array}$$

$$9 + 2 = 11$$

+	0	1	2	3	4	5	6	7	8	9
0										
1										
2										
3						8				
4										
5										
6										
7							13			
8										
9			11							

- Addition can also be written in columns.

## Example

Add the one-digit numbers.

$$\begin{array}{r} 3 \\ + 5 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 1 \\ 7 \\ + 6 \\ \hline 13 \end{array}$$

$$\begin{array}{r} 1 \\ 9 \\ + 2 \\ \hline 11 \end{array}$$

+	0	1	2	3	4	5	6	7	8	9
0										
1										
2										
3						8				
4										
5										
6										
7							13			
8										
9			11							

- Addition can also be written in columns.

## Example

Add the one-digit numbers.

$$\begin{array}{r} 3 \\ + 5 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 1 \\ 7 \\ + 6 \\ \hline 13 \end{array}$$

$$\begin{array}{r} 1 \\ 9 \\ + 2 \\ \hline 11 \end{array}$$

+	0	1	2	3	4	5	6	7	8	9
0										
1										
2										
3						8				
4										
5										
6										
7							13			
8										
9			11							

- Addition can also be written in columns.



## Example

Add the one-digit numbers.

$$\begin{array}{r} 3 \\ + 5 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 1 \\ 7 \\ + 6 \\ \hline 13 \end{array}$$

$$\begin{array}{r} 1 \\ 9 \\ + 2 \\ \hline 11 \end{array}$$

+	0	1	2	3	4	5	6	7	8	9
0	?	?	?	?	?	?	?	?	?	?
1	?	?	?	?	?	?	?	?	?	?
2	?	?	?	?	?	?	?	?	?	?
3	?	?	?	?	?	8	?	?	?	?
4	?	?	?	?	?	?	?	?	?	?
5	?	?	?	?	?	?	?	?	?	?
6	?	?	?	?	?	?	?	?	?	?
7	?	?	?	?	?	?	13	?	?	?
8	?	?	?	?	?	?	?	?	?	?
9	?	?	11	?	?	?	?	?	?	?

- Addition can also be written in columns.

## Example

Add the one-digit numbers.

$$\begin{array}{r} 3 \\ + 5 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 1 \\ 7 \\ + 6 \\ \hline 13 \end{array}$$

$$\begin{array}{r} 1 \\ 9 \\ + 2 \\ \hline 11 \end{array}$$

+	0	1	2	3	4	5	6	7	8	9
0	0	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9	10
2	2	3	4	5	6	7	8	9	10	11
3	3	4	5	6	7	8	9	10	11	12
4	4	5	6	7	8	9	10	11	12	13
5	5	6	7	8	9	10	11	12	13	14
6	6	7	8	9	10	11	12	13	14	15
7	7	8	9	10	11	12	13	14	15	16
8	8	9	10	11	12	13	14	15	16	17
9	9	10	11	12	13	14	15	16	17	18

- Addition can also be written in columns.

## Example

$$\begin{array}{r} 23 \\ + 34 \\ \hline \end{array}$$

## Example

$$\begin{array}{r} 23 \\ + 34 \\ \hline ? \end{array}$$

$$3 + 4 = ?$$

## Example

$$\begin{array}{r} 23 \\ + 34 \\ \hline 7 \end{array}$$

$$3 + 4 = 7$$

## Example

$$\begin{array}{r} 23 \\ + 34 \\ \hline 7 \end{array}$$

$$3 + 4 = 7$$

## Example

$$\begin{array}{r} 23 \\ + 34 \\ \hline ?7 \end{array}$$

$$2 + 3 = ?$$

## Example

$$\begin{array}{r} 23 \\ + 34 \\ \hline 57 \end{array}$$

$$2 + 3 = 5$$



## Example

$$\begin{array}{r} 23 \\ + 34 \\ \hline 57 \end{array}$$

$$2 + 3 = 5$$

## Example

$$\begin{array}{r} 23 \\ + 34 \\ \hline 57 \end{array}$$

## Example

$$\begin{array}{r} 23 \\ + 34 \\ \hline 57 \end{array}$$

## Example

$$\begin{array}{r} + 67 \\ 8 \\ \hline \end{array}$$

## Example

$$\begin{array}{r} ? \\ 67 \\ + 8 \\ \hline ? \end{array}$$

$$7 + 8 = ?$$

## Example

$$\begin{array}{r} \phantom{0}^1 \\ + 67 \\ \phantom{0}8 \\ \hline \phantom{0}5 \end{array}$$

$$7 + 8 = 15$$

## Example

$$\begin{array}{r} 1 \\ + 67 \\ 8 \\ \hline 5 \end{array}$$

$$7 + 8 = 15$$

## Example

$$\begin{array}{r} \textcolor{red}{1} \\ + 67 \\ \phantom{+} 8 \\ \hline 5 \end{array}$$

$$7 + 8 = \textcolor{red}{1}5$$



## Example

$$\begin{array}{r} 1 \\ + 67 \\ 8 \\ \hline ?5 \end{array}$$

$$1 + 6 + = ?$$

## Example

$$\begin{array}{r} 1 \\ + 67 \\ 8 \\ \hline 75 \end{array}$$

$$1 + 6 + 8 = 15$$

## Example

$$\begin{array}{r} 1 \\ + 67 \\ 8 \\ \hline 75 \end{array}$$

$$1 + 6 + = 7$$

## Example

$$\begin{array}{r} \phantom{0}^1 \\ + 67 \\ \phantom{0}8 \\ \hline 75 \end{array}$$

