LESSON MAKER PRO

Predict the Pattern

Use simulation results to make long-run predictions.

GRADE 7 · 7A.DSP.C.31.a

7A.DSP.C.31.a "Observe the relative frequency of an event over the long run, using simulation or technology, and use those results to predict approximate relative frequency."

NAME _____ DATE _____

THE BIG IDEA

A relative frequency tells you how often an event happened in a simulation: divide the event count by the total number of trials. Results from a longer run can give you a steadier estimate. Multiply that relative frequency by a new number of trials to predict about how many times the event will happen.

WORKED EXAMPLE

A simulation lands on blue 13 times in 52 spins. About how many times would you predict blue in 104 spins?

1. Find the relative frequency: 13/52 = 1/4.
2. Use it for the new run: 104 × 1/4 = 26.

Answer: About 26 blue spins.

PRACTICE 6 problems

1 A simulation lands on red 12 times in 48 spins. About how many red spins would you predict in 64 spins?

ANSWER _____

2 A simulation selects a star 28 times in 35 tries. About how many stars would you predict in 125 tries?

ANSWER _____

3 The table shows results after different numbers of simulated rolls. Use the longest run to find the relative frequency of a win. Then predict about how many wins there would be in 240 rolls.

SIMULATED ROLLS

Total rolls	Wins
24	8
96	40
192	80

ANSWER _____

4 A simulation picks a song from a playlist 110 times. It picks a pop song 55 times. About how many pop songs would you predict in 98 picks?

ANSWER _____

5 The table shows results after different numbers of simulated game turns. Use the longest run to find the relative frequency of earning a point. Then predict about how many points would be earned in 320 turns.

SIMULATED GAME TURNS

Total turns	Turns earning a point
16	7
64	24
256	96

ANSWER _____

6 A simulation shows a bus arriving on time 63 times in 84 trips. About how many on-time arrivals would you predict in 200 trips?

ANSWER _____

APPLY IT Show your work

1 A game designer simulates opening 225 mystery boxes. A special outfit appears 45 times. About how many special outfits would you predict in 350 boxes?

WORK SPACE

ANSWER _____

2 At a school festival, an app simulates spinning a digital prize wheel 280 times. It lands on a sticker 84 times. About how many stickers would you predict in 450 spins?

WORK SPACE

ANSWER _____

CHALLENGE One step up

The table shows results after different numbers of simulated shots in a basketball game. Which run would you use to predict how often a shot goes in? Predict about how many shots would go in out of 600, and explain your choice.

SIMULATED BASKETBALL SHOTS

Total shots	Shots made
25	10
125	35
500	150

WORK SPACE AND ANSWER

ANSWER KEY

Predict the Pattern

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A simulation lands on red 12 times in 48 spins. About how many red spins would you predict in 64 spins?	**About 16 red spins.**
2	A simulation selects a star 28 times in 35 tries. About how many stars would you predict in 125 tries?	**About 100 stars.**
3	The table shows results after different numbers of simulated rolls. Use the longest run to find the relative frequency of a win. Then predict about how many wins there would be in 240 rolls.	**Relative frequency: 5/12. Prediction: about 100 wins.**
4	A simulation picks a song from a playlist 110 times. It picks a pop song 55 times. About how many pop songs would you predict in 98 picks?	**About 49 pop songs.**
5	The table shows results after different numbers of simulated game turns. Use the longest run to find the relative frequency of earning a point. Then predict about how many points would be earned in 320 turns.	**Relative frequency: 3/8. Prediction: about 120 points.**
6	A simulation shows a bus arriving on time 63 times in 84 trips. About how many on-time arrivals would you predict in 200 trips?	**About 150 on-time arrivals.**

PART 2 · APPLY IT

1. **About 70 special outfits.** The relative frequency is 45/225 = 1/5. Multiply 350 by 1/5 to get 70.
2. **About 135 stickers.** The relative frequency is 84/280 = 3/10. Multiply 450 by 3/10 to get 135.

CHALLENGE

Use the 500-shot run because its relative frequency is based on the most trials. Its relative frequency is 150/500 = 3/10, so the prediction is about 180 made shots out of 600.

Accept equivalent fractions or decimals for relative frequencies. Predictions are approximate counts based on the specified simulation results, not guaranteed outcomes.