LESSON MAKER PRO

Chance Check

Compare predicted chances with what happened.

GRADE 7 · 7.DS.C.6

7.DS.C.6 "Develop and use probability models to find probabilities of events and compare them to observed results. Create a uniform probability model for situations where outcomes are equally likely and use the model to calculate the probability of..."

NAME _____ DATE _____

TWO WAYS TO FIND PROBABILITY

If outcomes are equally likely, divide the number of favorable outcomes by the number of possible outcomes. To estimate probability from data, divide the event's count by the total number of trials. The estimate may differ from the model because of chance.

WORKED EXAMPLE

A student drew a sticker, recorded its design, and put it back each time. Use the data to estimate P(waves).

STICKER DRAWS

Design	Count
Stars	7
Waves	11
Dots	13

1. Total draws: 7 + 11 + 13 = 31.
2. Waves appeared 11 times.
3. Estimated P(waves) = 11/31.

Answer: 11/31

PRACTICE 4 problems

1 A game gives each of 10 tokens an equal chance of being picked. Three tokens say BONUS. Find P(BONUS).

ANSWER _____

2 Roll a fair 6-sided number cube. Find P(rolling a number greater than 4).

ANSWER _____

3 In 20 song skips, 8 landed on a pop song. Estimate P(pop) from the data.

ANSWER _____

4 A fair coin's model gives P(heads) = 1/2. In 18 flips, 12 were heads. Find the observed P(heads). Is it above or below the model?

ANSWER _____

APPLY IT Show your work

1 Your playlist shuffles songs with equal chances. Find the model and observed P(pop). Which is higher?

PLAYLIST AND SHUFFLE RESULTS

Type	Songs	Plays
Pop	3	9
Rap	2	6
Rock	1	5

ANSWER _____

2 An arcade wheel has 12 equal sections, and 5 win a sticker. In 24 spins, 8 won stickers. Find the model and observed P(sticker). Give one reason they differ.

WORK SPACE

ANSWER _____

CHALLENGE One step up

An app says its 4 avatars are equally likely. In 40 picks, the results were as shown. Compare the model and observed P(fox). Do these results prove the model is wrong? Explain.

AVATAR PICKS

Avatar	Picks
Fox	16
Cat	10
Owl	8
Bear	6

WORK SPACE AND ANSWER

ANSWER KEY

Chance Check

GRADE 7 · 7.DS.C.6

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A game gives each of 10 tokens an equal chance of being picked. Three tokens say BONUS. Find P(BONUS).	**3/10**
2	Roll a fair 6-sided number cube. Find P(rolling a number greater than 4).	**1/3**
3	In 20 song skips, 8 landed on a pop song. Estimate P(pop) from the data.	**2/5**
4	A fair coin's model gives P(heads) = 1/2. In 18 flips, 12 were heads. Find the observed P(heads). Is it above or below the model?	**2/3, above the model**

PART 2 · APPLY IT

1. **Model: 1/2. Observed: 9/20. The model is higher.** There are 3 pop songs out of 6 songs, so the model gives 3/6 = 1/2. Pop played 9 times out of 20, and 9/20 < 1/2.
2. **Model: 5/12. Observed: 1/3. Chance variation is one possible reason.** The model gives 5/12. The observed probability is 8/24 = 1/3; results can vary over a limited number of spins.

CHALLENGE

Model: 1/4. Observed: 16/40 = 2/5, which is higher. No, the difference could be due to chance.

Accept equivalent fractions. For explanations, accept chance variation or another valid reason the observed results might differ from the model.