

## Honors Class01 Activity: Of Dice and Men

**Team Members:** \_\_\_\_\_

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Each team will receive a pair of dice. Roll the dice 50 times and record the total for each roll in the table on the back of this page along with the running grand total.

1. Grand total of all 50 rolls here: \_\_\_\_\_
2. Divide the sum by 50 to calculate the average: \_\_\_\_\_
3. What is the expected value of the average? Explain.
4. How much does your average differ from this expected value? \_\_\_\_\_
5. Do you think this difference is plausible given you only rolled the dice 50 times?
6. If you wanted to be very confident the dice were fair, how many rolls would you want to do? Explain your reasoning (even if it's not exact math).
7. The probability of rolling a 12 is  $1/36$ . Out of 50 rolls, how many 12s would you expect on average?
8. How many 12s did you roll and does this seem to be in agreement with the odds?
9. Suppose a classmate claims your dice are unfair because you didn't get any 12s. What evidence would you use to argue for or against this claim?
10. Based on this activity, write one sentence that summarizes what you learned about randomness and averages.

Roll #	Dice Sum	Running Total	Roll #	Dice Sum	Running Total
1			26		
2			27		
3			28		
4			29		
5			30		
6			31		
7			32		
8			33		
9			34		
10			35		
11			36		
12			37		
13			38		
14			39		
15			40		
16			41		
17			42		
18			43		
19			44		
20			45		
21			46		
22			47		
23			48		
24			49		
25			50		