LESSON MAKER PRO

Chance Data Detectives

Use trial results to build probability models.

GRADE 7 · 7.SP.C.7b

CCSS.Math.Content.7.SP.C.7b "Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will..."

NAME _____ DATE _____

BUILD FROM DATA

Estimate a probability by dividing the number of times an outcome happens by the total number of trials. Use the observed frequencies to decide whether outcomes seem equally likely.

WORKED EXAMPLE

A spinner lands on red 11 times in 23 spins. Estimate P(red).

1. Red occurred 11 times.
2. There were 23 total spins.
3. P(red) is about 11/23.

Answer: 11/23

PRACTICE 5 problems

1 A spinner lands on moon 9 times in 24 spins. Estimate P(moon).

ANSWER _____

2 A token lands red 6 times, blue 12 times, and green 12 times. Build a probability model.

ANSWER _____

3 A spinner lands on A 3 times, B 15 times, C 9 times, and D 9 times. Do the outcomes appear equally likely?

ANSWER _____

4 A tossed cup lands open-end down 15 times and open-end up 5 times. Estimate P(down).

ANSWER _____

5 A random selector shows sun 8 times, cloud 10 times, rain 6 times, and snow 16 times. Estimate P(not snow).

ANSWER _____

APPLY IT Show your work

1 A game app gives a chance reward. In 60 openings, it shows a badge 27 times, an avatar frame 21 times, and coins 12 times. Build a model. Which reward is most likely next?

WORK SPACE

ANSWER _____

2 A podcast sound button is pressed 45 times. It plays a chime 18 times, a drum 15 times, and a clap 12 times. Estimate P(chime or clap).

WORK SPACE

ANSWER _____

CHALLENGE One step up

A game tester runs 70 trials. Spark appears 14 times, wave appears 21 times, and bolt appears x times. Find x, build a probability model, and predict how many bolts would appear in 70 more trials. Do the outcomes appear equally likely?

WORK SPACE AND ANSWER

ANSWER KEY

Chance Data Detectives

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A spinner lands on moon 9 times in 24 spins. Estimate P(moon).	**3/8**
2	A token lands red 6 times, blue 12 times, and green 12 times. Build a probability model.	**P(red) = 1/5, P(blue) = 2/5, P(green) = 2/5**
3	A spinner lands on A 3 times, B 15 times, C 9 times, and D 9 times. Do the outcomes appear equally likely?	**No**
4	A tossed cup lands open-end down 15 times and open-end up 5 times. Estimate P(down).	**3/4**
5	A random selector shows sun 8 times, cloud 10 times, rain 6 times, and snow 16 times. Estimate P(not snow).	**3/5**

PART 2 · APPLY IT

1. **P(badge) = 9/20, P(frame) = 7/20, P(coins) = 1/5; badge** Divide each reward count by 60. The badge has the greatest observed probability.
2. **2/3** Chime or clap occurred 18 + 12 = 30 times. Use 30/45, which simplifies to 2/3.

CHALLENGE

x = 35; P(spark) = 1/5, P(wave) = 3/10, P(bolt) = 1/2; about 35 bolts; no

Accept equivalent fractions for all probability estimates. For equal-likelihood questions, accept a clear no supported by unequal observed frequencies.