Worksheet #2

Rocio, let's play a **gambling game**. You need to cut out the pieces provided.

Here's how you play:

*Put shapes face down. Mix them up. Pick a piece out **with your eyes closed**.*

If you pick a cherry, you don't win. If you pick a banana you get twenty five cents ($0.25). If you pick a pineapple you get three dollars ($3.00).

*It costs **$1 to play every round**.*

Okay, but before you start to play, fill in the **probability** chart below by counting a specific type of card and counting the total number of cards. We'll fill in the 'cherry' for you -- but you have to do the rest on your own:

Probability of Cherry		
$0	*fraction*	*6/10*
	decimal	*0.6*
	percent	*60%*

Probability of Banana		
$0.25	*fraction*	
	decimal	
	percent	

Probability of Pinneapple		
$3.00	*fraction*	
	decimal	
	percent	

Play the game 15, 30, and the 60 times. Fill in C, B, or P after each run:

Trial #	Fruit
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

Trial #	Fruit
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	

Trial #	Fruit
31	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	

Trial #	Fruit
46	
47	
48	
49	
50	
51	
52	
53	
54	
55	
56	
57	
58	
59	
60	

Results After 15 Trials | ***Total Amount Spent = $15*** | ***Total Amount Won:***								
Times You Got Cherry			**Times You Got Banana**			**Times You Got Pineapple**		
$0	*fraction*	**/ 15**	$0.25	*fraction*	**/ 15**	$3.00	*fraction*	**/ 15**
	decimal			*decimal*			*decimal*	
	percent			*percent*			*percent*	

Results After 30 Trials | ***Total Amount Spent = $30*** | ***Total Amount Won:***								
Times You Got Cherry			**Times You Got Banana**			**Times You Got Pineapple**		
$0	*fraction*	**/ 30**	$0.25	*fraction*	**/ 30**	$3.00	*fraction*	**/ 30**
	decimal			*decimal*			*decimal*	
	percent			*percent*			*percent*	

Results After 60 Trials | ***Total Amount Spent = $60*** | ***Total Amount Won:***								
Times You Got Cherry			**Times You Got Banana**			**Times You Got Pineapple**		
$0	*fraction*	**/ 60**	$0.25	*fraction*	**/ 60**	$3.00	*fraction*	**/ 60**
	decimal			*decimal*			*decimal*	
	percent			*percent*			*percent*	

Q1 After 15 trials, look at how many times you got cherry, banana, and pineapple. How does that compare to the probabilities you calculated to the left?

Q2 Were they the exact same numbers? Were they close? Discuss why or why not with your tutor?

Worksheet #2

Rocio, as you perform more **trials** the **actual percentage** of occurrence gets closer to the **predicted probability** of that event happening.

Let's take a two sided coin. What's the probability of flipping heads? Well, it's:

$$\frac{1}{2} = 0.5 = 50\%$$

So let's look at three tosses:

Trial #	Side
1	Head
2	Tail
3	Tail

What percent of the time did we get 'heads':

Let's look at 15 tosses:

Trial #	Side
1	Head
2	Tail
3	Tail
4	Head
5	Head
6	Head
7	Tail
8	Head
9	Head
10	Tail
11	Head
12	Tail
13	Tail
14	Head
15	Tail

What percent of the time did we get 'heads':

Q3 After 30 trials, look at how many times you got cherry, banana, and pineapple. How does that compare to the probabilities you calculated to the left?

Q4 Were they the exact same numbers? Were they closer than at 15 trials? Discuss why or why not with your tutor?

Q5 After 60 trials, look at how many times you got cherry, banana, and pineapple. How does that compare to the probabilities you calculated to the left?

Q6 Were they the exact same numbers? Were they closer than at 30 trials? Discuss why or why not with your tutor?

Q7 Did you win money or did you lose money? Why do you think that is?

Q8 What is the **average amount of money** you expect to win each round?

Q9 Apply the **average amount of money you expect to win per trial** by 60. Is this close to what you won?

Worksheet #2: Answer Key

Rocio, let's play a **gambling game**. You need to cut out the pieces provided.

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If you pick a cherry, you don't win. If you pick a banana you get twenty five cents ($0.25). If you pick a pineapple you get three dollars ($3.00).

*It costs **$1 to play every round**.*

Okay, but before you start to play, fill in the **probability** chart below by counting a specific type of card and counting the total number of cards. We'll fill in the 'cherry' for you -- but you have to do the rest on your own:

Probability of Cherry		
$0	fraction	6/10
	decimal	0.6
	percent	60%

Probability of Banana		
$0.25	fraction	3/10
	decimal	0.3
	percent	30%

Probability of Pinneapple		
$3.00	fraction	1/10
	decimal	0.1
	percent	10%

Play the game 15, 30, and the 60 times. Fill in C, B, or P after each run:

Trial #	Fruit
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

Trial #	Fruit
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	

Trial #	Fruit
31	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	

Trial #	Fruit
46	
47	
48	
49	
50	
51	
52	
53	
54	
55	
56	
57	
58	
59	
60	

Results After 15 Trials | ***Total Amount Spent = $15*** | ***Total Amount Won:***

Times You Got Cherry			Times You Got Banana			Times You Got Pineapple		
$0	fraction	/ 15	$0.25	fraction	/ 15	$3.00	fraction	/ 15
	decimal			decimal			decimal	
	percent			percent			percent	

Results After 30 Trials | ***Total Amount Spent = $30*** | ***Total Amount Won:***

Times You Got Cherry			Times You Got Banana			Times You Got Pineapple		
$0	fraction	/ 30	$0.25	fraction	/ 30	$3.00	fraction	/ 30
	decimal			decimal			decimal	
	percent			percent			percent	

Results After 60 Trials | ***Total Amount Spent = $60*** | ***Total Amount Won:***

Times You Got Cherry			Times You Got Banana			Times You Got Pineapple		
$0	fraction	/ 60	$0.25	fraction	/ 60	$3.00	fraction	/ 60
	decimal			decimal			decimal	
	percent			percent			percent	

Q1 After 15 trials, look at how many times you got cherry, banana, and pineapple. How does that compare to the probabilities you calculated to the left?

Q2 Were they the exact same numbers? Were they close? Discuss why or why not with your tutor?

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Let's look at 15 tosses:

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2	Tail
3	Tail
4	Head
5	Head
6	Head
7	Tail
8	Head
9	Head
10	Tail
11	Head
12	Tail
13	Tail
14	Head
15	Tail

What percent of the time did we get 'heads':

Q3 After 30 trials, look at how many times you got cherry, banana, and pineapple. How does that compare to the probabilities you calculated to the left?

Q4 Were they the exact same numbers? Were they closer than at 15 trials? Discuss why or why not with your tutor?

Q5 After 60 trials, look at how many times you got cherry, banana, and pineapple. How does that compare to the probabilities you calculated to the left?

Q6 Were they the exact same numbers? Were they closer than at 30 trials? Discuss why or why not with your tutor?

Q7 Did you win money or did you lose money? Why do you think that is?

Q8 What is the **average amount of money** you expect to win each round?

Money Per Round = 0.6 × \$0 + 0.3 × \$0.25 + 0.1 × \$3.00 = \$0.375 = \$0.38

Q9 Apply the **average amount of money you expect to win per trial** by 60. Is this close to what you won?

\$0.38 × 60 = \$22.80