LESSON MAKER PRO

Chance in Action

Use trial results to estimate what may happen next.

GRADE 8 · PA.D.2.1

PA.D.2.1 "Calculate experimental probabilities and represent them as percents, fractions, and decimals between 0 and 1. Use experimental probabilities to predict relative frequencies when actual probabilities are unknown."

NAME _____ DATE _____

FROM TRIALS TO PREDICTIONS

Experimental probability comes from what happened in trials, not from a known chance. Divide the number of times an outcome occurred by the total trials. Convert the fraction to a decimal and percent, then multiply the decimal by a future number of trials to predict a count.

WORKED EXAMPLE

A spinner was tested. Find the experimental probability of blue as a fraction, decimal, and percent.

SPINNER RESULTS

Result	Times
Blue	9
Not blue	31

1. Total trials: 9 + 31 = 40.
2. Fraction: 9/40.
3. Decimal: 9 ÷ 40 = 0.225.
4. Percent: 0.225 × 100% = 22.5%.

Answer: 9/40, 0.225, 22.5%

PRACTICE 4 problems

1 A player made 7 of 20 free throws. Find the experimental probability of a make as a fraction and decimal.

ANSWER _____

2 A game gave a bonus on 6 of 25 tries. Find the experimental probability of a bonus as a fraction and percent.

ANSWER _____

3 A bus arrived early on 14 of 50 days. Find the experimental probability of an early arrival as a decimal and percent.

ANSWER _____

4 A player won 12 of 30 rounds. At that rate, about how many wins should the player expect in 80 more rounds?

ANSWER _____

APPLY IT Show your work

1 In 60 shuffle plays, a favorite artist's song played 15 times. Estimate its chance of playing as a fraction, decimal, and percent. About how many times would it play in 120 more shuffles?

WORK SPACE

ANSWER _____

2 In 75 game reward drops, 27 gave a new avatar item. Estimate the percent of drops with a new item. About how many new items would you expect in 200 more drops?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Two players tested a game's random sticker drops. Combine their results to find the experimental probability of a sticker as a fraction, decimal, and percent. Predict the number of stickers in 150 more drops. Explain why you combined the results instead of averaging the players' percents.

STICKER DROPS

Player	Stickers	Total drops
A	10	20
B	6	30

WORK SPACE AND ANSWER

ANSWER KEY

Chance in Action

GRADE 8 · PA.D.2.1

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A player made 7 of 20 free throws. Find the experimental probability of a make as a fraction and decimal.	**7/20 and 0.35**
2	A game gave a bonus on 6 of 25 tries. Find the experimental probability of a bonus as a fraction and percent.	**6/25 and 24%**
3	A bus arrived early on 14 of 50 days. Find the experimental probability of an early arrival as a decimal and percent.	**0.28 and 28%**
4	A player won 12 of 30 rounds. At that rate, about how many wins should the player expect in 80 more rounds?	**32 wins**

PART 2 · APPLY IT

1. **1/4, 0.25, 25%; about 30 times** Divide 15 by 60 to get 1/4 = 0.25 = 25%. Multiply 0.25 by 120 to predict 30 plays.
2. **36%; about 72 new items** Divide 27 by 75 to get 0.36, or 36%. Multiply 0.36 by 200 to predict 72 new items.

CHALLENGE

Together, the players got 16 stickers in 50 drops, so the probability is 8/25 = 0.32 = 32%, and the prediction is 48 stickers. Combine the counts because the players made different numbers of drops.

Accept equivalent fractions and reasonable wording for predicted counts. Predictions use the experimental rate, not a guaranteed outcome.