

Exercises: Probability of Independent Events

Name:

Class:

1. Determine whether the following events are independent events or dependent events. Give your justification.

(a) A coin is tossed, and a six-sided die is rolled.	(b) A card is selected from a deck, replaced, and then a second card is selected.
(c) A red marble is selected from a bag and not replaced. A second marble is then selected.	(d) The weather today is rainy, and a coin shows heads when tossed.

2. List out the sample space, S . Hence, list out the total number of possible outcomes.

(a) A coin is tossed twice.

Total number of possible outcomes =

(b) Two spinner is spun. Spinner A has the colours 'Red', 'Blue', 'Green' and 'Purple'. Spinner B has the numbers labelled 1, 3, 5, 7, 9.

Total number of possible outcomes =

(c) A letter is selected from the set of vowel $\{A, E, I, O, U\}$ and a number is selected from the set of prime numbers $\{2, 3, 5, 7\}$.

Total number of possible outcomes =

(d) A coin is tossed and a four-sided die numbered 1, 2, 3 and 4 is rolled.

Total number of possible outcomes =

3. Calculate the probability of each of the following events. Verify the conjecture of each probability by listing out all possible outcomes.

(a) A spinner has five equal sectors numbered 1 to 5. The spinner is spun twice. Find the probability of obtaining odd numbers on both spins.

Multiplication Rule:

$P(\text{obtaining an odd number}) =$

$P(\text{obtaining odd numbers on both spin})$

$$= \boxed{} \times \boxed{}$$
$$= \boxed{}$$

Listing all possible outcomes:

Outcomes

=

$n(S) =$

$P(\text{obtaining odd numbers on both spin})$

$$= \boxed{}$$

(b) Two fair six-sided dice are rolled. Find the probability that the first die shows a multiple of 3 and the second die shows a number greater than 4.

Multiplication Rule:

$P(\text{obtaining a multiple of 3}) =$

$P(\text{obtaining a number greater than 4}) =$

$P(\text{obtaining a multiple of 3 and a number greater than 4})$

$$= \boxed{} \times \boxed{}$$
$$= \boxed{}$$

Listing all possible outcomes:

Outcomes

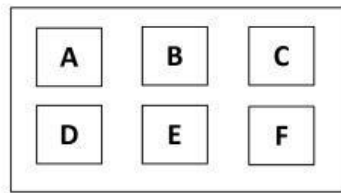
=

$n(S) =$

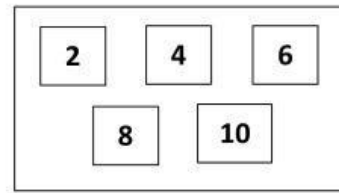
$P(\text{obtaining a multiple of 3 and a number greater than 4})$

$$= \boxed{}$$

(c) Diagram below shows two boxes *A* and *B*.



Box *A*



Box *B*

A card is chosen from each box. Find the probability that a consonant and a multiple of 4 is chosen.

Multiplication Rule:

Listing all possible outcomes:

$P(\text{obtaining a consonant}) =$

Outcomes

=

$P(\text{obtaining a multiple of 4}) =$

$P(\text{obtaining a consonant and a multiple of 4})$

$n(S) =$

= ×

$P(\text{obtaining a consonant and a multiple of 4})$

=

=

4. Complete the following tree diagram.

A bag contains 4 red marbles and 6 blue marbles. Two marbles are selected successively without replacement from the bag.

