LESSON MAKER PRO

Chance and Counts

Find a probability, then use it to predict results.

GRADE 7 · 7.D.2

7.D.2 "Calculate and use proportional reasoning with probabilities to model and solve mathematical problems. Determine the theoretical probability of an event using the ratio between the size of the event and the size of the sample space..."

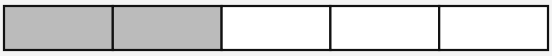
NAME _____ DATE _____

THE BIG IDEA

For equally likely outcomes, probability = favorable outcomes / all outcomes. Divide to write a fraction as a decimal, then multiply by 100 to write it as a percent. To predict a count, multiply the probability by the number of trials.

WORKED EXAMPLE

One section of the bar is chosen at random. Find the probability of choosing a shaded section as a fraction, decimal, and percent. Predict shaded picks in 30 choices.



1. Probability = 2/5.
2. 2 ÷ 5 = 0.4 = 40%.
3. 30 × 2/5 = 12.

Answer: 2/5, 0.4, 40%; 12 shaded picks

PRACTICE 4 problems

1 A bag has 3 blue and 9 red chips. What is P(blue) as a fraction in simplest form?

ANSWER _____

2 A machine has 7 winning tokens among 10 equally likely tokens. Give P(win) as a decimal and a percent.

ANSWER _____

3 A spinner has 8 equal sections, with 3 purple. Predict purple results in 40 spins.

ANSWER _____

4 A box has 9 heart stickers and 3 moon stickers. Give P(heart) as a fraction and a percent.

ANSWER _____

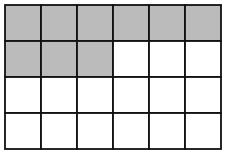
APPLY IT Show your work

1 In a game, 6 of 24 equally likely mystery prizes are rare. What is P(rare)? Predict rare prizes in 80 openings.

WORK SPACE

ANSWER _____

2 An app picks one square at random from this board. Give P(shaded) as a fraction, decimal, and percent. Predict shaded picks in 64 tries.



ANSWER _____

CHALLENGE One step up

A wheel has 16 equal spaces: 7 green, 3 orange, and the rest blue. In 96 spins, how many more green than blue results do you predict? Explain.

WORK SPACE AND ANSWER

ANSWER KEY

Chance and Counts

GRADE 7 · 7.D.2

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A bag has 3 blue and 9 red chips. What is P(blue) as a fraction in simplest form?	**1/4**
2	A machine has 7 winning tokens among 10 equally likely tokens. Give P(win) as a decimal and a percent.	**0.7; 70%**
3	A spinner has 8 equal sections, with 3 purple. Predict purple results in 40 spins.	**15 purple results**
4	A box has 9 heart stickers and 3 moon stickers. Give P(heart) as a fraction and a percent.	**3/4; 75%**

PART 2 · APPLY IT

1. **1/4; 20 rare prizes** P(rare) = 6/24 = 1/4. Then 80 × 1/4 = 20.
2. **3/8, 0.375, 37.5%; 24 shaded picks** There are 9 shaded squares out of 24, so P(shaded) = 9/24 = 3/8 = 0.375 = 37.5%. Then 64 × 3/8 = 24.

CHALLENGE

6 more green results. There are 6 blue spaces, so the predicted counts are 96 × 7/16 = 42 green and 96 × 6/16 = 36 blue. The difference is 6.

Accept equivalent fractions where a simplest form is not requested. Predicted counts use theoretical probability, not a guarantee of actual results.