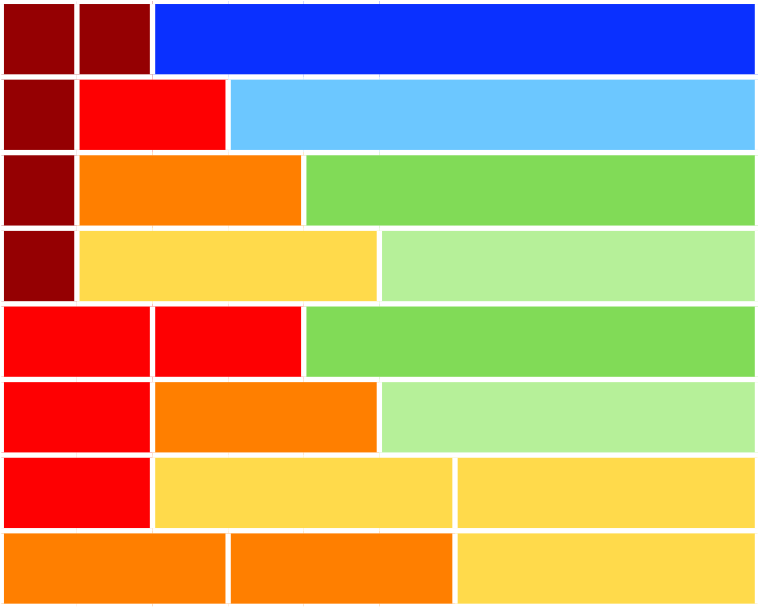
Notes For Teachers

Encourage children to make sure that there are no repeated answers (with the same numbers but in a different order). Explain that in this activity, we are wanting completely different ways to make the total.

You can use visual aids, such as Cuisenaire rods, number shapes, linking cubes, etc. to represent the problem.

You could also ask the children to colour in squared paper or use the sheets provided.

For example, the image below could show ways to make a total of 10:



In order for the children to be sure that they have all possible ways to make each total, you can introduce a system to follow.

Encourage the children to:

Start with 1 + 1 + ?, then 1 + 2 + ?, then 1 + 3 + ?…etc.

Next, use 2 + 2 + ? (no need to use 2 + 1, as they've already used this in the previous step), then 2 + 3 + ?, then 2 + 4 + ?…etc.

Then, use 3 + 3 + ? (no need to use 3 + 1 or 3 + 2, as they've already used these in another order in the previous steps), then 3 + 4 + ?, then 3 + 5 + ?…etc.

As the children work through each step, they will get to the point where they cannot make any new number sentences, as they will already have the same ones (but in a different order). E.g. 1 + 5 + 4 cannot be used because they should already have 1 + 4 + 5. Both number sentences are essentially the same, just arranged in a different order. There are a few examples of this within the answers (see text in italics).

Children should use the column called 'Repeat Check' to tick when they have checked for repetition.

Adding 3 One-Digit Numbers Investigation Challenge

Using the numbers 1 to 9, how many ways are there of adding 3 numbers together to make a total of 3?

Make sure there are no repeated answers, with the same numbers but in a different order.

You may not need all the rows in the table.

Different Ways	Repeat Check
+ +	
+ +	
+ +	

Using the numbers 1 to 9, how many ways are there of adding 3 numbers together to make a total of 4?

Make sure there are no repeated answers, with the same numbers but in a different order.

You may not need all the rows in the table.

Different Ways	Repeat Check
+ +	
+ +	
+ +	

Using the numbers 1 to 9, how many ways are there of adding 3 numbers together to make a total of 5?

Make sure there are no repeated answers, with the same numbers but in a different order.

You may not need all the rows in the table.

Different Ways	Repeat Check
+ +	
+ +	
+ +	

Using the numbers 1 to 9, how many ways are there of adding 3 numbers together to make a total of 6?

Make sure there are no repeated answers, with the same numbers but in a different order.

You may not need all the rows in the table.

Different Ways	Repeat Check
+ +	
+ +	
+ +	
+ +	

Using the numbers 1 to 9, how many ways are there of adding 3 numbers together to make a total of 7?

