LESSON MAKER PRO

Chance Check

Compare predicted chances with what happened.

GRADE 7 · 7.DS.C.6.c

7.DS.C.6.c "Compare probabilities from a model to observed data and explain possible reasons for any differences."

NAME _____ DATE _____

MODEL VS. RESULTS

A model gives the expected chance of an outcome. The observed rate is the number of times it happened divided by the number of tries. Use a common denominator to find the difference, then think about why the rates might not match.

WORKED EXAMPLE

A game predicts prizes at the model rate shown. Compare the model with the results. Why might they differ?

PRIZE RESULTS

Model rate	Prizes won
2/5	9 in 20 turns

1. Observed rate: 9/20.
2. Model rate: 2/5 = 8/20.
3. Difference: 9/20 - 8/20 = 1/20.

Answer: The observed rate is 1/20 higher. Chance variation could explain the difference.

PRACTICE 4 problems

1 Model P(blue) = 1/2. Blue appears 3 times in 8 tries. Is the observed rate higher or lower, and by how much?

ANSWER _____

2 Model P(win) = 1/3. You win 4 of 6 games. Find the observed rate and its difference from the model.

ANSWER _____

3 Model P(orange) = 3/4. Orange appears 10 times in 16 tries. Find the difference and give one possible reason.

ANSWER _____

4 Model P(heads) = 1/2. Heads appears 18 times in 30 flips. Compare the rates and give one possible reason.

ANSWER _____

APPLY IT Show your work

1 A music app says a new song has a 1/4 chance of playing on shuffle. It plays 14 times in 40 taps. How does the observed rate compare? Why might they differ?

WORK SPACE

ANSWER _____

2 An arcade game says a bonus appears on 1/6 of plays. Your class gets 8 bonuses in 24 plays. How much higher is the observed rate? Give one reason the model might not fit the game.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A game models a win rate of 1/4. Which day differs more from the model, and by how much? Why doesn't the other day's result prove the model will always match?

GAME RESULTS

Day	Wins	Plays
Monday	6	12
Tuesday	18	72

WORK SPACE AND ANSWER

ANSWER KEY

Chance Check

GRADE 7 · 7.DS.C.6.c

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Model P(blue) = 1/2. Blue appears 3 times in 8 tries. Is the observed rate higher or lower, and by how much?	**Lower by 1/8.**
2	Model P(win) = 1/3. You win 4 of 6 games. Find the observed rate and its difference from the model.	**Observed rate: 2/3. It is 1/3 higher.**
3	Model P(orange) = 3/4. Orange appears 10 times in 16 tries. Find the difference and give one possible reason.	**The observed rate is 1/8 lower. Chance variation is one possible reason.**
4	Model P(heads) = 1/2. Heads appears 18 times in 30 flips. Compare the rates and give one possible reason.	**The observed rate is 1/10 higher. Chance variation is one possible reason.**

PART 2 · APPLY IT

1. **The observed rate is 1/10 higher. Chance variation could explain the difference.** The observed rate is 14/40 = 7/20. The model rate is 1/4 = 5/20, so the difference is 2/20 = 1/10.
2. **The observed rate is 1/6 higher. The game might be set to give bonuses more often than stated.** The observed rate is 8/24 = 1/3. Subtract the model rate: 1/3 - 1/6 = 1/6.

CHALLENGE

Monday differs more: 6/12 = 1/2, which is 1/4 above the model. Tuesday's rate is 18/72 = 1/4, but future results can vary by chance.

Accept equivalent fractions or percentages. For possible reasons, accept chance variation or a specific way the model might not match the game, when the reason fits the question.