Three coin game I

This task is about comparing theoretical with experimental outcomes.

Practical Task

Throw the three coins together. Score a "head" as 1 point and a "tail" as 2 points.

a) i) Add the three scores together, repeat this a total of 80 times and record your results in the tally chart below.

Sum of the three coins	Tally
3	
4	
5	
6	

ii) Complete the table below using the information from the tally chart above.

Sum of the three coins	3	4	5	6
Frequency				

b) There are eight ways that the coins can come up. They are:

	Coin 1	Coin 2	Coin 3	Sum
1.	Heads	Heads	Heads	3
2.	Heads	Heads	Tails	4
3.	Heads	Tails	Heads	4
4.	Tails	Heads	Heads	4
5.	Heads	Tails	Tails	5
6.	Tails	Heads	Tails	5
7.	Tails	Tails	Heads	5
8.	Tails	Tails	Tails	6

The probability of getting the three coins summing to 3 (i.e., three heads) is $\frac{1}{8}$.

Complete the table of probabilities. The first one has been done for you.

Sum of the three coins (S)	3	4	5	6
Probability (p)	$\frac{1}{8}$			

c) Use the table above to predict how many times you would expect to get each of the following sums if the three coins were thrown 80 times.

i) A sum of 3? _____

ii) A sum of 4? _____

iii) A sum of 5? _____

iv) A sum of 6? _____

Get your teacher to check parts b) and c) before you continue.

d) Write a statement comparing the expected frequencies in c) with what you actually got in the experiment in part a) ii).

e) Why may the results in a) ii) and c) be different?
Give **two** reasons.

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