Introduction to Probability

Introduction to probability: Models and calculations

Name _____ **Date** _____ **Score** _____ / 6

QUICK REVIEW

For equally likely outcomes, probability = favorable outcomes/total outcomes. A bag with 3 red and 5 blue has $P(\text{red}) = 3/8$, while $P(\text{not red}) = 5/8 = 1 - 3/8$. Impossible events have probability 0; certain events have probability 1. Random does not mean every color is equally likely when color counts differ.

Worked example

Find the probability of one red draw. A bag contains 3 red, 5 blue, and 0 green counters; draw one at random. Find $P(\text{red})$.

1. Total equally likely counters $= 3 + 5 + 0 = 8$.
2. The event has 3 favorable counters, so probability $= 3/8 = \frac{3}{8}$.
3. Complement probability $= 1 - \frac{3}{8} = \frac{5}{8}$; together they total 1.
Answer: $\frac{3}{8}$.

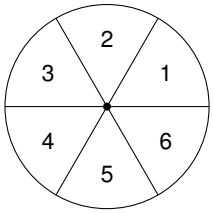
Practice Problems

Show your thinking.

1. Count equally likely individual counters. A bag contains 4 red, 3 blue, and 1 green counters; draw one at random. Find $P(\text{blue})$.

2. Find a complementary event. A bag contains 2 red, 5 blue, and 3 green counters; draw one at random. Find $P(\text{not red})$.

3. A fair spinner has six equal sectors labeled 1 to 6. Find the probability of an even number.



4. Explain whether an unlisted color can be drawn. A bag contains 5 red, 2 blue, and 3 green counters; draw one at random. Find $P(\text{purple})$.

5. Design a simple counter bag. Use 12 counters in all and make $P(\text{red}) = \frac{1}{3}$.

6. A game wins on red or blue. Find win probability. A bag contains 3 red, 1 blue, and 4 green counters; draw one at random. Find $P(\text{red or blue})$.

Answer Key

1. $\frac{3}{8}$.
2. $\frac{4}{5}$.
3. $\frac{1}{2}$.
4. 0.
5. 4 red and 8 non-red counters.
6. $\frac{1}{2}$.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Total equally likely counters $= 4 + 3 + 1 = 8$.
2. The event has 3 favorable counters, so probability $= 3/8 = \frac{3}{8}$.
3. Complement probability $= 1 - \frac{3}{8} = \frac{5}{8}$; together they total 1.

Problem 2

1. Total equally likely counters $= 2 + 5 + 3 = 10$.
2. The event has 8 favorable counters, so probability $= 8/10 = \frac{4}{5}$.
3. Complement probability $= 1 - \frac{4}{5} = \frac{1}{5}$; together they total 1.

Problem 3

1. Even labels are $2, 4, 6$: 3 favorable sectors.
2. There are 6 equal sectors, so $P(\text{even}) = 3/6 = 1/2$.

Problem 4

1. Total equally likely counters $= 5 + 2 + 3 = 10$.
2. The event has 0 favorable counters, so probability $= 0/10 = 0$.
3. Complement probability $= 1 - 0 = 1$; together they total 1.

Problem 5

1. Red count $= 12 \times \frac{1}{3} = 4$.
2. Non-red $= 12 - 4 = 8$; check $4/12 = \frac{1}{3}$.

Problem 6

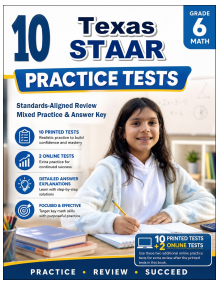
1. Total equally likely counters $= 3 + 1 + 4 = 8$.
2. The event has 4 favorable counters, so probability $= 4/8 = \frac{1}{2}$.
3. Complement probability $= 1 - \frac{1}{2} = \frac{1}{2}$; together they total 1.

TESTINAR

Keep Building Grade 6 Math Skills

Choose the practice book matched to your state assessment and turn worksheet practice into a complete test-prep plan.

All Grade 6 books



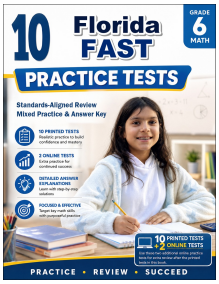
TEXAS STAAR

10 Full-Length Math Practice Tests

Build Grade 6 accuracy, confidence, and test stamina with 10 printable practice tests.

Printable eBook • Instant PDF access

View eBook



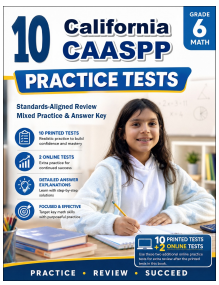
FLORIDA FAST

10 Full-Length Math Practice Tests

Build Grade 6 accuracy, confidence, and test stamina with 10 printable practice tests.

Printable eBook • Instant PDF access

View eBook



CALIFORNIA CAASPP

10 Full-Length Math Practice Tests

Build Grade 6 accuracy, confidence, and test stamina with 10 printable practice tests.

Printable eBook • Instant PDF access

View eBook

Need a different state?
Testinar has Grade 6 math practice books for state assessments across the country.

TESTINAR.COM/GRADES/6