

Grade 7 · Probability and Probability Models · Quiz

Common Core 7.SP.C.5, 7.SP.C.6, 7.SP.C.7 · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

This quiz has 10 multiple-choice questions on probability and probability models. Read each spinner, bag, and bar chart carefully, write probabilities as fractions or decimals between 0 and 1, and multiply by the number of trials when a prediction is asked. Only one answer is correct.

Grade 7 Common Core: 7.SP.C.5 · 7.SP.C.6 · 7.SP.C.7

Questions

Question 1

Which probability describes an event that is unlikely but possible?

- A. 0
- B. 0.5
- C. 0.08
- D. 0.95

Question 2

A bag holds marbles as shown. One marble is picked at random.

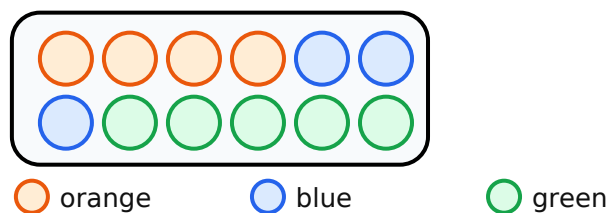


Figure. A bag of marbles.

What is the probability of picking a blue marble?

- A. $\frac{1}{10}$
- B. $\frac{2}{10}$
- C. $\frac{4}{4}$

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

Question 3

The spinner has 8 equal sectors.

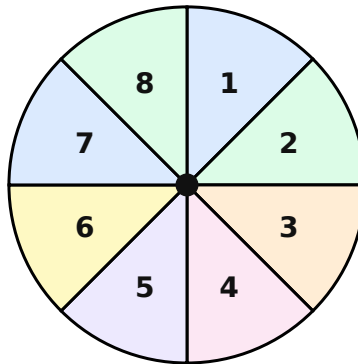


Figure. A spinner with 8 equal sectors.

What is the probability of landing on a number less than 3?

- A. $\frac{1}{4}$
- B. $\frac{1}{8}$
- C. $\frac{3}{8}$
- D. $\frac{1}{2}$

Question 4

The bar chart shows the results of 40 spins.

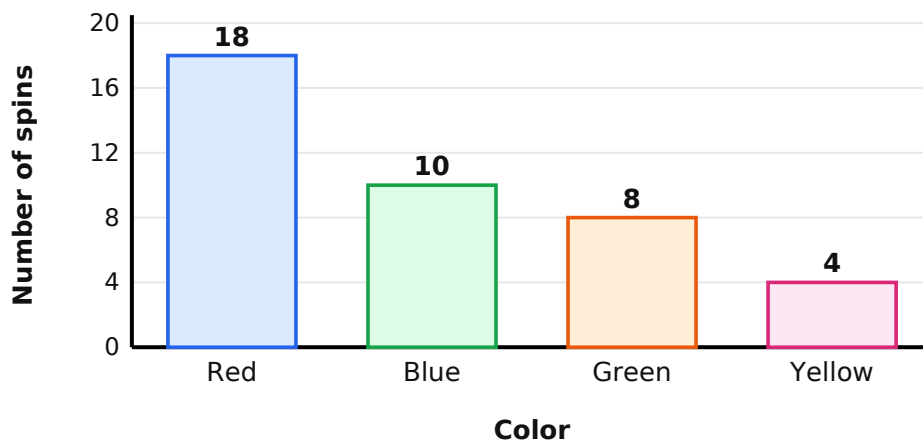


Figure. Results of 40 spins.

What is the experimental probability of blue?

- A. $\frac{1}{3}$
- B. $\frac{1}{4}$
- C. $\frac{1}{10}$
- D. $\frac{2}{5}$

Question 5

The probability that a train is late is 0.3. What is the probability that the train is not late?

- A. 0.3
- B. 1.3
- C. 0.03
- D. 0.7

Question 6

The probability of landing on red is $\frac{2}{5}$. About how many reds should be expected in 150 spins?

- A. 30
- B. 75
- C. 60
- D. 375

Question 7

Which list could be a probability model for three outcomes?

- A. 0.5, 0.3, 0.2
- B. 0.5, 0.4, 0.2
- C. 0.4, 0.3, 0.2
- D. 0.6, 0.6, -0.2

Question 8

Ava rolled a cube 60 times. If the cube is fair, each face is expected 10 times.