Make sure there are no repeated answers, with the same numbers but in a different order.

You may not need all the rows in the table.

Different Ways	Repeat Check
+ +	
+ +	
+ +	
+ +	
+ +	

Using the numbers 1 to 9, how many ways are there of adding 3 numbers together to make a total of 8?

Make sure there are no repeated answers, with the same numbers but in a different order.

You may not need all the rows in the table.

Different Ways	Repeat Check
+ +	
+ +	
+ +	
+ +	
+ +	
+ +	

Using the numbers 1 to 9, how many ways are there of adding 3 numbers together to make a total of 9?

Make sure there are no repeated answers, with the same numbers but in a different order.

You may not need all the rows in the table.

Different Ways	Repeat Check
+ +	
+ +	
+ +	
+ +	
+ +	
+ +	
+ +	
+ +	

Using the numbers 1 to 9, how many ways are there of adding 3 numbers together to make a total of 10?

Make sure there are no repeated answers, with the same numbers but in a different order.

You may not need all the rows in the table.

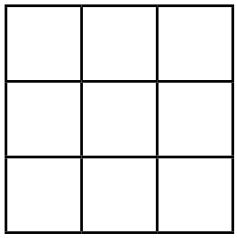
Different Ways			Repeat Check
	+	+	
	+	+	
	+	+	
	+	+	
	+	+	
	+	+	
	+	+	
	+	+	
	+	+	
	+	+	

Using the numbers 1 to 9, how many ways are there of adding 3 numbers together to make a total of 3?

Shade these squares to show the different ways of making the number 3.

You may not need all the rows.

Check to make sure you are not repeating any ways.

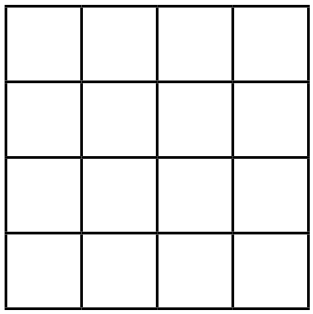


Using the numbers 1 to 9, how many ways are there of adding 3 numbers together to make a total of 4?

Shade these squares to show the different ways of making the number 4.

You may not need all the rows.

Check to make sure you are not repeating any ways.

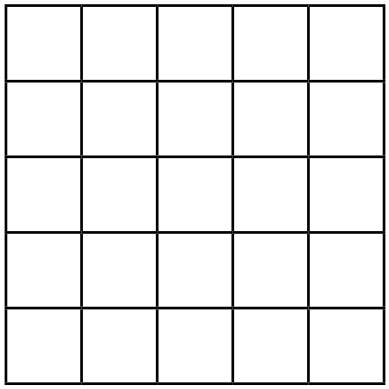


Using the numbers 1 to 9, how many ways are there of adding 3 numbers together to make a total of 5?

Shade these squares to show the different ways of making the number 5.

You may not need all the rows.

Check to make sure you are not repeating any ways.

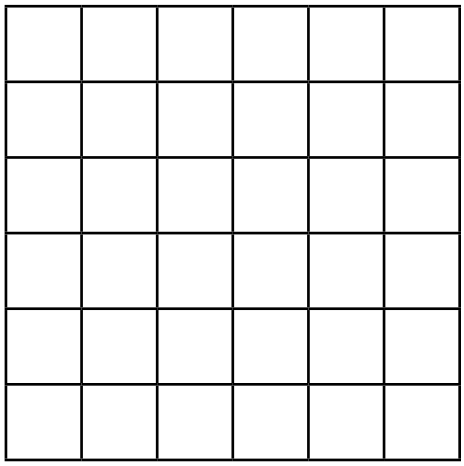


Using the numbers 1 to 9, how many ways are there of adding 3 numbers together to make a total of 6?

Shade these squares to show the different ways of making the number 6.

You may not need all the rows.

Check to make sure you are not repeating any ways.

