

Game with two dice: What is your favorite sum?

Last time we played with one dice and freed the animals from 6 cages. Did we find any numbers to be “better” than others?

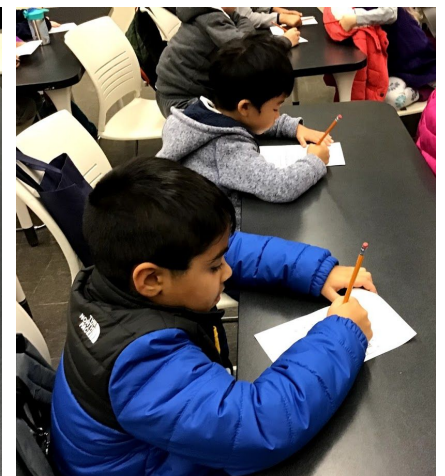
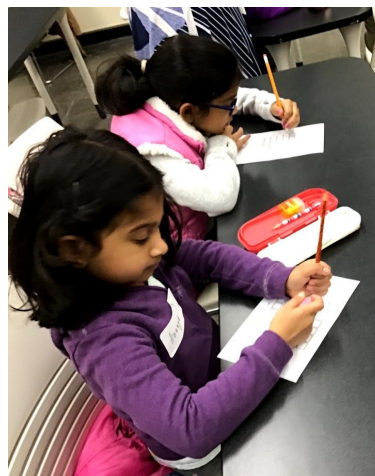
What will change if we have 2 dice?

If now we will throw two 6 sided dice simultaneously, what numbers we can get on each of the dice? What are the sums that we can get? What is the smallest sum we can get? What is the largest sum we can get? We will fill the 6x6 table with all possible sums we can get from throwing two dice.

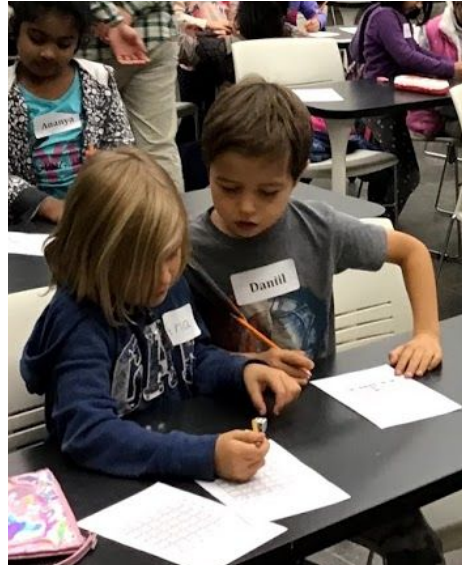
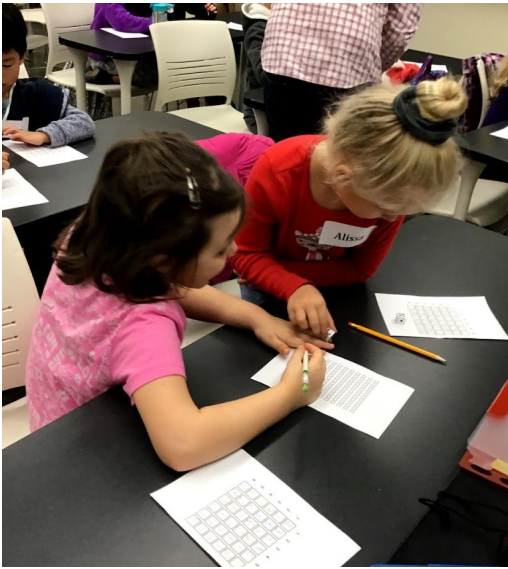


Let us now fill up the table with all the sums we can get. Do we have any “better” numbers here?

	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12



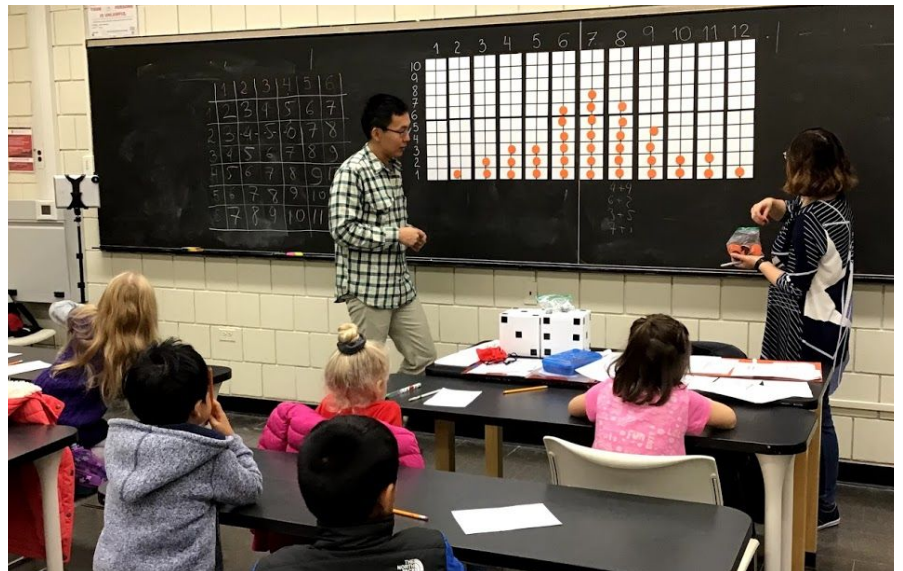
To find this out, let us do an experiment: we will throw two dice simultaneously, find the sum of the two numbers, record it by bubbling the right column of the grid given to you, and repeat this until one of the numbers appears 10 times.



