

Theoretical probability – determined mathematically

Experimental probability – determined by conducting an experiment

CELEBRITY HUNGER GAMES EXPERIMENT

Based on the book, a tribute has a bit more than a 50% chance of advancing to Day 2. After the first day a tribute's chance of advancing any given day rises to about 85-90%.

ROLL TWO DICE	<i>Eliminated</i>	<i>Survived</i>
Day 1	8, 9, 10, 11, 12	2, 3, 4, 5, 6, 7
After Day 1	3, 11, 12	2, 4, 5, 6, 7, 8, 9, 10

If the final tributes are eliminated on the same day, re-roll for that day.

Simulate the 12 person Celebrity Hunger Games five times.

Player	Example	1 st Simulation	2 nd Simulation	3 rd Simulation	4 th Simulation	5 th Simulation
Justin Bieber	Day 1					
Taylor Swift	Day 4					
Katniss Everdeen	Day 7					
Harry Potter	Day 1					
Batman	Day 1					
Darth Vader	Day 5					
LeBron James	Day 2					
Michael Jordan	Day 1					
Mrs. Loewen	Day 10					
Mrs. Bailey	Day 1					
Olaf	WON					
Nemo	Day 2					
WINNER	Olaf					

1.	What was the theoretical probability Nemo would win?	
2.	What was the experimental probability Nemo would win?	
3.	What was the theoretical probability Darth Vader would not win?	
4.	What was the experimental probability Darth Vader would not win?	
5.	What was the theoretical probability a two-name character would win?	
6.	What was the experimental probability a two-name character would win?	
7.	Why are theoretical and experimental probabilities not necessarily the same?	

Solve.

1.	Katniss is playing basketball. She scored 11 baskets in 15 free throws. What is the experimental probability that she will score a basket on her next free throw?													
2.	Gale has gone to work for 60 days. On 39 of those days, he arrived at work before 8:30 A.M. On the rest of the days he arrived after 8:30 A.M. What is the experimental probability he will arrive after 8:30 A.M. on the next day he goes to work?													
3.	For the past four weeks, Prim has been recording the daily high temperature. During that time, the high temperature has been greater than 45°F on 20 out of 28 days. What is the experimental probability that the high temperature will be below 45°F on the twenty-ninth day?													
4.	After the movie The Hunger Games, 99 out of 130 people surveyed said they liked the movie. What is the experimental probability that the next person surveyed will say he or she liked the movie? He or she did not like the movie?													
5.	For the past 40 days, Katniss has been recording the number of customers at The Hob between 10:00 A.M. and 11:00 A.M. During that hour, there have been fewer than 20 customers on 25 out of the 40 days. What is the experimental probability there will be fewer than 20 customers on the forty-first day? 20 or more customers on the forty-first day?													
6.	<p>Peeta was bored so he tossed a coin and spun a spinner with 3 equal sections. The results are shown in the table.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>Heads</th> <th>Tails</th> </tr> </thead> <tbody> <tr> <th>1</th> <td>53</td> <td>65</td> </tr> <tr> <th>2</th> <td>49</td> <td>71</td> </tr> <tr> <th>3</th> <td>54</td> <td>62</td> </tr> </tbody> </table> <p>What is the experimental probability that the next toss and spin will result in Tails and a 3?</p>		Heads	Tails	1	53	65	2	49	71	3	54	62	
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1	53	65												
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7.	<p>The tributes stopped at the Sandwich Shop for lunch. They can choose the bread and meat they want. The table shows the sandwiches that were sold on a given day.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>White Bread</th> <th>Wheat Bread</th> </tr> </thead> <tbody> <tr> <th>Ham</th> <td>22</td> <td>24</td> </tr> <tr> <th>Turkey</th> <td>21</td> <td>22</td> </tr> <tr> <th>Tuna</th> <td>25</td> <td>23</td> </tr> </tbody> </table> <p>What is the experimental probability that the next sandwich sold will be tuna on wheat bread?</p>		White Bread	Wheat Bread	Ham	22	24	Turkey	21	22	Tuna	25	23	
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