The college is planning to add a food vendor in the student union and would like to know what type of food service the students would prefer. A sample of 120 students is obtained and each student is asked to select his/her preference from a coffee shop, a pizza place, or a hamburger grill. The resulting frequency data are shown in the table below.

|  |  |  |
| --- | --- | --- |
| **Coffee** | **Pizza** | **Hamburger** |
| 53 | 37 | 30 |

(a) Do the data indicate any significant preferences among the three types of food service? Test at the .05 level of significance. 

1

yes, there are significant preferences no, there are no significant preferences

(b) A similar survey of the student population 10 years ago found that a coffee shop was preferred by 20% of the students, and pizza and hamburger were each preferred by 40% of the students. Find the expected frequencies for the chi-square test.

|  |  |
| --- | --- |
| Coffee | 2 |
| Pizza | 3 |
| Hamburger | 4 |

Do the data indicate a significant change in preferences during the past 10 years? 

5

yes, there has been a significant change in preferences no, there hasn't been any change in the population proportions