LESSON MAKER PRO

Chance Bar Lab

Turn outcomes into probability graphs.

HIGH SCHOOL · MA.912.DP.6.1

MA.912.DP.6.1 "Define a random variable for a quantity of interest by assigning a numerical value to each individual outcome in a sample space; graph the corresponding probability distribution using the same graphical displays as for data distributions."

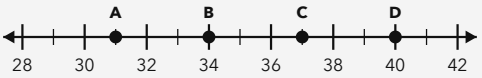
NAME _____ DATE _____

MAP, COUNT, GRAPH

Assign each outcome a number called x. Combine outcomes with the same x-value, then use probability = favorable outcomes/total outcomes. Graph x-values on the horizontal axis and probability bar heights on the vertical axis.

WORKED EXAMPLE

Four equally likely ticket outcomes are plotted at their x-values. Make the probability distribution.

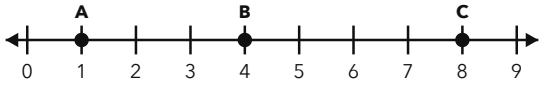


1. Read the x-values: 31, 34, 37, 40.
2. There are 4 equally likely outcomes.
3. Each x-value has probability 1/4.
4. Draw four bars, each with height 1/4.

Answer: P(x=31)=1/4, P(x=34)=1/4, P(x=37)=1/4, P(x=40)=1/4.

PRACTICE 4 problems

1 The figure plots x for three equally likely outcomes. Give the bar locations and heights.



ANSWER _____

2 A fair coin is tossed twice. Let x=10 + the number of tails. Give the probability distribution.

ANSWER _____

3 A fair die is rolled. Let x be the number of letters in the word for the result. Give the probability distribution.

ANSWER _____

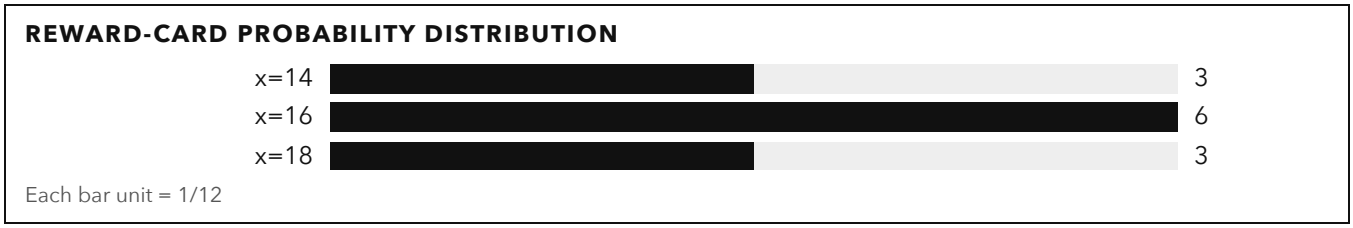
4 The figure places five equally likely outcomes at their x-values. Give the probability distribution.



ANSWER _____

APPLY IT Show your work

1 A music app randomly gives one of 12 reward cards. The graph shows x, the points on the card. Find P(x=16) and P(x≥16).



ANSWER _____

2 Eight mystery gift cards are equally likely to be chosen. Their values are $25, $25, $35, $45, $45, $45, $55, and $55. Let x be the card value. Make a bar graph of the probability distribution.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A fair coin is tossed three times. Let x=2(number of heads) - (number of tails). Give the bar heights for the probability distribution, then explain why the bars at x=0 and x=3 have equal heights.

WORK SPACE AND ANSWER

ANSWER KEY # Chance Bar Lab

HIGH SCHOOL · MA.912.DP.6.1

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	The figure plots x for three equally likely outcomes. Give the bar locations and heights.	**Bars at x=1, 4, and 8, each with height 1/3.**
2	A fair coin is tossed twice. Let x=10 + the number of tails. Give the probability distribution.	**P(x=10)=1/4, P(x=11)=1/2, P(x=12)=1/4.**
3	A fair die is rolled. Let x be the number of letters in the word for the result. Give the probability distribution.	**P(x=3)=1/2, P(x=4)=1/3, P(x=5)=1/6.**
4	The figure places five equally likely outcomes at their x-values. Give the probability distribution.	**P(x=2)=2/5, P(x=6)=1/5, P(x=9)=2/5.**

PART 2 · APPLY IT

1. **P(x=16)=1/2; P(x≥16)=3/4.** The x=16 bar has height 6/12. The bars for 16 and 18 total 9/12.
2. **Bars: x=25, height 1/4; x=35, height 1/8; x=45, height 3/8; x=55, height 1/4.** Count each dollar value among the 8 cards, then divide each count by 8.

CHALLENGE

P(x=-3)=1/8, P(x=0)=3/8, P(x=3)=3/8, P(x=6)=1/8. The values x=0 and x=3 each come from 3 equally likely outcomes: one head or two heads.

Accept equivalent fractions, such as 2/4 for 1/2. For graphing responses, accept correctly placed bars with the listed heights and labeled axes.