Stats / Experimental and theoretical probability

Experimental and theoretical probability

Nicole rolled a number cube 40 times and got the following results.

Outcome Rolled	1	2	3	4	5	6
Number of Rolls	8	9	8	4	4	7

$8+7 = \frac{15}{40} = 0.375$

Answer the following. Round your answers to the nearest thousandths.

(a) From Nicole's results, compute the experimental probability of rolling a 1 or 6.
0.375

(b) Assuming that the cube is fair, compute the theoretical probability of rolling a 1 or 6.
0.33

$\frac{2}{6} = 0.33$

(c) Assuming that the cube is fair, choose the statement below that is true.

- As the number of rolls increases, we expect the experimental and theoretical probabilities to become *closer*, though they might not be equal.
- As the number of rolls increases, we expect the experimental and theoretical probabilities to become *farther apart*.
- The experimental and theoretical probabilities must always be equal.

Experimental and theoretical probability

Tammy rolled a number cube 500 times and got the following results.

Outcome Rolled	1	2	3	4	5	6
Number of Rolls	87	79	81	87	85	81

$P(5) = \frac{1}{6} = 0.167$

Answer the following. Round your answers to the nearest thousandths.

(a) From Tammy's results, compute the experimental probability of rolling a 5.
$\frac{85}{500} = 0.17$

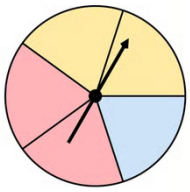
(b) Assuming that the cube is fair, compute the theoretical probability of rolling a 5.
0.167

(c) Assuming that the cube is fair, choose the statement below that is true.

- With a large number of rolls, there might be a difference between the experimental and theoretical probabilities, but the difference should be *small*.
- With a large number of rolls, there must be a *large* difference between the experimental and theoretical probabilities.
- With a large number of rolls, there must be *no* difference between the experimental and theoretical probabilities.

Experimental and theoretical probability

A spinner with 5 equally sized slices has 2 yellow slices, 2 red slices, and 1 blue slice. Ivanna spun the dial 40 times and got the following re



Outcome	Yellow	Red	Blue
Number of Spins	20	13	7

Answer the following. Round your answers to the nearest thousandths.

(a) From Ivanna's results, compute the experimental probability of landing on blue.
$\frac{\text{Blue}}{\text{total}} = \frac{7}{40} = 0.175$

(b) Assuming that the spinner is fair, compute the theoretical probability of landing on blue.
$\frac{\text{Blue}}{\text{total}} = \frac{1}{5} = 0.20$

(c) Assuming that the spinner is fair, choose the statement below that is true.

- With a small number of spins, it is surprising when the experimental probability is much less than the theoretical probability.
- With a small number of spins, it is *not* surprising when the experimental probability is much less than the theoretical probability.
- With a small number of spins, the experimental probability will always be much less than the theoretical probability.