Now we will combine all our results in one graph and see the distribution. What number did you get more often?

Why we have some numbers more often than other?

Does this mean certain sums are really “better” than the others?



Let us look at how we can get each sum:

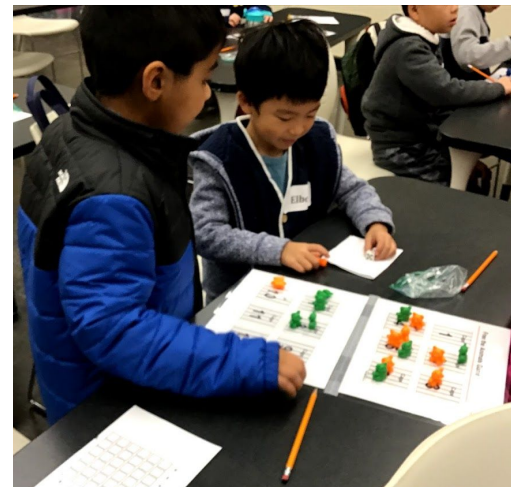
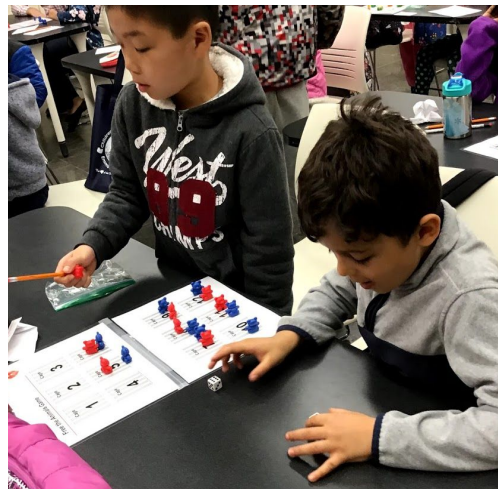
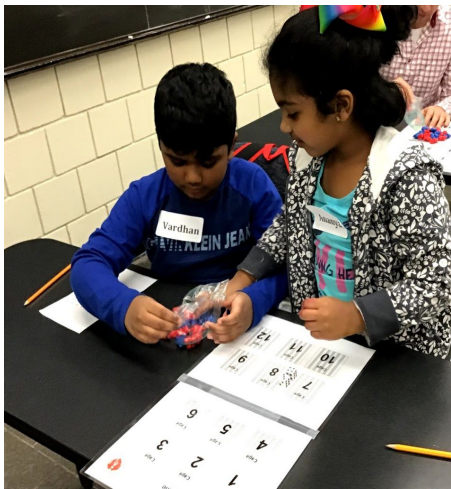
1	2	3	4	5	6	7	8	9	10	11	12
	1+1	1+2	2+2	2+3	3+3	3+4	4+4	4+5	5+5	6+5	6+6
		2+1	1+3	3+2	2+4	4+3	3+5	5+4	4+6	5+6	
			3+1	1+4	4+2	2+5	5+3	3+6	6+4		
				4+1	1+5	5+2	2+6	6+3			
					5+1	1+6	6+2				
						6+1					

Now we will again play our “Free the animals” game. Each person will free his or her animals from cages. Each pair of students will share a field and compete against each other:

Today we will play with two 6 sided dice:

- You will have two dice, one field with 12 cages (#1 -#12) and each of you will have 8 animals to put in cages.
- Before we start, everyone puts their 8 animals into any combination of the 12 cages on the field.
- Then we will take turns throwing both dice and freeing the animal from the cage that has number equal to the sum of two dice.
- Remember:
 - You can free only one animal from the cage with the number equal to sum of dice throws.
 - And you can free your animal from a cage only on your turn!
 - Whoever frees his 8 animals from the cages first wins the game!

What is the better strategy to put your 8 animals? Should we change the strategy from last time? Where should we put our animals?



And finally Game time! Pick your game for the week!



See you next week!