

## VENN DIAGRAMS

- 1a. A survey of 70 high school students revealed that 35 like folk music, 15 like classical music, and 5 like both. How many of the students surveyed do not like either folk or classical music?

2a. Out of 35 students in a finite math class, 22 are male, 19 are business majors, 27 are freshmen, 14 are male business students, 17 are male freshmen, 15 are freshmen business majors, and 11 are male freshmen business majors. How many upperclass women non-business majors are in the class? How many women business majors are in the class?

3a. A survey of 100 college faculty who exercise regularly found that 45 jog, 30 swim, 20 cycle, 6 jog and swim. 1 jogs and cycles, 5 swim and cycle, and 1 does all three. How many of the faculty members do not do any of these three activities? How many just jog?

4a. After a genetics experiment, the number of pea plants having certain characteristics were tallied, with the results as follows.

- 22 were tall
- 25 produce green peas
- 39 produce smooth peas
- 9 are tall and produce green peas
- 17 are tall and produce smooth peas.
- 20 produce green peas and smooth peas
- 6 have all three characteristics
- 4 have none of the characteristics.

- (a) Find the total number of plants counted.
- (b) How many plants are tall, but produce peas which are neither smooth nor green?
- (c) How many plants are not tall, but produce peas which are smooth and green?

5a. A survey of 80 business executives found the following recommendations on college majors for business students.

- 36 recommended liberal arts courses
- 32 recommended business courses.
- 32 recommended technical courses.
- 16 recommended technical and business courses.
- 16 recommended business and liberal arts courses.
- 14 recommended liberal arts and technical courses
- 6 recommended all three.

- (a) How many executives recommend liberal arts, but neither of the other two?
- (b) How many recommend none of these three types of courses?

6a. The musical tastes of a number of college students were surveyed, and it was found that:

- 22 like Johnny Cash
- 25 like Elvis Presley
- 39 like The Carpenters
- 9 like Johnny Cash and Elvis Presley
- 17 like Johnny Cash and The Carpenters
- 20 like Elvis Presley and The Carpenters
- 6 like all three
- 4 like none of these performers

- (a) How many students were surveyed?
- (b) How many like exactly two of these three performers?
- (c) How many like Johnny Cash only?
- (d) How many do not like Johnny Cash?

7a. The following data shows the preferences of 110 people at a wine-tasting party.

- 99 like Spanada
- 96 like Ripple
- 99 like Boone's Fair Apple Wine
- 95 like Spanada and Ripple
- 94 like Ripple and Boone's
- 96 like Spanada and Boone's
- 93 like all three.

How many of the people:

- (a) like none of the three beverages?
- (b) like Spanada, but not Ripple?
- (c) do not like Boone's Farm Apple Wine?
- (d) like only Ripple?
- (e) like exactly two wines?

8a. Routine physical examinations of 500 pre-school children revealed that 40 had dental problems, 45 had vision problems, 55 had hearing problems, 15 had dental and vision problems, 15 had dental and hearing problems, 20 had vision and hearing problems, and 10 had dental, vision, and hearing problems. How many of the children had none of the three kinds of problems?