

Name: _____

You select eight cards in sequence from a standard deck, replacing the selected card and shuffling after each selection. What is the probability that you selected three or four hearts?

Binomial experiment

$$n=8$$

$$p = P(\text{a card is a heart}) = \frac{1}{4} = 0.25$$

$$q = 1 - p = 0.75$$

x = # of hearts selected

$$\begin{aligned} P(x=3 \text{ or } 4) &= P(x=3) + P(x=4) \\ &= 8C3 (0.25)^3 (0.75)^5 \\ &\quad + 8C4 (0.25)^4 (0.75)^4 \\ &\approx 0.29 \end{aligned}$$