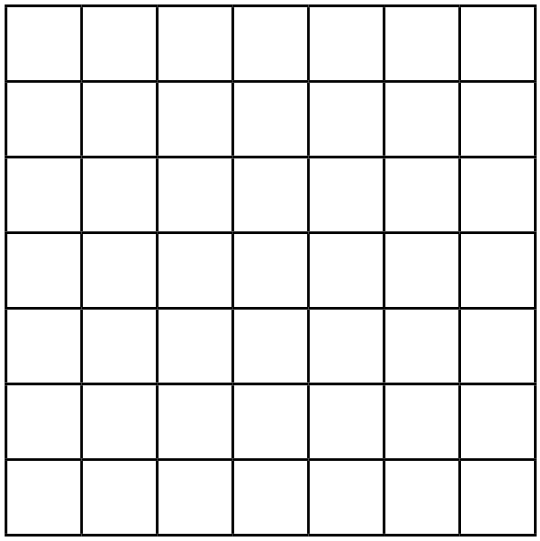


Using the numbers 1 to 9, how many ways are there of adding 3 numbers together to make a total of 7?

Shade these squares to show the different ways of making the number 7.

You may not need all the rows.

Check to make sure you are not repeating any ways.

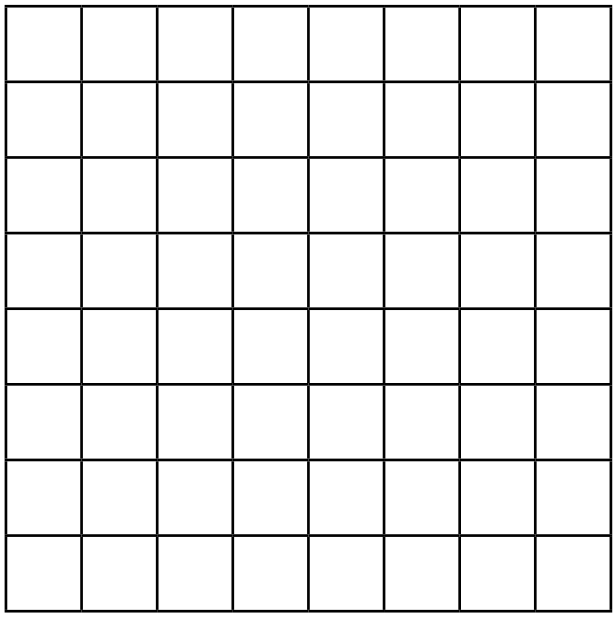


Using the numbers 1 to 9, how many ways are there of adding 3 numbers together to make a total of 8?

Shade these squares to show the different ways of making the number 8.

You may not need all the rows.

Check to make sure you are not repeating any ways.

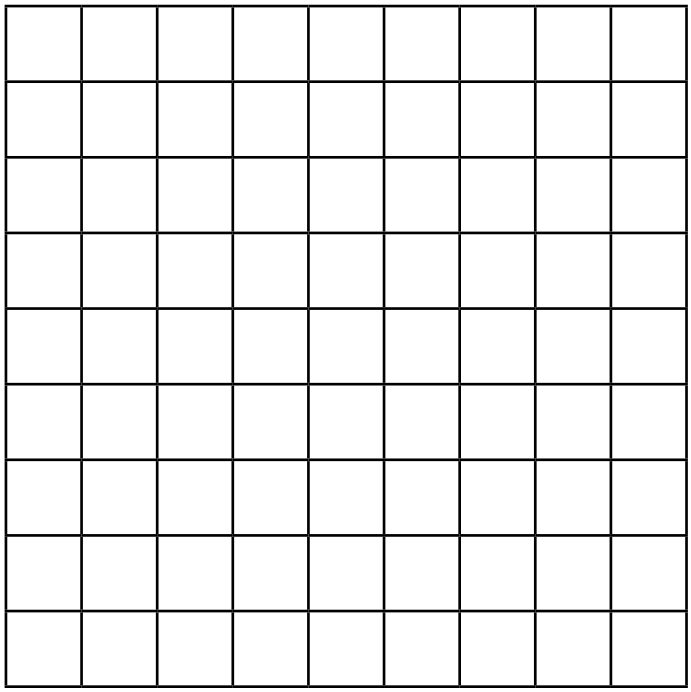


Using the numbers 1 to 9, how many ways are there of adding 3 numbers together to make a total of 9?

