G9-Probability of Compound Event-Test

Short Response

1. The spinner in the picture is used in a lucky draw.(a) David needs to get the number 3 on a single spin. What is the probability that he will land on the number 3 in one spin? If the spinner has two sections labeled with the number 3 (out of a total of four sections), then the probability of

landing on a 3 in one spin would be $\frac{2}{4} = \frac{1}{2}$.



(b) What is the probability that David will get the number **3** twice in a row when the wheel is spun twice?

 $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

(c) What is the theoretical probability that he will win the lucky prize if the wheel lands on the number **3** four times in a row?

 $\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{16}$

2.Two bags, Bag 1 and Bag 2, each contain three counters.

- **Bag 1** contains counters labeled **3**, **4**, **and 6**.
- **Bag 2** contains counters labeled **2**, **5**, **and 7**.

A counter is drawn at random from Bag 1, and a counter is drawn from Bag 2. The two numbers are **multiplied together** to give a score.

(a) Complete the table to show all possible scores.

	3	4	6
2	6	8	12
5	15	20	30
7	21	28	42

(b) Find the probability of scoring a 12.

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\frac{1}{9}
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- (c) Find the probability of scoring a multiple of 4. Multiples of 4 in the table: **8**, **12**, **20**, **28**.
 - 4
 - 9
- (d) Find the probability of scoring an odd number. Odd numbers in the table: **15**, **21**.

3.Rose is playing a game with a fair six-sided die and a fair coin. She rolls the die and flips the coin.

- If the coin lands on heads, her score is two less than the number on the die.
- If the coin lands on tails, her score is three more than the number on the die.
- (a) Complete the table to show all possible scores.

Die	1	2	3	4	5	6
Head	-1	0	1	2	3	4
Tail	4	5	6	7	8	9

(b) Find the probability of scoring a 1.

 $\frac{1}{12}$

(c) Find the probability of scoring a 6.

 $\frac{1}{12}$

(d) Find the probability of scoring a number greater than 5. Numbers greater than 5: 6, 7, 8, 9.

$$\frac{4}{12} = \frac{1}{3}$$

(e) Find the probability of scoring a prime number. Prime numbers: 2, 3, 5, 7.

$$\frac{4}{12} = \frac{1}{3}$$

4. A fair die has six faces numbered 1, 1, 2, 3, 4, and 5. The die is rolled twice, and the numbers shown are recorded each time.

(a) Find the probability that the sum of the two numbers is at least 7.

Possible outcomes where the sum is at least 7: (2+5), (3+4), (3+5), (4+3), (4+4), (4+5), (5+2), (5+3), (5+4), (5+5).

There are **10 favorable outcomes**.

Total possible outcomes: 36

Probability: $\frac{10}{36} = \frac{5}{18}$

(b) Find the probability that both rolls result in an even number. Even numbers on the die: 2, 4. Possible combinations: (2,2), (2,4), (4,2), (4,4). There are **4 favorable outcomes**. Total possible outcomes: 36 Probability: $\frac{4}{36} = \frac{1}{9}$

(c) Find the probability that the sum is an odd number. Odd sums can occur with the following combinations: (1,2), (1,4), (2,1), (2,3), (3,2), (3,4), (4,1), (4,3), (5,2), (5,4).There are **10 favorable outcomes**. Total possible outcomes: 36.

Probability: $\frac{10}{36} = \frac{5}{18}$

5. You are baking a cake, and you have three different flavors to choose from: Vanilla, Chocolate, and Strawberry. You also have two types of decorations to add

to the cake: Sprinkles and Icing.

(a)How many different cake combinations can you create if you can choose one flavor and one decoration?

- Vanilla with Sprinkles
- Vanilla with Icing
- Chocolate with Sprinkles
- Chocolate with Icing
- Strawberry with Sprinkles
- Strawberry with Icing

Total combinations: 3×2=6 different combinations.

(b)What is the probability of randomly selecting a Chocolate cake with Sprinkles?

 $\frac{1}{6}$

(c)If you were to randomly pick one flavor and one decoration, what is the probability that you do not end up with a Strawberry cake with Icing?

 $\frac{5}{6}$

Vocabulary:

- Probability (機率): The likelihood of a specific outcome. (某特定結果發生的可能性)
- Randomly (隨機地): Without a specific pattern, order, or objective. (沒有特定的模式、順序或目的地進行)
- Flavor (口味): A particular taste of food or drink. (食物或飲料的特定味道)
- Decoration (裝飾): Items added to something to make it look more attractive. (添加到某物上的物品, 使其看起來更吸引人)
- Outcome (結果): The result of a process or situation. (一個過程或情況的結果)

Sentence Patterns:

- What is the probability of [verb] + [specific event]? (發生[特定事件]的機率是什麼?)
 - o Example (例子): What is the probability of landing on the number 3? (轉到數字 3 的機率是什麼?)
- If [condition], then [result].
 - (如果[條件], 那麼[結果]。)
 - o Example (例子): If the coin lands on heads, then her score is two less than the number on the die.
 - (如果硬幣正面朝上, 那麼她的得分比骰子的數字少兩分。)
- Complete the table to show [specific detail].
 (完成表格以顯示[特定細節]。)
 - o Example (例子): Complete the table to show all possible scores.
 (完成表格以顯示所有可能的分數。)
- What is the theoretical probability that [condition] + [result]? (在[條件]下, [結果]的理論機率是多少?)
 - Example (例子): What is the theoretical probability that the wheel lands on the number 3 four times in a row?
 (轉盤連續四次轉到數字3的理論機率是多少?)