Lotto or Life: What are the Chances ?

Activity 1/ Part B

Next, we look at a lottery game which is slightly more complicated than Pick 3. This time we will examine the theoretical probability of winning a multiple digit game such as "Lotto". If we chose a certain series of 7 numbers, each less than 40 as is allowed in "Lotto", what would be our chances of winning?

If we calculate,

$$W = a * b * c * d * e * f * g$$

where,

W = The probability of winning the "Lotto"
a = The probability of 'getting' the first number
b = The probability of 'getting' the second number
c = The probability of 'getting' the third number
d = The probability of 'getting' the fourth number
e = The probability of 'getting' the fifth number
f = The probability of 'getting' the sixth number
g = The probability of 'getting' the seventh number

If we know that each number is one of forty and a given number cannot be called twice, we substitute

W=a * b * c * d * e * f * g
W=(1/40) (1/39) (1/38) (1/37) (1/36) (1/35) (1/34)

W= 1/93,963,542,400

an extremely small number!