LESSON MAKER PRO

Chance Data Lab

Use trial results to estimate future outcomes.

GRADE 7 · 7.SP.C.6

CCSS.Math.Content.7.SP.C.6 "Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. For example..."

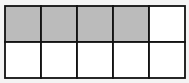
NAME _____ DATE _____

ESTIMATE FROM DATA

Experimental probability is the number of times an event occurs divided by the total number of trials. Multiply this relative frequency by a future number of trials to predict an approximate count. More trials usually make the estimate more reliable.

WORKED EXAMPLE

The array shows 10 game tests. Each shaded square shows a test that gave a bonus. Predict the number of bonuses in 50 tests.



1. Count 4 bonuses in 10 tests.
2. Write the experimental probability: 4/10.
3. Multiply: 4/10 x 50 = 20.

Answer: About 20 bonuses.

PRACTICE 4 problems

1 A coin lands heads 8 times in 24 flips. What is the experimental probability of heads?

ANSWER _____

2 A button works 15 times in 60 tests. Predict how many times it will work in 120 tests.

ANSWER _____

3 A spinner lands on green 7 times in 28 spins. Predict how many green results there will be in 84 spins.

ANSWER _____

4 A random number generator gives an even number 18 times in 72 trials. What is the experimental probability of an even number? Predict the number of even results in 36 trials.

ANSWER _____

APPLY IT Show your work

1 Jordan tests a random sticker dispenser. Based on the table, predict how many yellow stickers Jordan will get from 140 stickers.

STICKER DISPENSER TESTS

Result	Number of stickers
Yellow	14
Other colors	42
Total	56

ANSWER _____

2 In a basketball video game, Maya opens 80 reward packs and gets a rare player in 16 packs. Based on this data, predict how many rare players she will get from 200 more packs.

WORK SPACE

ANSWER _____

3 Collect your own chance data: With a partner, flip a teacher-provided coin 60 times on a clear table, letting it land each time. Record every H or T in groups of 10. After 10, 30 and 60 flips, record the cumulative heads count and divide by the cumulative number of flips. Compare those three relative frequencies; say whether they moved closer to or farther from 1/2, without assuming they must move closer. Use your 60-flip frequency to estimate the heads count in 100 future flips. State why this is approximate. Use extra paper for the trial log.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Lia gets 25 wins in 75 tries on a random game app. Omar gets 70 wins in 210 tries on the same app. Whose estimate of the chance of winning is more reliable? Explain.

WORK SPACE AND ANSWER

ANSWER KEY # Chance Data Lab

GRADE 7 · 7.SP.C.6

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A coin lands heads 8 times in 24 flips. What is the experimental probability of heads?	**1/3**
2	A button works 15 times in 60 tests. Predict how many times it will work in 120 tests.	**About 30 times.**
3	A spinner lands on green 7 times in 28 spins. Predict how many green results there will be in 84 spins.	**About 21 green results.**
4	A random number generator gives an even number 18 times in 72 trials. What is the experimental probability of an even number? Predict the number of even results in 36 trials.	**1/4; about 9 even results.**

PART 2 · APPLY IT

1. **About 35 yellow stickers.** The experimental probability of yellow is 14/56, or 1/4. Multiply 1/4 by 140 to get 35.
2. **About 40 rare players.** The experimental probability is 16/80, or 1/5. Multiply 1/5 by 200 to get 40.
3. **Results vary. Example cumulative heads counts 7, 18, 32 give frequencies 0.70, 0.60, 8/15 ≈ 0.533; the final estimate is about 53 heads in 100 flips.** Use each learner's recorded data. Frequency at n flips is cumulative heads/n; the prediction is (heads/60) × 100, rounded to an approximate count. The example distances from 1/2 are 0.20, 0.10, about 0.033, but other actual paths may move away or fluctuate.

CHALLENGE

Omar's estimate is more reliable. Both students found an experimental probability of 1/3, but Omar used 210 trials, so his relative frequency is more likely to be close to the long-run probability.

Accept equivalent fractions, decimals, or percents for experimental probabilities. Accept predicted counts labeled as approximate, since future results may not match the prediction exactly. For Apply It 3, supply a coin and clear landing surface per pair; observe actual trials and check 60 H/T entries and cumulative counts at 10, 30, 60. Counts must be nondecreasing, no larger than the trial total, and consistent with the log. Accept accurate fluctuation descriptions and predictions based on their own results; do not require convergence in this short run or the illustrative counts.