

Probability and Compound Events: math practice, Grade 7 – download the PDF

22 problems graded by difficulty (★ easy, ★★ medium, ★★★ hard). Try first, without looking at the solutions!

1 Likely or unlikely?



Match each event with the best probability from this list: **0, 0.05, 0.5, 0.95, 1.**

- a. You roll a standard die and get a number less than 7.
- b. You roll a standard die and get a 7.
- c. A fair coin lands on tails.
- d. Your name is picked from a hat of 20 equal slips, one of which is yours.
- e. Your name is not picked from a hat of 20 equal slips, one of which is yours.

2 Marbles in a bag

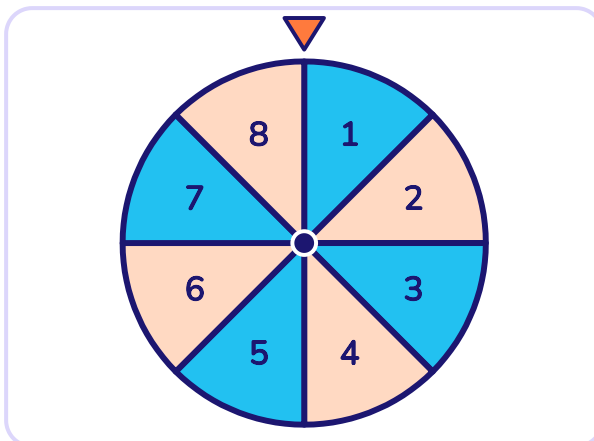


A bag holds 4 red, 6 green and 5 yellow marbles. One marble is drawn at random. Find the probability of drawing (a) green, (b) yellow, (c) a marble that is not red. Simplify each fraction.

3 The eight-section spinner



The spinner has eight equal sections numbered 1 to 8.



Find the probability that it lands on (a) an even number, (b) a number greater than 5, (c) a prime number, (d) a multiple of 3.

4 Using the complement



(a) The forecast says the probability of rain on Sunday is 0.35. What is the probability that it does not rain?

(b) The probability that a team wins its next game is $\frac{3}{8}$. What is the probability that it does not win?

5 Paper cup experiment



Priya tosses a paper cup 50 times. It lands upright 9 times. What is the experimental probability that the cup lands upright? Give your answer as a fraction, a decimal and a percent.

6 True or false?



Say whether each statement is true or false. Explain.

- a. The probability of an event can be 1.2.
- b. An event with probability $\frac{7}{7}$ is certain.
- c. If $P(A) = 0.5$, then A and “not A” are equally likely.
- d. A probability can be negative when the event is very unlikely.

7 Two coins



You flip a fair coin twice. (a) List the sample space. (b) Find the probability of exactly one head. (c) Find the probability of at least one head.

8 Lunch model



A cafeteria records what students choose for lunch. Some probabilities are in the table.

Choice	Pizza	Tacos	Salad	Soup
Probability	0.4	0.25	?	0.1

- (a) Find the missing probability. (b) Find the probability that a student picks pizza or soup.
- (c) Is this a uniform model? Explain.

9 Rolling a 4



Marcus rolls a die 120 times and gets a 4 exactly 25 times. (a) What is the experimental probability of a 4? (b) What is the theoretical probability? (c) Based on the theoretical probability, how many 4s should he expect in 600 rolls? (d) Based on his experimental probability?

10 Defective light bulbs



A factory knows that the probability that a bulb is defective is 0.04. A shipment contains 2,500 bulbs. About how many are defective? About how many work?

11 Two dice and a table



Use the table of sums for two dice.

		Die 1					
		1	2	3	4	5	6
Die 2	1	2	3	4	5	6	7
	2	3	4	5	6	7	8
	3	4	5	6	7	8	9
	4	5	6	7	8	9	10
	5	6	7	8	9	10	11
	6	7	8	9	10	11	12

Find (a) $P(\text{sum is } 9)$, (b) $P(\text{sum is less than } 4)$, (c) $P(\text{sum is even})$.