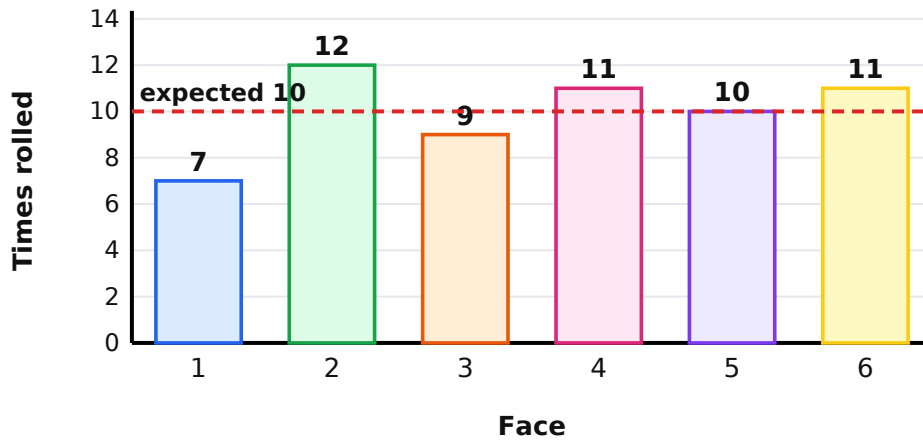


Figure. 60 rolls of a cube. The dashed line marks 10.

Which face is farthest from the expected count?

- A. Face 1, which is 3 below 10
- B. Face 2, which is 2 above 10
- C. Face 3, which is 1 below 10
- D. Face 5, which is on the line

Question 9

A fair number cube is rolled once. What is the probability of rolling a prime number?

- A. $\frac{1}{6}$
- B. $\frac{1}{3}$
- C. $\frac{2}{3}$
- D. $\frac{5}{6}$

Question 10

A paper cup landed on its side 41 times in 100 tosses. About how many side landings should be expected in 200 tosses?

- A. 41
- B. 82
- C. 164
- D. 8

Answer key

1. **C** – A probability close to 0 but greater than 0 is unlikely but possible. 0 is impossible, 0.5 is as likely as not, and 0.95 is likely.
2. **D** – There are 3 blue marbles among 12, so the probability is $\frac{3}{12} = \frac{1}{4}$. The mistake is to compare blue only with a few other marbles.
3. **D** – Only 1 and 2 are less than 3, so the probability is $\frac{2}{8} = \frac{1}{4}$. Counting 3 would give $\frac{3}{8}$, which is the mistake for "less than or equal to 3".
4. **B** – Blue came up 10 times in 40 spins, so the relative frequency is $\frac{10}{40} = \frac{1}{4}$. The total number of spins is the denominator.
5. **D** – The probability of an event and its opposite add to 1, so $1 - 0.3 = 0.7$.
6. **C** – Multiply the probability by the number of trials: $\frac{2}{5} \times 150 = 60$. Dividing 150 by $\frac{2}{5}$ gives 375, which is the wrong operation.
7. **A** – The probabilities must be between 0 and 1 and add to 1. $0.5 + 0.3 + 0.2 = 1$. The other lists add to 1.1, 0.9, and 1, but the last has a negative value.
8. **A** – The differences from 10 are -3, 2, -1, 1, 0, and 1. The largest difference in size is 3, for face 1.
9. **B** – The primes on a cube are 2, 3, and 5, so the probability is $\frac{3}{6} = \frac{1}{2}$. Counting 1 as prime or leaving out 5 leads to the other answers.
10. **B** – The relative frequency is $\frac{41}{100} = 0.41$, and $0.41 \times 200 = 82$. Keeping 41 forgets that the number of tosses doubled.

Remember:

- Probability 0 means impossible, 1 means certain, and $\frac{1}{2}$ means as likely as not.
- Theoretical probability = favorable outcomes divided by possible outcomes (equally likely).
- Experimental probability = number of times it happened divided by number of trials.
- In every probability model the probabilities add to 1; a uniform model has equal probabilities.
- Expected count = probability times number of trials; compare it with the observed count.