## Example

$$\begin{array}{r} 1 \\ + 67 \\ 8 \\ \hline 75 \end{array}$$

## Example

$$\begin{array}{r} 67 \\ + 962 \\ \hline \end{array}$$

## Example

$$\begin{array}{r} 67 \\ + 962 \\ \hline \end{array}$$

$$7 + 2 = ?$$

## Example

$$\begin{array}{r} 67 \\ + 962 \\ \hline 9 \end{array}$$

$$7 + 2 = 9$$



## Example

$$\begin{array}{r} + 67 \\ 962 \\ \hline 9 \end{array}$$

$$7 + 2 = 9$$

## Example

$$\begin{array}{r} \textcolor{red}{?} \\ \textcolor{red}{+} \quad \textcolor{red}{6}7 \\ \quad 9\textcolor{red}{6}2 \\ \hline \quad \textcolor{red}{?}9 \end{array}$$

$$\textcolor{red}{6} + \textcolor{red}{6} = \textcolor{red}{?}$$

## Example

$$\begin{array}{r} \phantom{+} \phantom{9} \overset{1}{6}7 \\ + \phantom{9}62 \\ \hline \phantom{+} \phantom{9}29 \end{array}$$

$$6 + 6 = 12$$

## Example

$$\begin{array}{r} 1 \\ + 67 \\ 962 \\ \hline 29 \end{array}$$

$$6 + 6 = 12$$

## Example

$$\begin{array}{r} \textcolor{red}{1} \\ + \quad 67 \\ + \quad 962 \\ \hline 29 \end{array}$$

$$6 + 6 = \textcolor{red}{1}2$$

## Example

$$\begin{array}{r} \textcolor{red}{?} \textcolor{red}{1} \\ + \quad 67 \\ \textcolor{red}{+} \quad 962 \\ \hline \textcolor{red}{?} 29 \end{array}$$

$$\textcolor{red}{1} + \textcolor{red}{9} = \textcolor{red}{?}$$

## Example

$$\begin{array}{r} \phantom{1} \phantom{1} \\ + \phantom{0} 67 \\ \hline \phantom{0} 962 \\ \phantom{0} 029 \end{array}$$

$$1 + 9 = 10$$

## Example

$$\begin{array}{r} \phantom{1} \phantom{1} \\ + \phantom{1} 67 \\ \hline 962 \\ \phantom{0} 29 \end{array}$$

$$1 + 9 = 10$$



## Example

$$\begin{array}{r} \textcolor{red}{1} \text{ } 1 \\ + \quad 67 \\ 962 \\ \hline 029 \end{array}$$

$$1 + 9 = \textcolor{red}{1}0$$

## Example

$$\begin{array}{r} \phantom{+} \phantom{0} \overset{1}{\phantom{0}} \overset{1}{\phantom{0}} \\ + \phantom{0} 67 \\ \phantom{+} 962 \\ \hline \overset{1}{\phantom{0}} 029 \end{array}$$

## Example

$$\begin{array}{r} 11 \\ + 67 \\ 962 \\ \hline 1029 \end{array}$$

## Example

$$\begin{array}{r} 35461 \\ + 68072 \\ \hline \end{array}$$

## Example

$$\begin{array}{r} + 35461 \\ 68072 \\ \hline ? \end{array}$$

$$1 + 2 = ?$$

## Example

$$\begin{array}{r} 35461 \\ + 68072 \\ \hline 3 \end{array}$$

$$1 + 2 = 3$$

## Example

$$\begin{array}{r} 35461 \\ + 68072 \\ \hline \end{array}$$

**3**

$$1 + 2 = \mathbf{3}$$

## Example

$$\begin{array}{r} \text{?} \\ 354\textcolor{red}{6}1 \\ + 680\textcolor{red}{7}2 \\ \hline \textcolor{red}{?}3 \end{array}$$

$$\textcolor{red}{6} + \textcolor{red}{7} = \textcolor{red}{?}$$



## Example

$$\begin{array}{r} \phantom{+} 354\overset{1}{6}1 \\ + 68072 \\ \hline \phantom{+} \phantom{3}33 \end{array}$$

$$6 + 7 = 13$$

## Example

$$\begin{array}{r} \phantom{1} \\ + \phantom{1} 35461 \\ \phantom{1} 68072 \\ \hline \phantom{1} \phantom{0} 33 \end{array}$$