12 Outfits

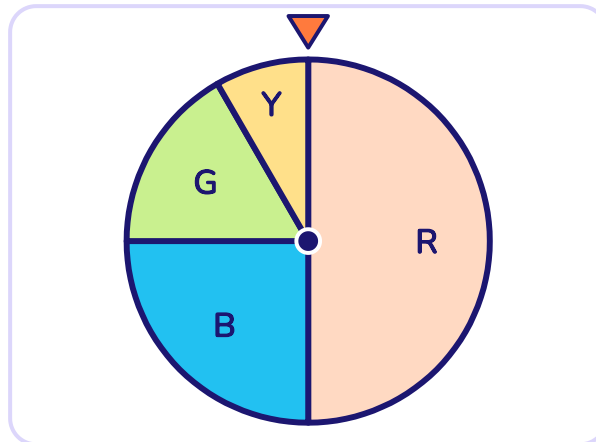


Jada has 3 shirts (red, blue, white), 4 pairs of pants and 2 pairs of shoes. She picks one of each at random. (a) How many different outfits are possible? (b) What is the probability that she wears the red shirt? (c) What is the probability of one particular outfit?

13 Unequal sections



The spinner has a red section of 180 degrees, blue 90 degrees, green 60 degrees and yellow 30 degrees.



(a) Find the probability of each color as a fraction of the full circle (360 degrees). (b) Check that the probabilities add up to 1. (c) Find $P(\text{blue or green})$.

14 Find the mistakes



Two students made claims. Explain what is wrong with each.

a. Leo: "A fair coin landed on heads 5 times in a row, so tails is more likely on the next flip."

b. Nina: "A bag has 2 red marbles and 8 blue marbles. There are two colors, so

$$P(\text{red}) = \frac{1}{2}."$$

15 Coin and spinner



You flip a coin and spin a spinner with four equal sections numbered 1 to 4. (a) Draw a tree diagram or list the sample space. How many outcomes are there? Find (b)

$P(\text{heads and a number greater than 2})$, (c) $P(\text{tails and an odd number})$, (d)

$P(\text{heads or a 4})$.

16

Three coin flips

A fair coin is flipped three times. (a) List all outcomes. Find the probability of (b) exactly two heads, (c) at least one tail, (d) all three flips the same.

17

Letter and digit

A game picks one letter from A, B, C at random and one digit from 1, 2, 3, 4, 5 at random.

Find (a) the number of outcomes, (b) $P(\text{B and an odd digit})$, (c)

$P(\text{A and a digit of at least 4})$, (d) $P(\text{A or the digit 5})$.

One out of every four cereal boxes contains a prize. To simulate opening boxes, use the numbers 1 to 4 and let a 1 mean “prize”. Here are ten trials; each trial lasts until the first 1 appears.

Trial	Numbers drawn
1	3, 2, 4, 1
2	2, 2, 1
3	4, 3, 3, 4, 2, 1
4	1
5	3, 4, 1
6	2, 3, 4, 4, 3, 2, 1
7	4, 1
8	2, 4, 2, 1
9	1
10	3, 3, 2, 4, 1

(a) Find the number of boxes opened in each trial. (b) What is the average number of boxes needed to find a prize? (c) In how many trials was the prize found within the first 3 boxes, and what is the experimental probability of that?

19 Is the game fair?



Two dice are rolled. Ava scores 1 point if the product of the numbers is even. Ben scores 1 point if the product is odd. (a) Use a table to find each probability. (b) Is the game fair? (c) Ben's points are changed to 3 for each win. About how many points does each player expect in 36 rounds?

20 Bike to school



In a random sample of 80 students, 28 ride a bike to school. The school has 1,200 students. (a) What is the experimental probability that a student rides a bike? (b) Predict how many students at the school ride a bike. (c) Why is a random sample important?

21 Changing the bag



Bag A has 3 red and 5 blue marbles. Bag B has 4 red and 8 blue marbles. (a) Which bag gives the greater probability of drawing red? (b) How many red marbles must be added to Bag B so that its probability of red is exactly $\frac{1}{2}$?

22 At least one six



Two dice are rolled. Use the sample space of 36 outcomes. (a) How many outcomes have no 6 on either die? (b) Find the probability of no 6. (c) Use the complement to find the probability of at least one 6.



Test yourself: quick challenge for Grade 7

[Change level](#)

Level : **Grade 7**

6 random questions, instant feedback.

 **Start the challenge**



Speed drill for Grade 7: how many in 60 seconds?



Keep exploring with Zyro



Practice solutions

Probability and Compound Events:
practice solutions, Grade 7



Math lessons

Probability and Compound Events: math
lesson, Grade 7

 Math quizzes

Probability and Compound Events: math quiz, Grade 7

 Practice solutions

Ratios and Proportional Relationships: practice solutions, Grade 7

 Practice solutions

Percent Applications: practice solutions, Grade 7

 Math lessons

Ratios and Proportional Relationships: math lesson, Grade 7

Zyro vous emmène sur nos sites partenaires

Embarquez pour d'autres planètes du savoir et leurs applis.

Décollage