

3. To increase morale among employees, a company began a program in which one employee is randomly selected each week to receive a gift card. Each of the company’s 200 employees is equally likely to be selected each week, and the same employee could be selected more than once. Each week’s selection is independent from every other week.
- (a) Consider the probability that a particular employee receives at least one gift card in a 52-week year.
- (i) Define the random variable of interest and state how the random variable is distributed.
- (ii) Determine the probability that a particular employee receives at least one gift card in a 52-week year. Show your work.
- GO ON TO THE NEXT PAGE.

Use a pencil or pen with black or dark blue ink only. Do NOT write your name. Do NOT write outside the box.

- (b) Calculate and interpret the expected value for the number of gift cards a particular employee will receive in a 52-week year. Show your work.
- (c) Suppose that Agatha, an employee at the company, never receives a gift card for an entire 52-week year. Based on her experience, does Agatha have a strong argument that the selection process was not truly random? Explain your answer.
- GO ON TO THE NEXT PAGE.

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