

THEORETICAL PROBABILITY ACTIVITY

Theoretical probability is just that...a theory. It's what is expected to happen, yet as we all know in life, the expected does not always happen. Today's activity will begin to test theoretical activity.

Needed Supplies

- this worksheet
- die (singular of dice)

Probability Prediction Time

What is the chance of each of the following happening? Imagine the die were rolled 100 times, what would be the chance out of 100 if this theoretical probability prediction were to remain the same.

Number Rolled	Probability	Probability Out of 100
5		
an even number		
a prime number		
a multiple of 3		

The Test

Now let's test it. Your job will be to roll the die **exactly 100 times** and record how many times each number is rolled. To do this you will want to make a tally table. Keep careful track of how many rolls you have done.

1	
2	
3	
4	
5	
6	

Name _____

Period _____

Comparing Theory with Reality

Now it's time to actually compare how theory and reality matched up. Write your results in percent form. Round to the nearest whole percent.

Number Rolled	Probability Out of 100	Actual Amount Out of 100
5		
an even number		
a prime number		
a multiple of 3		

Critical Thinking

1. How did your actual rolls compare to your theoretical probability prediction?

2. Do you think this would have been different if you had rolled the die 1,000 or even 10,000 times? Explain your reasoning.

THEORETICAL PROBABILITY ACTIVITY

(ANSWER KEY)

Theoretical probability is just that...a theory. It's what is expected to happen, yet as we all know in life, the expected does not always happen. Today's activity will begin to test theoretical activity.

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- this worksheet
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Probability Prediction Time

What is the chance of each of the following happening? Imagine the die were rolled 100 times, what would be the chance out of 100 if this theoretical probability prediction were to remain the same.

Number Rolled	Probability	Probability Out of 100
5	$1/6$	$\approx 17/100$
an even number	$3/6 = 1/2$	$50/100$
a prime number	$3/6 = 1/2$	$50/100$
a multiple of 3	$2/6 = 1/3$	$\approx 33/100$

The Test

Now let's test it. Your job will be to roll the die **exactly 100 times** and record how many times each number is rolled. To do this you will want to make a tally table. Keep careful track of how many rolls you have done.

1	Results will vary (show proper tally mark format)
2	
3	
4	
5	
6	

Name _____

Period _____

Comparing Theory with Reality

Now it's time to actually compare how theory and reality matched up. Write your results in percent form. Round to the nearest whole percent.

Number Rolled	Probability Out of 100	Actual Amount Out of 100
5	≈17%	Results will vary
an even number	50%	
a prime number	50%	
a multiple of 3	≈33%	

Critical Thinking

3. How did your actual rolls compare to your theoretical probability prediction?

Answers will vary.

4. Do you think this would have been different if you had rolled the die 1,000 or even 10,000 times? Explain your reasoning.

Answers will vary. Students should be able to understand that the theoretical probability predictions should be closer to the actual experimental probability results as the number of trials increases.