LESSON MAKER PRO

Odds Over Time

Find probabilities for ranges of outcomes.

HIGH SCHOOL · MM.D3D.C.19.d

MM.D3D.C.19.d "Find the long-term probability of a given range of outcomes from a random event or random sample."

NAME _____ DATE _____

COUNT THE RANGE

For equally likely outcomes, divide the number in the range by the total number of outcomes. For trial data, add the counts in the range and divide by the total number of trials. This gives an estimate of the long-term probability.

WORKED EXAMPLE

A game recorded scores from 42 rounds. Estimate P(score 40-59).

GAME SCORES

Score	Rounds
30-39	13
40-49	17
50-59	12

1. Count rounds with scores from 40 to 59: 17 + 12 = 29.
2. Divide by all 42 rounds: 29/42.

Answer: 29/42

PRACTICE 4 problems

1 A random integer from 1 through 16 is chosen. Find P(4-7).

ANSWER _____

2 A random integer from 1 through 27 is chosen. Find P(10-18).

ANSWER _____

3 In 50 trials, 15 results were 0-4, 25 were 5-9, and 10 were 10-14. Estimate P(5-14).

ANSWER _____

4 In 24 trials, results 1, 2, 3, and 4 occurred 4, 6, 9, and 5 times, respectively. Estimate P(2 or 3).

ANSWER _____

APPLY IT Show your work

1 A student recorded how long a game took to load. Use the table to estimate P(load time 3-8 seconds).

GAME LOAD TIMES

Seconds	Loads
0-2	14
3-5	28
6-8	18

ANSWER _____

2 A gaming giveaway draws one ticket at random from tickets numbered 1 through 48. You hold tickets 21 through 32. Find the long-term probability that you win.

WORK SPACE

ANSWER _____

CHALLENGE One step up

In 80 game rounds, 24 scores were 0-9, 36 were 10-19, and 20 were 20-29. Estimate P(score 10-29). At that rate, how many of the next 200 rounds would have scores in that range?

WORK SPACE AND ANSWER

ANSWER KEY

Odds Over Time

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A random integer from 1 through 16 is chosen. Find P(4-7).	**1/4**
2	A random integer from 1 through 27 is chosen. Find P(10-18).	**1/3**
3	In 50 trials, 15 results were 0-4, 25 were 5-9, and 10 were 10-14. Estimate P(5-14).	**7/10**
4	In 24 trials, results 1, 2, 3, and 4 occurred 4, 6, 9, and 5 times, respectively. Estimate P(2 or 3).	**5/8**

PART 2 · APPLY IT

1. **23/30** There were 28 + 18 = 46 loads in the range out of 60 loads total. The estimate is 46/60 = 23/30.
2. **1/4** The range includes 12 tickets. The probability is 12/48 = 1/4.

CHALLENGE

7/10; 140 rounds

Accept equivalent fractions. Probabilities based on recorded results are estimates, not guarantees about future rounds.