LESSON MAKER PRO

Chance Check

Model, test, and compare probability.

GRADE 7 · 7.PR.6.3

7.PR.6.3 "Develop a probability model and use it to find probabilities of simple events. Compare experimental and theoretical probabilities of events. If the probabilities are not close, explain possible sources of the discrepancy."

NAME _____ DATE _____

BUILD AND TEST A MODEL

A theoretical probability comes from a model of equally likely outcomes. An experimental probability is favorable results divided by total trials. Compare them, then consider random variation or problems with the experiment.

WORKED EXAMPLE

A spinner has 19 equal sections. Seven are gold. In 38 spins, it lands on gold 15 times. Find both probabilities.

1. Theoretical probability = 7/19.
2. Experimental probability = 15/38.
3. Compare the two fractions.

Answer: Theoretical: 7/19. Experimental: 15/38.

PRACTICE 5 problems

1 A bag has 6 yellow and 12 purple tiles. Find P(yellow).

ANSWER _____

2 A number cube is rolled 16 times. A 2 appears 9 times. Find the experimental probability of rolling a 2.

ANSWER _____

3 A spinner has 12 equal sections, and 2 are blue. In 18 spins, blue appears 6 times. Find both probabilities. Which is greater?

ANSWER _____

4 A fair coin is flipped 10 times and lands heads 6 times. Find the difference between the theoretical and experimental probabilities of heads. Name one possible source of the difference.

ANSWER _____

5 A playlist has 9 hip-hop, 6 pop, and 3 jazz songs. Find P(not pop).

ANSWER _____

APPLY IT Show your work

1 A game reward wheel has 20 equal spaces, including 6 avatar-frame spaces. Maya spins it 12 times and gets 2 avatar frames. Find the theoretical and experimental probabilities. Which is greater?

WORK SPACE

ANSWER _____

2 A coding club uses a random card picker with replacement. Of 18 challenge cards, 6 are design challenges. In 12 picks, design challenges appear 9 times. Find both probabilities and explain one possible reason they differ.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A music app has 24 songs, 10 marked new and 14 marked familiar. In 18 shuffles, 12 songs are new. Find both probabilities, find their difference, and give one reason the results might differ.

WORK SPACE AND ANSWER

ANSWER KEY

Chance Check

GRADE 7 · 7.PR.6.3

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A bag has 6 yellow and 12 purple tiles. Find P(yellow).	**1/3**
2	A number cube is rolled 16 times. A 2 appears 9 times. Find the experimental probability of rolling a 2.	**9/16**
3	A spinner has 12 equal sections, and 2 are blue. In 18 spins, blue appears 6 times. Find both probabilities. Which is greater?	**Theoretical: 1/6. Experimental: 1/3. The experimental probability is greater.**
4	A fair coin is flipped 10 times and lands heads 6 times. Find the difference between the theoretical and experimental probabilities of heads. Name one possible source of the difference.	**Difference: 1/10. Possible source: random variation in a small number of flips.**
5	A playlist has 9 hip-hop, 6 pop, and 3 jazz songs. Find P(not pop).	**2/3**

PART 2 · APPLY IT

1. **Theoretical: 3/10. Experimental: 1/6. The theoretical probability is greater.** Use 6/20 for the model and 2/12 for the results. Simplify both fractions before comparing.
2. **Theoretical: 1/3. Experimental: 3/4. Possible reason: random variation from only 12 picks.** The model is 6/18, and the experiment is 9/12. A short trial can produce results that differ from the model.

CHALLENGE

Theoretical: 5/12. Experimental: 2/3. Difference: 1/4. Possible reason: the shuffle may not be fully random, or 18 shuffles may be too few trials.

Accept equivalent fractions. For discrepancy explanations, accept random variation, too few trials, uneven outcomes, recording error, or a nonrandom process when the explanation fits the situation.