

Name: \_\_\_\_\_

Due Date: \_\_\_\_\_

Teacher: \_\_\_\_\_

Parent Sign: \_\_\_\_\_

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1. A fair coin is flipped once. What is the probability of getting tails?
2. A six-sided fair die is rolled. What is the probability of rolling a 4?
3. A spinner has 4 equal sectors labeled A, B, C, and D. What is the probability it lands on C?
4. A bag contains 3 red and 5 blue marbles. If one marble is drawn at random, what is the probability it is red?
5. Two fair coins are flipped. List the sample space and find the probability of getting exactly one head.
6. A die is rolled twice. What is the probability that both rolls are even?
7. A jar contains 2 green, 2 yellow, and 6 black marbles. If one marble is drawn at random, what is the probability it is not black?
8. A spinner is split into 3 equal parts: 1, 2, and 3. If you spin once, what is the probability of getting a number less than 3?
9. A standard deck question for grade 7-style: A bag has 10 numbered tiles (1-10). One tile is chosen at random. What is the probability the number is a multiple of 3?
10. A box contains 4 red, 4 white, and 2 blue candies. If you randomly pick one candy, what is the probability it is white or blue?
11. You flip a coin 50 times and get 28 heads. What is the experimental probability of heads?
12. A spinner was spun 60 times. The results: A-15, B-18, C-12, D-15. What is the experimental probability of landing on B?
13. A student rolls a die 30 times and records a six 3 times. What is the experimental probability of rolling a six based on this experiment?
14. A bag of mixed beads is sampled 40 times (with replacement), and red beads appeared 10 times. What is the experimental probability of red?
15. A football player shoots 20 free throws and makes 15. Based on this experiment, what is the experimental probability she makes a free throw?
16. A spinner (4 equal sections) is spun 80 times and lands on section 1 forty times. What is the experimental probability of section 1?
17. A class surveyed 100 students about a coin-toss game and 52 reported getting heads on their single toss. Compare the experimental probability of heads to the theoretical probability.
18. You draw a marble from a bag 25 times with replacement and get 8 blue marbles. What is the experimental probability of blue?
19. A die was rolled 120 times and rolled an even number 72 times. What is the experimental probability of rolling an even number?
20. A jar of jelly beans is sampled 200 times (with replacement), and the strawberry flavor was chosen 30 times. What is the experimental probability for strawberry?
21. If the probability of rain tomorrow is 0.3, out of 100 days with the same forecast, how many days would you predict rain? (Round to nearest whole day.)
22. A spinner has probability 0.25 of landing on red. If spun 200 times, how many times would you expect red?

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23. A fair die has probability  $\frac{1}{6}$  of landing on 2. Out of 36 rolls, how many twos would you expect?
24. If the probability of picking a purple marble is 0.12, predict how many purples you'd get in 250 picks.
25. A basketball player has a 0.8 chance of making a free throw. If she attempts 50 free throws in practice, how many would you expect her to make?
26. A vending machine gives a candy with probability 0.6 of being chocolate. If you buy 75 candies, how many chocolates do you expect?
27. If a spinner has a 0.4 chance of landing on green, how many greens in 50 spins would you predict?
28. A machine produces defective items with probability 0.02. Out of 1,000 items, how many defects are expected?
29. A card is randomly picked from a model of 100 equally likely outcomes where 18 are labeled "win." How many wins do you expect in 500 draws?
30. An experimental probability for a fair coin is 0.48 based on past data. If you flip it 1000 times, how many heads would you predict using this experimental probability?
31. A cat-themed frozen-yogurt shop offers 3 flavors: Vanilla, Chocolate, Strawberry. Flavors are equally likely if customers choose at random. What is the probability a random customer chooses Chocolate?
32. At the same shop, there are 2 cup sizes: Small and Large. If a customer picks a flavor and size at random (all equally likely), list the sample space.
33. Using question 32's sample space, what is the probability a customer chooses Large Strawberry?
34. The shop has 3 toppings: Sprinkles, Nuts, and Fruit. If a customer chooses one flavor, one size, and one topping at random (each choice equally likely), how many possible different orders are there?
35. At the frozen-yogurt shop, 40
36. At the same shop: 50
37. A survey at the shop showed among 150 customers, 30 chose Small Chocolate. What is the experimental probability a customer chooses Small Chocolate?
38. The shop has a probability model:  $P(\text{Vanilla})=0.4$ ,  $P(\text{Chocolate})=0.35$ ,  $P(\text{Strawberry})=0.25$ . If a customer chooses two scoops independently (first scoop and second scoop), what is the probability both scoops are Vanilla?
39. Using the model in 38, what is the probability a two-scoop order has one Vanilla and one Chocolate (order doesn't matter)?
40. The shop offers cups in 3 colors: Red (probability 0.2), Blue (0.5), Green (0.3). If 50 customers are randomly given a cup, how many Green cups would you expect?
41. The frozen-yogurt shop recorded 500 customers and 260 picked Chocolate. What is the experimental probability of Chocolate?
42. If a customer randomly chooses a flavor and then a topping (3 flavors, 4 toppings), what is the probability of choosing Strawberry and then Nuts?
43. There are 4 flavors and 2 toppings. If flavor and topping are chosen independently and randomly, what is the probability a chosen order is not Vanilla (assume flavors are Vanilla, A, B, C)?



## Math Worksheet for 7th Grade Probability models

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44. A special promotion: every 10th customer gets a free topping. What is the theoretical probability a given customer gets the free topping?
45. A bowl has 5 blueberry, 3 cherry, and 2 mango frozen yogurt scoops printed on tokens (10 tokens). One token is chosen at random for a prize. What is the probability it's either blueberry or mango?
46. At the shop, in one week 700 cups were sold. If historical probability of Strawberry is 0.22, how many Strawberry cups should the manager expect that week?
47. A customer chooses 3 different toppings from 6 available, all equally likely combinations. How many different topping combinations are possible (order doesn't matter)?
48. If the probability of choosing Nuts as a topping is 0.15, what is the probability a customer does not choose Nuts?
49. The shop claims the chance of getting Sprinkles is twice the chance of getting Fruit. If  $P(\text{Fruit})=0.2$ , what is  $P(\text{Sprinkles})$ ? Check that probabilities could be valid with only these two options or explain missing info.
50. A small experiment: 40 customers are observed and 10 choose Strawberry. What is the experimental probability and how does it compare to a theoretical probability of 0.25 for Strawberry? State which is higher and by how much.