LESSON MAKER PRO

Chance Check

Compare predicted and observed results.

GRADE 7 · 7.PS.1

7.PS.1 "The student will use statistical investigation to determine the probability of an event and investigate and describe the difference between the experimental and theoretical probability. Determine the theoretical probability of an event..."

NAME _____ DATE _____

TWO WAYS TO FIND PROBABILITY

Theoretical probability is favorable outcomes / total equally likely outcomes. Experimental probability is times an event happened / total trials. More trials often make experimental probability closer to theoretical probability, but not always.

WORKED EXAMPLE

A spinner has 11 equal sections, and 4 have stars. In 44 spins, it lands on a star 15 times. Find both probabilities.

1. Theoretical probability = 4/11.
2. Experimental probability = 15/44.
3. Write 4/11 as 16/44.
4. 15/44 is 1/44 less than 4/11.

Answer: Theoretical: 4/11. Experimental: 15/44.

PRACTICE 5 problems

1 A jar has 5 red tiles and 7 yellow tiles. What is the theoretical probability of red?

ANSWER _____

2 In 40 free throws, Kai makes 14. What is the experimental probability of making a free throw?

ANSWER _____

3 A fair coin lands heads 6 times in 10 flips, then 28 times in 56 flips. Which result is closer to 1/2?

ANSWER _____

4 A bag has 4 green marbles and 9 black marbles. What is the theoretical probability of black?

ANSWER _____

5 A number cube is rolled 25 times and lands on 6 eleven times. What is the experimental probability of rolling 6?

ANSWER _____

APPLY IT Show your work

1 A gaming club prize wheel has 12 equal spaces, and 5 spaces give a coupon. In 20 spins, players win 7 coupons. Find the theoretical and experimental probabilities. Which is greater?

WORK SPACE

ANSWER _____

2 A playlist has 30 songs, including 6 by one artist. A student uses shuffle with replacement 60 times and hears that artist 9 times. Find the theoretical and experimental probabilities. Which is greater?

WORK SPACE

ANSWER _____

CHALLENGE One step up

A fair-coin simulation has 12 heads in its first 30 flips and 29 heads in its next 70 flips. Find the experimental probability for all flips. Is it closer to 1/2 than the first batch was? Explain.

WORK SPACE AND ANSWER

ANSWER KEY

Chance Check

GRADE 7 · 7.PS.1

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A jar has 5 red tiles and 7 yellow tiles. What is the theoretical probability of red?	**5/12**
2	In 40 free throws, Kai makes 14. What is the experimental probability of making a free throw?	**7/20**
3	A fair coin lands heads 6 times in 10 flips, then 28 times in 56 flips. Which result is closer to 1/2?	**28 heads in 56 flips**
4	A bag has 4 green marbles and 9 black marbles. What is the theoretical probability of black?	**9/13**
5	A number cube is rolled 25 times and lands on 6 eleven times. What is the experimental probability of rolling 6?	**11/25**

PART 2 · APPLY IT

1. **Theoretical: 5/12. Experimental: 7/20. The theoretical probability is greater.** Compare 5/12 and 7/20 using a denominator of 60: 25/60 is greater than 21/60.
2. **Theoretical: 1/5. Experimental: 3/20. The theoretical probability is greater.** The theoretical probability is 6/30 = 1/5. The experimental probability is 9/60 = 3/20.

CHALLENGE

41/100. Yes. The first batch was 12/30 = 2/5, which is 1/10 from 1/2. The combined result is 9/100 from 1/2.

Accept equivalent fractions. For comparison answers, accept a correct statement that names which probability is greater or closer.