Shade these squares to show the different ways of making the number 9.

You may not need all the rows.

Check to make sure you are not repeating any ways.

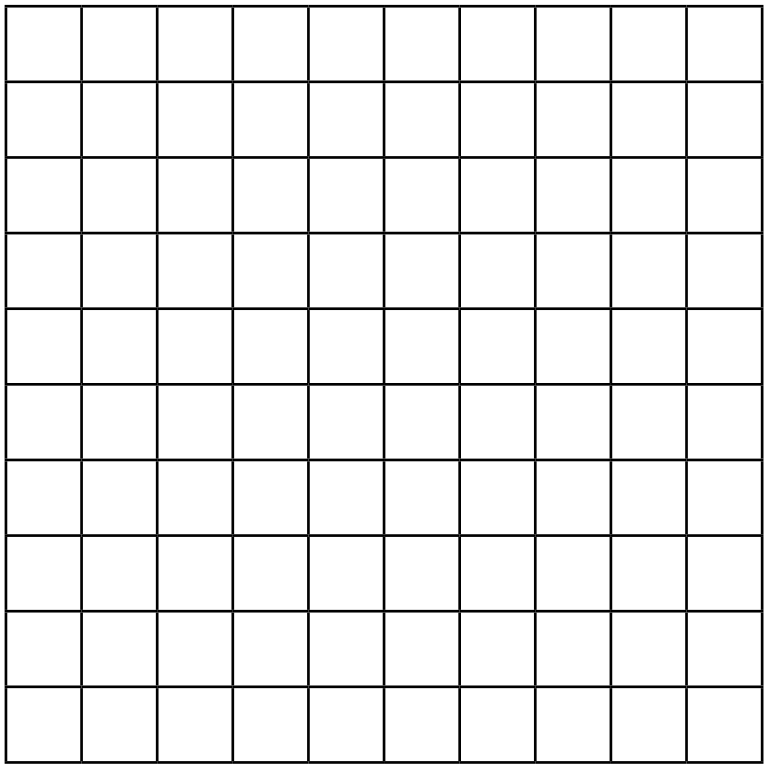


Using the numbers 1 to 9, how many ways are there of adding 3 numbers together to make a total of 10?

Shade these squares to show the different ways of making the number 10.

You may not need all the rows.

Check to make sure you are not repeating any ways.



Adding 3 One-Digit Numbers Investigation Challenge: **Answers**

Total	Ways to Make It
0	Not possible
1	Not possible
2	Not possible
3	1 + 1 + 1 = 3
4 1 way	1 + 1 + 2 = 4 (1 + 2 + 1 cannot be used, because it is the same as 1 + 1 + 2 = 4)
5 2 ways	1 + 1 + 3 =5 1 + 2 + 2 = 5 (1 + 3 + 1 cannot be used, because it is the same as 1 + 1 + 3 = 5)
6 3 ways	1 + 1 + 4 = 6 1 + 2 + 3 = 6 (1 + 3 + 2 cannot be used, because it is the same as 1 + 2 + 3 = 6) 2 + 2 + 2 = 6 (2 + 3 + 1 cannot be used, because it is the same as 1 + 2 + 3 = 6)
7 4 ways	1 + 1 + 5 = 7 1 + 2 + 4 = 7 1 + 3 + 3 = 7 2 + 3 + 2 = 7
8 5 ways	1 + 1 + 6 = 8 1 + 2 + 5 = 8 1 + 3 + 4 = 8 2 + 2 + 4 = 8 2 + 3 + 3= 8
9 7 ways	1 + 1 + 7 = 9 1 + 2 + 6 = 9 1 + 3 + 5 = 9 1 + 4 + 4 = 9 2 + 2 + 5 = 9 2 + 3 + 4 = 9 3 + 3 + 3 = 9
10 8 ways	1 + 1 + 8 = 10 1 + 2 + 7 = 10 1 + 3 + 6 = 10 1 + 4 + 5 = 10 2 + 2 + 6 = 10 2 + 3 + 5 = 10 2 + 4 + 4 = 10 3 + 3 + 4 = 10