LESSON MAKER PRO

Predict the Picks

Use probability to predict what happens over many trials.

GRADE 7 · 7.D.2.3

7.D.2.3 "Use proportional reasoning to draw conclusions about and predict relative frequencies of outcomes based on theoretical probabilities."

NAME _____ DATE _____

FROM CHANCE TO COUNT

A theoretical probability tells you the share of trials you can expect for an outcome. To predict a count, multiply the probability by the total number of trials. The actual count may be different.

WORKED EXAMPLE

A game awards a bonus on 5/12 of plays. About how many bonuses would you expect in 60 plays?

1. Write the prediction: 5/12 × 60.
2. Divide the total into 12 equal groups: 60 ÷ 12 = 5.
3. Take 5 groups: 5 × 5 = 25.

Answer: About 25 bonuses.

PRACTICE 6 problems

1 A spinner has 4 equal sections, and 1 is blue. In 28 spins, about how many times would you expect blue?

ANSWER _____

2 A fair six-sided number cube is rolled 42 times. About how many rolls would you expect to show an even number?

ANSWER _____

3 A bag holds 2 red tiles and 6 gold tiles. After each pick, the tile goes back in the bag. In 48 picks, about how many red picks and gold picks would you expect?

ANSWER _____

4 A computer picks a random digit from 0 to 9, with each digit equally likely. In 80 picks, about how many times would you expect a 0 or a 9?

ANSWER _____

5 The chance of winning a game is 3/8. About how many wins would you expect in 32 games?

ANSWER _____

6 The chance that a random choice selects an art app is 1/6. If you expect 9 art-app choices, about how many choices were made in all?

ANSWER _____

APPLY IT Show your work

1 A playlist has 18 tracks, including 6 instrumental tracks. Each time a track plays, the app picks one at random from the full playlist. About how many instrumental tracks would you expect to hear in 45 plays?

WORK SPACE

ANSWER _____

2 In a game, 4 of the 16 possible items in a mystery pack are rare. Each item is equally likely. After 84 packs, a player has found 18 rare items. How many rare items would you predict, and how does the player's count compare?

WORK SPACE

ANSWER _____

CHALLENGE One step up

In a game, the probability of earning a blue badge is 2/9, and the probability of earning a green badge is 1/3. Every play earns exactly one badge: blue, green, or orange. In 81 plays, how many more orange badges than blue badges would you expect? Explain your reasoning.

WORK SPACE AND ANSWER

ANSWER KEY

Predict the Picks

GRADE 7 · 7.D.2.3

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A spinner has 4 equal sections, and 1 is blue. In 28 spins, about how many times would you expect blue?	**7 times**
2	A fair six-sided number cube is rolled 42 times. About how many rolls would you expect to show an even number?	**21 rolls**
3	A bag holds 2 red tiles and 6 gold tiles. After each pick, the tile goes back in the bag. In 48 picks, about how many red picks and gold picks would you expect?	**12 red picks and 36 gold picks**
4	A computer picks a random digit from 0 to 9, with each digit equally likely. In 80 picks, about how many times would you expect a 0 or a 9?	**16 times**
5	The chance of winning a game is 3/8. About how many wins would you expect in 32 games?	**12 wins**
6	The chance that a random choice selects an art app is 1/6. If you expect 9 art-app choices, about how many choices were made in all?	**54 choices**

PART 2 · APPLY IT

1. **15 instrumental tracks** The probability of an instrumental track is 6/18, or 1/3. Multiply 45 by 1/3 to predict 15 plays.
2. **Predict 21 rare items. The player found 3 fewer than predicted.** The probability of a rare item is 4/16, or 1/4, so the predicted count is 84 × 1/4 = 21. Compare 18 with 21 to find a difference of 3.

CHALLENGE

18 more orange badges. Green has probability 3/9, so orange has probability 1 - 2/9 - 3/9 = 4/9. In 81 plays, predict 36 orange badges and 18 blue badges, a difference of 18.

Accept equivalent calculations and counts labeled with the correct outcome. These are predictions, so actual results need not match them.