$$6 + 7 = 13$$

## Example

$$\begin{array}{r} \phantom{+} \overset{1}{3}5461 \\ + 68072 \\ \hline \phantom{+} 33 \end{array}$$

$$6 + 7 = \overset{1}{1}3$$

## Example

$$\begin{array}{r} \phantom{0}1 \\ 35461 \\ + 68072 \\ \hline \phantom{0}?\phantom{0}33 \end{array}$$

$$1 + 4 + 0 = ?$$

## Example

$$\begin{array}{r} \phantom{+} 35\overset{1}{4}61 \\ + 68072 \\ \hline \phantom{+} 533 \end{array}$$

$$1 + 4 + 0 = 5$$

## Example

$$\begin{array}{r} 1 \\ + 35461 \\ + 68072 \\ \hline 533 \end{array}$$

$$1 + 4 + 0 = 5$$

## Example

$$\begin{array}{r} \textcolor{red}{?} \quad 1 \\ 3\textcolor{red}{5}461 \\ + 6\textcolor{red}{8}072 \\ \hline \textcolor{red}{?}533 \end{array}$$

$$\textcolor{red}{5} + \textcolor{red}{8} = \textcolor{red}{?}$$

## Example

$$\begin{array}{r} \phantom{0}^1 \phantom{0}^1 \\ 3\color{red}{5}461 \\ + 6\color{red}{8}072 \\ \hline \color{red}{3}533 \end{array}$$

$$\color{red}{5} + \color{red}{8} = \color{red}{13}$$



## Example

$$\begin{array}{r} \phantom{+} \overset{1}{3} \overset{1}{5} 4 6 1 \\ + 6 8 0 7 2 \\ \hline \phantom{+} 3 5 3 3 \end{array}$$

$$5 + 8 = 13$$

## Example

$$\begin{array}{r} \textcolor{red}{1} \quad 1 \\ 35461 \\ + 68072 \\ \hline 3533 \end{array}$$

$$5 + 8 = \textcolor{red}{1}3$$

## Example

$$\begin{array}{r} \textcolor{red}{?} \textcolor{red}{1} \quad 1 \\ + \quad 35461 \\ \quad \textcolor{red}{6}8072 \\ \hline \quad \textcolor{red}{?}3533 \end{array}$$

$$\textcolor{red}{1} + \textcolor{red}{3} + \textcolor{red}{6} = \textcolor{red}{?}$$

## Example

$$\begin{array}{r} \phantom{+} \overset{1}{\phantom{+}} \overset{1}{\phantom{+}} \phantom{+} \overset{1}{\phantom{+}} \\ \phantom{+} 35461 \\ + 68072 \\ \hline 03533 \end{array}$$

$$1 + 3 + 6 = 10$$

## Example

$$\begin{array}{r} \phantom{+} \overset{1}{\phantom{0}} \overset{1}{\phantom{0}} \phantom{0} \overset{1}{\phantom{0}} \\ 35461 \\ + 68072 \\ \hline 03533 \end{array}$$

$$1 + 3 + 6 = 10$$

## Example

$$\begin{array}{r} \phantom{+} \overset{1}{\phantom{0}} \overset{1}{\phantom{0}} \overset{1}{\phantom{0}} \\ 35461 \\ + 68072 \\ \hline 03533 \end{array}$$

$$1 + 3 + 6 = \overset{1}{0}$$

## Example

$$\begin{array}{r} \phantom{+} \overset{1}{\phantom{0}} \overset{1}{\phantom{0}} \overset{1}{\phantom{0}} \\ + \quad 35461 \\ \quad 68072 \\ \hline \overset{1}{\phantom{0}}03533 \end{array}$$

## Example

$$\begin{array}{r} \phantom{0}1\phantom{0}1\phantom{0} \\ + 35461 \\ 68072 \\ \hline 103533 \end{array}$$



We covered addition by example; algorithm follows. Feel free to skip.

### Algorithm (Addition base 10)

1. Set **maxNumberOfDigits** to the larger number of digits.
2. For each digit position **i**, starting at position **0**:
  - 2.1. - Let **topDigit** and **bottomDigit** be the two digits in **i<sup>th</sup>** position. If smaller number has no digit at the position, set its digit to **0**.
  - 2.2. - Set **digitSum** to **topDigit** + **bottomDigit**.
  - 2.3. - If **digitSum**  $\geq 10$ , set **resultDigit** = **digitSum** - 10 and **carryOver** = 1.  
- Else **digitSum** < 10, so set **resultDigit** = **digitSum** and **carryOver** = 0.
  - 2.4. - Set the result's **i<sup>th</sup>** digit to **resultDigit**.
3. If after last step **carryOver** is **1**, set **1** as the result's (**maxNumberOfDigits** + 1)<sup>th</sup> digit.