

Probability

Running Time: 26 Minutes

Nifty questions in this episode:

- What is probability?
- What is a bell curve?
- What is a prediction?

Awesome answers:

- The chance of something happening or not happening!
- An average number of responses (higher in the middle, more pointed curve.)
- An expectation of what will happen in the future based on events or results that have happened in the past.

Experiments shown on the video:

COIN TOSS

Objective: To determine the number of heads and tails when flipping a coin 50 times.

- Flip a large coin. On a piece of paper, record whether it landed with “heads” or “tails” facing up.
- Repeat for a total of 50 flips, recording the outcome for each flip.
- Heads should appear about as many times as tails. As the number of trials (coin flips) increases, so does the possibility that the number of heads will equal the number of tails.

More interesting stuff to do:

MYSTERY BAG!

Objective: To record the outcomes when colored beads are randomly selected.


- Place 50 red beads and 50 blue beads (the size of a pea or larger) into a paper lunch bag; hold the top of the bag and shake.
- Without looking inside the bag, reach in and pull out a bead. On a piece of paper, record whether it was red or blue. Put the bead back in the bag and continue randomly selecting beads and recording each one’s color 100 times.
- Your chance of selecting a red bead is 50 out of 100, or 50%; likewise, your chance of selecting a blue bead is also 50%. Increasing the number of attempts produces a more even balance of red and blue beads. Express your results in the form of two line graphs: one showing the number of blue beads randomly selected per 100 attempts; the other, the number of red beads per 100 attempts.
- Now return the 50 red and 50 blue beads to the bag. Add 25 green beads and 25 yellow beads. How will this different mix of beads affect the outcome when you select a bead at random? What is the chance that the outcome will be a green bead? What is the chance of grabbing a yellow bead? What is the chance that the bead you pull out of the bag will be either green or yellow, as opposed to red or blue?
- As you can see, by altering the variables (numbers of colored beads in the bag) you will alter the outcomes (chances of selecting any one color at each attempt). Try adding more colored beads and performing more trials.

PICK A COLOR

Objective: To determine the number of attempts necessary to select a certain color.

- Obtain a new box of natural round wooden toothpicks. Note the number of toothpicks in the box and empty it into a bowl.
- Color one of the toothpicks blue with a liquid marker and place it back in the bowl.
- Without looking, select a toothpick from the bowl. On a piece of paper, record its color. Continue randomly drawing toothpicks from the bowl until you have selected the blue toothpick. How many attempts did it take before you obtained the blue toothpick?
- Refill the bowl and repeat the procedure several times. Do any patterns develop?
- What are the odds (chances) that the blue toothpick will appear at each attempt? (One out of the total number toothpicks remaining in the bowl.) Add more blue toothpicks and then determine the odds of selecting one.

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 closed-captioned



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