

EXPERIMENTAL PROBABILITY

Experimental probability is the probability that a certain outcome will occur based on an experiment being performed multiple times.

- Experimental probability is calculated completely on the results of an experiment.
- Theoretical probability is the probability that a certain outcome will occur based on all the possible outcomes.
- Experimental probability is different from theoretical probability although sometimes the probabilities may be the same.

- When the experimental probability is taken into account

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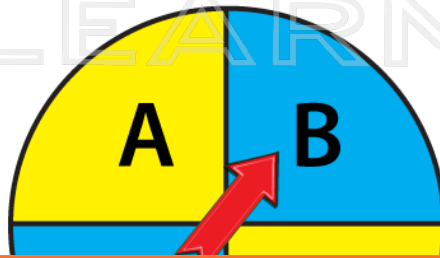
For

numbers 1 -10. Jeanie picks the number 3. Her teacher picks a number 10 times and the numbers are 2, 1, 6, 9, 7, 6, 3, 7, 3, and 6. The probability of Jeanie's number, 3, being picked is $\frac{2}{10}$ or $\frac{1}{5}$.


- Based on the experiment, the experimental probability is $\frac{1}{5}$ or .2.
- The theoretical probability of the number 3 being picked out of the numbers 1 - 10 is $\frac{1}{10}$ or .1.
- In this case, the experimental probability is greater than the theoretical probability. If Jeanie had picked the number 1 instead of the number 3, the experimental probability would be equal to the theoretical probability.

When the experimental probability is taken into account, **predictions** can be made based on the experiment and the experimental probability.

For example, if the spinner shown is spun 20 times and the results are shown, what letter should be predicted to appear the next time the spinner is spun?



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Sur

shows the results of a survey of 80 people which asked their favorite color. Based on the table, what is the probability that the next person asked will answer that green is his or her favorite color?

red	22
blue	24
green	12
yellow	14
orange	8

The table shows that 12 out of 80 people said green was their favorite color, so the probability would be $\frac{12}{80}$ or .15.

Try This!

- Ruth's class did an experiment where a die was rolled 8 times. Ruth picked the number 4. The results were 2, 1, 6, 1, 6, 3, 5, and 2. What was the **experimental probability** of Ruth getting a 4?
- Was the **experimental probability** of Ruth getting a 4 greater than, less than or equal to the **theoretical probability**?



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1 car	15
2 cars	18
3 cars	9
4 cars	6
5 cars	2