1. a.

The outcome space of Super Lotto 638 has totally outcomes. The winning set is the only one outcome in the outcome space.

Thus, the probability of first prize is:

Assumption:

* iid assumption in each term: Every winning set has identical probability to be chosen independently each term.
* iid assumption in choosing a number each a number: Every number has the identical probability to be chosen independently each time.

1. b.

* There are different outcomes in the first set.
* Five of the six numbers have to be the winning numbers, and the rest of the number is not the winning numbers. Thus, there are sets.
* The second number must be the winning number.

The probability to win the third prized is:

1. c.

* Event A and event B are independent.
* Event B and event C are independent.
* Event C and event D are mutually exclusive.

1. d.

* P(A):
* P(A|B):
* P(A|C): =0.010312
* P(C or D):
* P(C|D):

2.

3.