# 10.1 Introduction to Probability

PRACTICE

**Describe the likelihood of an event as impossible, unlikely, equally likely, likely or certain.**

Your Fortnite team wins $\frac{3}{4}$ of the time. likely

There is a 0% chance that you will grow 10 more feet. impossible

The probability that the sun rises tomorrow is 1. Certain

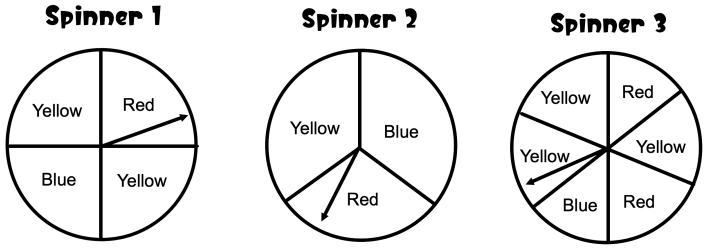
It rains on $\frac{1}{5}$ of the days in July. Unlikely

There is a 5% chance of winning a contest. unlikely

Picking a number less than 15 from a jar with papers labeled from 1 to 12. Certain

Picking an odd number from a jar with papers labeled from 1 to 12. equally likely

**Use the spinners to fill in the table below. Express each probability as a fraction in simplest form.**




| Probability | Spinner 1 | Spinner 2 | Spinner 3 |
|---|---|---|---|
| P(Yellow) | $\frac{2}{4} = \frac{1}{2}$ | $\frac{1}{3}$ | $\frac{3}{6} = \frac{1}{2}$ |
| P(Blue) | $\frac{1}{4}$ | $\frac{1}{3}$ | $\frac{1}{6}$ |
| P(Red) | $\frac{1}{4}$ | $\frac{1}{3}$ | $\frac{2}{6} = \frac{1}{3}$ |

**The letters of the word GOOSE are put into a bag. You randomly draw a letter from the bag. Find the probabilities as FRACTIONS.** → 5 letters

P (letter S) = $\frac{1}{5}$ P (letter G) = $\frac{1}{5}$ P (Letter K) = $\frac{0}{5}$

P (vowel) = $\frac{3}{5}$ P (not a vowel) = $\frac{2}{5}$ P (letter O) = $\frac{2}{5}$

**Find each theoretical probability as a FRACTION in SIMPLEST FORM, if you roll a standard number cube.**

P (1) = $\frac{1}{6}$ P (2) = $\frac{1}{6}$ P (1 or 2) = $\frac{2}{6} = \frac{1}{3}$

P (not a 4) = $\frac{5}{6}$ P (even number) = $\frac{3}{6} = \frac{1}{2}$ P(7) = $\frac{0}{6} = 0$

**Suppose a number cube is rolled 120 times. About how many times should each event occur?**

You roll a 5. You roll an even number. You roll a number less than 6.

$\frac{\text{5s}}{\text{TOTAL}}$ $\frac{1}{6} = \frac{x}{120}$ $\frac{\text{EVENS}}{\text{TOTAL}}$ $\frac{3}{6} = \frac{x}{120}$ $\frac{\#s < 6}{\text{TOTAL}}$ $\frac{5}{6} = \frac{x}{120}$

$6x = 120$ $6x = 360$ $6x = 600$

$x = 20$ times $x = 60$ times $x = 100$ times

Find the **experimental probability** of each event based off of the rolls of a number cube recorded in the table.

| # on number cube | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| # of rolls | 16 | 20 | 13 | 17 | 19 | 15 |

P (1) = $\frac{16}{100} = \frac{4}{25}$ P (Not 2) = $\frac{80}{100} = \frac{4}{5}$ P (Even) = $\frac{52}{100} = \frac{13}{50}$ P (6) = $\frac{15}{100} = \frac{3}{20}$

**A bag of marbles contains: 1 green, 2 blue, 1 yellow, 3 purple and 3 red. Write each answer as a DECIMAL.**

P (blue) = $\frac{2}{10} = 0.2$ P (not red) = $\frac{7}{10} = 0.7$ P (green) = $\frac{1}{10} = 0.1$

P (not blue) = $\frac{8}{10} = 0.8$ P (purple) = $\frac{3}{10} = 0.3$ P (blue or red) = $\frac{5}{10} = 0.5$

## 10.1 Intro to Prob

WRAP UP

1. **Sully draws a pen at random from a bag of pens. He records its color and replaces it. His results are shown in the table below.**

| Pens | Blue | Red | Black |
|---|---|---|---|
| Frequency | 29 | 19 | 27 |

**Find:**

P(Blue) _____ (as a fraction) P(Not red)= _____ (as a decimal) P(Black or Blue)= _____ (as a fraction) P(Green) = _____ (as a decimal)