Keno Probability

A popular game of chance in Maryland is KENO. KENO is played with 80 numbers from which 20 are selected for each game. The player can choose how many numbers (spots) from 1 to 10 are played on each game. The player marks the slip, pays the KENO agent and then watches the KENO monitor for the winning numbers for that game. If the player matches some or all of the winning numbers, the player wins money based on the payout chart. On the back of the play slip is the KENO Payout Chart. Determine the probability for some of the payouts from the chart. Some of the problems are started to help you understand the pattern. When necessary, probabilities should be rounded to the nearest ten-thousandths.

a) 1 Spot Game    Match 1 wins   $2

\[ \frac{\binom{20}{D} \times \binom{80-D}{0}}{\binom{80}{10}} \]

Probability of winning some money is ______________________

b) 2 Spot Game    Match 2 wins   $10

\[ \frac{\binom{20}{2} \times \binom{60}{2}}{\binom{80}{10}} \]

Probability of winning some money is ______________________

c) 3 Spot Game    Match 3 wins   $25

\[ \frac{\binom{20}{3} \times \binom{60}{3}}{\binom{80}{10}} \]

\[ \frac{\binom{20}{2} \times \binom{60}{2}}{\binom{80}{10}} \]

Probability of winning some money is ______________________
d) 4 Spot Game
   Match 4 wins $50
   Match 3 wins $5
   Match 2 wins $1

\[ \frac{C(20, \_ ) \times C(60, \_ )}{C(80, \_ )} \]

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Probability of winning some money is ________________

Here are some other payouts from KENO for you to set-up and solve. As you write each number in the fraction, think about what that number represents in the probability.

e) 6 Spot Game
   Match 6 wins $1000
   Match 5 wins $50
   Match 4 wins $5
   Match 3 wins $1

Probability of winning some money is ________________

f) 10 Spot Game
   Match 10 wins $100,000
   Match 9 wins $4,000
   Match 8 wins $400
   Match 7 wins $50
   Match 6 wins $10
   Match 5 wins $2
   Match 0 wins $4

Probability of winning some money is ________________