LESSON MAKER PRO

Chance Check

Compare expected results with trial results.

GRADE 7 · MA.7.DP.2

MA.7.DP.2 "Develop an understanding of probability. Find and compare experimental and theoretical probabilities."

NAME _____ DATE _____

TWO KINDS OF PROBABILITY

Theoretical probability is favorable outcomes / total equally likely outcomes. Experimental probability is times an event happens / total trials. To compare, write equivalent fractions with a common denominator.

WORKED EXAMPLE

A bag has 11 blue and 16 red chips. In 54 draws with replacement, blue appears 24 times. Find and compare both probabilities.

1. Total chips: 11 + 16 = 27.
2. Theoretical P(blue) = 11/27.
3. Experimental P(blue) = 24/54 = 4/9.
4. 4/9 = 12/27, so experimental probability is higher.

Answer: Theoretical: 11/27. Experimental: 4/9, higher.

PRACTICE 5 problems

1 An equal spinner has 10 sections. Three sections have stars. Find theoretical P(star).

ANSWER _____

2 A coin lands heads 13 times in 25 flips. Find experimental P(heads).

ANSWER _____

3 A number cube is rolled 40 times. A 6 appears 7 times. Find experimental P(6).

ANSWER _____

4 A bag has 14 black beads and 6 white beads. Find theoretical P(white).

ANSWER _____

5 An app chooses 1 of 10 equal icons. A heart appears 20 times in 50 picks. Theoretical P(heart) is 1/10. Find the experimental probability. Is it higher or lower?

ANSWER _____

APPLY IT Show your work

1 A playlist has 35 songs, including 14 hip-hop songs. After 45 shuffles, 21 first songs are hip-hop. Find and compare the theoretical and experimental probabilities.

WORK SPACE

ANSWER _____

2 A game chest has 8 rare skins and 22 common skins, all equally likely. A player opens 60 chests and gets 14 rare skins. Find and compare the theoretical and experimental probabilities.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A game claims that blue should appear with probability 2/3. Trial A gets blue 26 times in 39 tries. Trial B gets blue 21 times in 35 tries. Which trial is closer to the claim? Explain.

WORK SPACE AND ANSWER

ANSWER KEY

Chance Check

GRADE 7 · MA.7.DP.2

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	An equal spinner has 10 sections. Three sections have stars. Find theoretical P(star).	**3/10**
2	A coin lands heads 13 times in 25 flips. Find experimental P(heads).	**13/25**
3	A number cube is rolled 40 times. A 6 appears 7 times. Find experimental P(6).	**7/40**
4	A bag has 14 black beads and 6 white beads. Find theoretical P(white).	**3/10**
5	An app chooses 1 of 10 equal icons. A heart appears 20 times in 50 picks. Theoretical P(heart) is 1/10. Find the experimental probability. Is it higher or lower?	**2/5, higher**

PART 2 · APPLY IT

1. **Theoretical: 2/5. Experimental: 7/15. The experimental probability is higher by 1/15.** Theoretical probability is 14/35 = 2/5. Experimental probability is 21/45 = 7/15, and 2/5 = 6/15.
2. **Theoretical: 4/15. Experimental: 7/30. The experimental probability is lower by 1/30.** Theoretical probability is 8/30 = 4/15. Experimental probability is 14/60 = 7/30.

CHALLENGE

Trial A. Its probability is 26/39 = 2/3 exactly. Trial B is 21/35 = 3/5, which is 1/15 below 2/3.

Accept equivalent fractions and correct comparison statements. Students may compare using common denominators or simplified fractions.