

Chance Lab

*Model simple and compound events.***GRADE 7 • TEKS 7.6.B****7.6.B** "select and use different simulations to represent simple and compound events with and without technology;"

NAME _____

DATE _____

MATCH THE CHANCE

Choose a simulation with the same equally likely outcomes as the event. For a compound event, simulate each part, then use target results divided by total trials to estimate probability.

WORKED EXAMPLE

An app has 9 equal icons, 2 suns and 7 clouds. Use digits 1-9, with 1-2 = sun. The digits are 8, 1, 5, 9, 2, 6, 4, 7, 3. Estimate $P(\text{sun})$.

1. Let 1 and 2 represent sun.
2. There are 9 simulated trials.
3. Sun appears 2 times.
4. Estimate = $2/9$.

Answer: $2/9$ **PRACTICE** 5 problems

- 1** Which pencil-and-paper simulation models one fair coin flip? A. Use odd/even random digits. B. Roll a die and call 1 heads. C. Choose A, B, or C.

ANSWER _____

- 2** Which simulation models rolling a fair die twice? A. Roll a die twice. B. Flip one coin. C. Choose one random digit.

ANSWER _____

- 3** Digits 0-9 simulate a spinner with equal red and blue halves. Red occurs in 3 of 8 trials. Estimate $P(\text{red})$.

ANSWER _____

- 4** Two coin flips simulate a compound event. In 12 trials, HH occurs 4 times. Estimate $P(\text{HH})$.

ANSWER _____

- 5** A random-number app gives integers 1-8. How should you simulate rolling two 8-sided dice?

ANSWER _____

APPLY IT Show your work

- 1** A game has 3 equal mystery-box prizes: a sticker, a keychain, and a rare skin. Jada uses a random-number app set to 1-3 for 15 trials. The rare skin appears 6 times. Estimate $P(\text{rare skin})$.

WORK SPACE

ANSWER _____

- 2** A basketball app gives a bonus animation only when two fair coin flips are both heads. In 20 simulated pairs, HH appears 7 times. Estimate $P(\text{bonus animation})$.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A prize wheel has 2 green sections, 1 yellow section, and 1 blue section. You want to simulate green, then blue, with replacement. Describe a valid technology simulation and give the theoretical probability.

WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Which pencil-and-paper simulation models one fair coin flip? A. Use odd/even random digits. B. Roll a die and call 1 heads. C. Choose A, B, or C.	A. Use odd/even random digits.
2	Which simulation models rolling a fair die twice? A. Roll a die twice. B. Flip one coin. C. Choose one random digit.	A. Roll a die twice.
3	Digits 0-9 simulate a spinner with equal red and blue halves. Red occurs in 3 of 8 trials. Estimate $P(\text{red})$.	$\frac{3}{8}$
4	Two coin flips simulate a compound event. In 12 trials, HH occurs 4 times. Estimate $P(\text{HH})$.	$\frac{1}{3}$
5	A random-number app gives integers 1-8. How should you simulate rolling two 8-sided dice?	Generate two numbers from 1-8 for each trial.

PART 2 • APPLY IT

- 2/5** Assign one number to each prize. Use 6/15, which simplifies to 2/5.
- 7/20** Each trial needs two coin flips. Divide 7 bonus results by 20 total trials.

CHALLENGE

Use a random-number app set to 1-4 twice per trial: 1-2 = green, 3 = yellow, 4 = blue. $P(\text{green then blue}) = \frac{1}{8}$.

Accept any fair equivalent mapping for the simulation choices. Accept equivalent fractions, such as 6/15 for 2/5.