

You are playing a game where you roll a 4 sided die, then toss a bean bag onto the board pictured at below. To win the game you must land the bean bag on the same number that you rolled on the die (ie. Roll a 4, land on 4). Assume that every toss lands on the board and the sections are equal in size.

1	2
3	4

1. Create the sample space for the scenario and identify the number of possible outcomes.

Die

	1	2	3	4
1	11	12	13	14
2	21	22	23	24
3	31	32	33	34
4	41	42	43	44

16 outcomes

2. What is the probability that you will get the winning combination?

11, 22, 33 or 44 wins, so $\frac{4}{16} = \frac{1}{4} = .25 = 25\%$

3. What is the probability that you will not win the game?

$\frac{12}{16}$ or $1 - P(\text{win}) = 1 - \frac{1}{4} = \frac{3}{4} = .75 = 75\%$

The results from rolling a six sided die 25 times are listed in the table to the below. For problems 4-7 find the experimental probability.

4. $P(6) = \frac{2}{25}$ 5. $P(\text{not } 5) = \frac{22}{25}$ 6. $P(1 \text{ or } 2) = \frac{9}{25}$ 7. $P(\text{odd}) = \frac{10}{25} = \frac{2}{5}$

Experiment results

Number on Die	1	2	3	4	5	6
Frequency	3	6	4	7	3	2

You roll a six sided die. Find the following theoretical probabilities.

8. $P(2) = \frac{1}{6}$ 9. $P(\text{greater than } 4) = \frac{2}{6} = \frac{1}{3}$ 10. $P(\text{even}) = \frac{3}{6} = \frac{1}{2}$ 11. $P(\text{multiple of } 2) = \frac{3}{6} = \frac{1}{2}$

12. Fill the two-way table below using the frequencies (counts) in the scenario. There are 10 adults and 18 kids at an ice cream shop. The shop offers ice cream or frozen yogurt. A total of 8 adults and 7 kids choose frozen yogurt.

	Ice cream	Frozen Yogurt	Totals
Adults	2	8	10
kids	11	7	18
Totals	13	15	28

13. Using the two-way table above, find the joint and marginal relative frequencies, round to two decimal places if necessary.

	Ice cream	Frozen Yogurt	Totals
Adults	$\frac{2}{28} = 0.07$	$\frac{8}{28} = 0.29$	$\frac{10}{28} = 0.36$
kids	$\frac{11}{28} = 0.39$	$\frac{7}{28} = 0.25$	$\frac{18}{28} = 0.64$
Totals	$\frac{13}{28} = 0.46$	$\frac{15}{28} = 0.54$	$\frac{28}{28} = 1.0$

Using the table of relative frequencies above, find the following probabilities:

14. Probability a randomly selected person is an adult.
15. Probability a randomly selected kid chose ice cream. $\frac{.39}{.64} \approx .61 = 61\%$
16. Probability a randomly selected person likes frozen yogurt and they are an adult. $0.29 = 29\%$
17. Probability a randomly selected person who likes ice cream is an adult. $\frac{.07}{.46} \approx .15 = 15\%$