

Chance Counts

Build a fair model, then count the outcomes.

GRADE 7 • 7.PR.6.4

7.PR.6.4 "Develop a uniform probability model by assigning equal probability to all outcomes and use the model to determine probabilities of events."

NAME _____

DATE _____

FAIR OUTCOMES

When every outcome is equally likely, probability = favorable outcomes / total outcomes. Count all possible outcomes, then count the outcomes that match the event. Simplify the fraction when possible.

WORKED EXAMPLE

A game spinner has 17 equal sections. Six sections show a star. What is the probability of spinning a star?

1. Total equally likely outcomes: 17.
2. Favorable outcomes, star: 6.
3. Probability = $6/17$.

Answer: $6/17$

PRACTICE 6 problems

- 1** A fair coin is flipped once. What is the probability that it lands on tails?

ANSWER _____

- 2** A spinner has 8 equal sections. Three sections are purple. What is the probability of not landing on purple?

ANSWER _____

- 3** One card is chosen at random from cards numbered 1 through 14. What is the probability that the card number is a multiple of 5?

ANSWER _____

- 4** A box has 10 raffle tickets. Seven tickets are for music downloads, and 3 tickets are for art supplies. What is the probability of choosing an art-supply ticket?

ANSWER _____

- 5** A fair number spinner has 8 equal sections labeled 1 through 8. What is the probability of spinning an odd number?

ANSWER _____

- 6** A bag has 15 marbles. Ten are striped, and 5 are solid. What is the probability of choosing a solid marble?

ANSWER _____

APPLY IT Show your work

- 1** At a school gaming event, a prize wheel has 20 equal sections. Eight sections offer a game-theme sticker, 5 offer a keychain, 3 offer a phone grip, and 4 offer a snack voucher. What is the probability of winning a phone grip or a snack voucher?

WORK SPACE

ANSWER _____

- 2** Twenty-one students sign up to open a talent show. Their order is chosen randomly. Nine perform dance, 7 perform music, and 5 perform comedy. What is the probability that the opening performer is not a music performer?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A random generator selects one number from 1 through 25, with each number equally likely. Find the probability that the selected number is even or a multiple of 5. Explain how you avoid counting any number twice.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A fair coin is flipped once. What is the probability that it lands on tails?	1/2
2	A spinner has 8 equal sections. Three sections are purple. What is the probability of not landing on purple?	5/8
3	One card is chosen at random from cards numbered 1 through 14. What is the probability that the card number is a multiple of 5?	1/7
4	A box has 10 raffle tickets. Seven tickets are for music downloads, and 3 tickets are for art supplies. What is the probability of choosing an art-supply ticket?	3/10
5	A fair number spinner has 8 equal sections labeled 1 through 8. What is the probability of spinning an odd number?	1/2
6	A bag has 15 marbles. Ten are striped, and 5 are solid. What is the probability of choosing a solid marble?	1/3

PART 2 • APPLY IT

- 7/20** There are 3 phone-grip sections and 4 snack-voucher sections. Add the favorable sections, $3 + 4 = 7$, then divide by 20.
- 2/3** There are $9 + 5 = 14$ performers who are not music performers. The probability is $14/21$, which simplifies to $2/3$.

CHALLENGE

3/5. There are 12 even numbers and 5 multiples of 5. The 2 numbers that are both even and multiples of 5, 10 and 20, were counted twice, so $12 + 5 - 2 = 15$ favorable outcomes out of 25.

Accept equivalent fractions when they represent the same probability. For the challenge, students should subtract the overlap before dividing by the total number of outcomes.