MATHEMATICS · GRADES 4-6

Basic probability

Difficulty level: Intermediate

Mathematics: Grades 4-6

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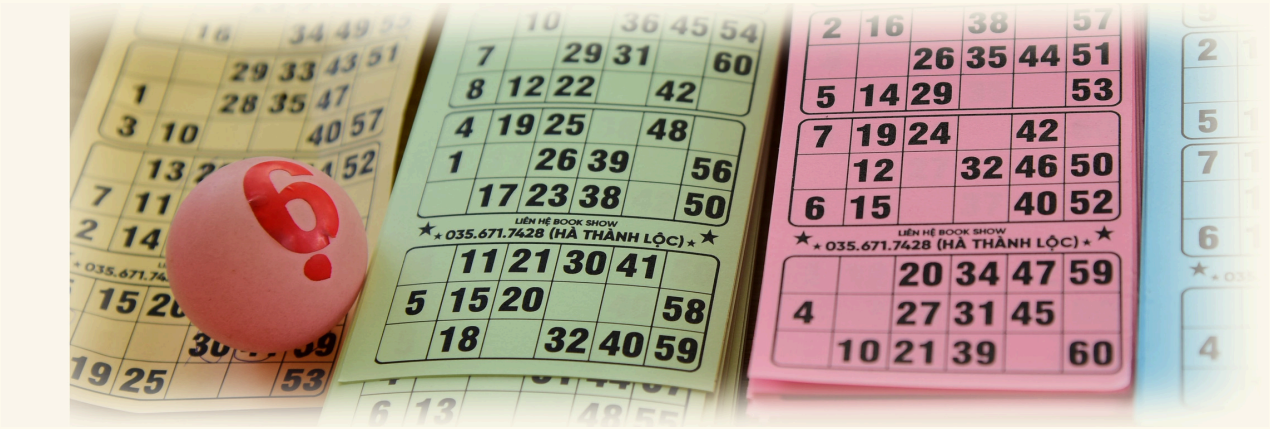
Overview of the concept

This is how you put a number on a chance. The chance of rain tomorrow, drawing a winning raffle ticket, or rolling a six can all be written as a number between zero and one (see Probability of Complementary Events). That number lets you compare risks fairly, so you can tell whether one bet is genuinely better than another.



Rule

Basic probability: the probability of an event is P =

$$\frac{\text{number of wanted outcomes}}{\text{number of equally likely outcomes}}.$$

The answer is always a number from 0 to 1.

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Worked examples

EXAMPLE 1

Q What is the probability of rolling a 6 on a fair die?

SOLUTION

Outcomes: 1, 2, 3, 4, 5, 6 (6 total)

Wanted: 6 (1 outcome)

Probability: $\frac{1}{6}$

Count all equally likely outcomes: 6 faces.

Count the wanted outcomes: one face shows 6.

Probability = wanted over total: $\frac{1}{6}$

EXAMPLE 2

Q What is the probability of picking a red ball from a bag with 3 red and 2 blue balls?

SOLUTION

Total balls: 3 + 2 = 5

Red balls: 3

Probability: $\frac{3}{5}$

Count the total balls: 3 + 2 = 5.

Count the red balls: 3.

Probability = $\frac{3}{5}$

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Practice questions

1. A fair coin is tossed once. Find the probability of heads.

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2. Roll a die once. What is the probability of an even number?

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3. Pick one card from a deck of 52 cards. Find the probability of picking an ace.

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4 **Roll a die once. What is the probability of rolling a 1?**

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5 **A bag has 2 blue balls and 3 red balls. Pick one ball. What is the probability it is blue?**

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6 **An event can never happen. What is its probability?**

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7 An event is certain to happen. What is its probability?

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8 What is the probability of rolling a 7 on an ordinary die?

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9 Pick one card from a deck of 52 cards. Find the probability of picking a red card.

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10 The probability of rain tomorrow is $\frac{1}{4}$. What is the probability that it does NOT rain?

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ANSWER KEY

1. $\frac{1}{2}$

2. $\frac{1}{2}$

3. $\frac{1}{13}$

4. $\frac{1}{6}$

5. $\frac{2}{5}$

6. 0

7. 1

8. 0

9. $\frac{1}{2}$

10. $\frac{3}{4}$

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