



**Math Virtual Learning**

# **Algebra IIB**

**May 12, 2020**



Lesson: May 12, 2020

**Objective/Learning Target:**

Students will focus on experimental probability and understand its difference from theoretical probability

# Bell Ringer

What is the theoretical probability of rolling an even number on a 13-sided die?

# Bell Ringer

What is the theoretical probability of rolling an even number on a 13-sided die?

Answer:  $\frac{6}{13}$

# Lesson

In the previous lesson you focused on theoretical probability. Today's focus will be on experimental probability. You can rewatch the [video](#) or reread the [notes](#) if you need to see an reminder of theoretical probability and experimental probability.

# Practice

- 1.) What is the theoretical probability that an even number will be rolled on a number cube?
- 2.) What was the experimental probability of how many times an even number was actually rolled using the table?
- 3.) Theoretically if you roll a number cube 36 times, how many times would you expect to roll the number one?
- 4.) How many times did you actually roll the number one in the experiment?
- 5.) What is the theoretical probability for rolling a number greater than 4?

# on Cube	Frequency
1	8
2	3
3	9
4	6
5	4
6	6

- 6.) What was the experimental probability of rolling a number greater than 4?
- 7.) What is the difference between theoretical and experimental probability?
- 8.) If a car factory checks 360 cars and 8 of them have defects, how many will have defects out of 1260?
- 9.) If a car factory checks 320 cars and 12 of them have defects, how many out of 560 will **NOT** have defects?
- 10.) You plant 30 African violet seeds and 9 of them sprout. Use experimented probability to predict how many will sprout if you plant 20 seeds?
- 11.) If you are picking a number between 1-20 what is the probability that you will pick a number greater than 14 or less than 4?

# Answers

- 1.) What is the theoretical probability that an even number will be rolled on a number cube?

$$\frac{1}{2}$$

- 2.) What was the experimental probability of how many times an even number was actually rolled using the table?

$$\frac{15}{36} = \frac{5}{12}$$

- 3.) Theoretically if you roll a number cube 36 times, how many times would you expect to roll the number one?

$$\frac{1}{6}(36) = 6$$

- 4.) How many times did you actually roll the number one in the experiment?

$$8$$

- 5.) What is the theoretical probability for rolling a number greater than 4?

$$\frac{2}{6} = \frac{1}{3}$$

- 6.) What was the experimental probability of rolling a number greater than 4?

$$\frac{10}{36} = \frac{5}{18}$$

# on Cube	Frequency
1	8
2	3
3	9
4	6
5	4
6	6

36



7.) What is the difference between theoretical and experimental probability?

based on theory } based on actual  
everything happens } event  
eventually

8.) If a car factory checks 360 cars and 8 of them have defects, how many will have defects out of 1260?

$$\frac{8}{360} = \frac{x}{1260} \quad 28$$

9.) If a car factory checks 320 cars and 12 of them have defects, how many out of 560 will NOT have defects?

$$\begin{array}{r} 320 \\ -12 \\ \hline 308 \end{array} \xrightarrow{\text{no defects}} \frac{308}{320} = \frac{x}{560} \quad 539$$

10.) You plant 30 African violet seeds and 9 of them sprout. Use experimented probability to predict how many will sprout if you plant 20 seeds?

$$\frac{9}{30} = \frac{x}{20} \quad 6$$

11.) If you are picking a number between 1-20 what is the probability that you will pick a number greater than 14 or less than 4?

$$\frac{8}{20} = \frac{2}{5}$$