LESSON MAKER PRO

Chance Chains

Find probabilities across repeated trials.

GRADE 8 · MA.8.DP.2

MA.8.DP.2 "Represent and find probabilities of repeated experiments."

NAME _____ DATE _____

MULTIPLY ALONG THE PATH

For repeated independent trials, the result of one trial does not change the next result. Represent possible outcomes with a list, table, or tree diagram, then multiply the probabilities along the path you need. If an item is not replaced, update the total before finding the next probability.

WORKED EXAMPLE

A fair spinner has 19 equal sections, 8 purple and 11 yellow. You spin once, then spin again. What is P(purple, then yellow)?

1. Write the first-spin probability: 8/19.
2. Write the second-spin probability: 11/19.
3. Multiply: (8/19) x (11/19) = 88/361.

Answer: 88/361

PRACTICE 6 problems

1 Flip a fair coin twice. List the equally likely outcomes, then find the probability of getting exactly one head.

ANSWER _____

2 A fair six-sided number cube is rolled, then rolled again. Find P(first roll is greater than 4 and second roll is 1).

ANSWER _____

3 A fair spinner has 12 equal sections, 5 with triangles and 7 with squares. You spin it twice. Find P(triangle on both spins).

ANSWER _____

4 A bag has 4 red marbles and 5 blue marbles. You draw one marble, replace it, then draw another. Find P(red, then blue).

ANSWER _____

5 A box has 7 tickets, 3 marked WIN and 4 marked TRY AGAIN. You draw one ticket and do not replace it before drawing again. Find P(WIN on both draws).

ANSWER _____

6 A fair four-sided die labeled 1, 2, 3, and 4 is rolled twice. Use a table or organized list to find the probability that the product of the rolls is 4.

ANSWER _____

APPLY IT Show your work

1 A video app has 9 short clips, 4 dance clips and 5 sports clips. Each clip is equally likely to be chosen. The app chooses a clip, puts it back into the choices, then chooses another clip. What is the probability that both clips are sports clips?

WORK SPACE

ANSWER _____

2 At an esports event, a player takes one random item from a digital reward chest, returns it, then takes another item. The chest has 12 equally likely items: 7 avatar frames, 4 badges, and 1 bonus level. What is the probability of getting an avatar frame first and a badge second?

WORK SPACE

ANSWER _____

CHALLENGE One step up

A bag has 5 red, 3 blue, and 2 green tokens. You draw one token and do not replace it before drawing a second token. What is the probability that the two tokens are different colors? Explain your reasoning using an organized count.

WORK SPACE AND ANSWER

ANSWER KEY

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Flip a fair coin twice. List the equally likely outcomes, then find the probability of getting exactly one head.	**HH, HT, TH, TT; 1/2**
2	A fair six-sided number cube is rolled, then rolled again. Find P(first roll is greater than 4 and second roll is 1).	**1/18**
3	A fair spinner has 12 equal sections, 5 with triangles and 7 with squares. You spin it twice. Find P(triangle on both spins).	**25/144**
4	A bag has 4 red marbles and 5 blue marbles. You draw one marble, replace it, then draw another. Find P(red, then blue).	**20/81**
5	A box has 7 tickets, 3 marked WIN and 4 marked TRY AGAIN. You draw one ticket and do not replace it before drawing again. Find P(WIN on both draws).	**1/7**
6	A fair four-sided die labeled 1, 2, 3, and 4 is rolled twice. Use a table or organized list to find the probability that the product of the rolls is 4.	**3/16; favorable ordered pairs: (1,4), (2,2), (4,1)**

PART 2 · APPLY IT

1. **25/81** The probability of a sports clip on each choice is 5/9. Multiply: (5/9) x (5/9) = 25/81.
2. **7/36** Multiply the probability of a frame by the probability of a badge: (7/12) x (4/12) = 28/144 = 7/36.

CHALLENGE

31/45

Accept equivalent fractions and correct unsimplified products. For list or table items, accept outcomes in any order when all outcomes and favorable outcomes are correct.