1.3 – Venn Diagram Questions

1. In a certain group of 100 customers at Joe's Pizza Place, 60 customers ordered cheese and pepperoni on their pizza. Altogether 80 customers ordered a pizza with cheese on it, and 72 customers ordered pizza with pepperoni on it.
 (a) How many customers ordered cheese on their pizza, but no pepperoni?
 (b) How many customers ordered pepperoni on their pizza, but no cheese?
 (c) How many customers in the group of 100 customers ordered neither cheese nor pepperoni on their pizza?

2. At a pet shop, 150 customers were asked what type of pet they had. Fifty-one people in the group had a dog, 48 people had a cat, and 29 people had both a dog and a cat.
   (a) How many of these people had only a dog?
   (b) How many of these people did not have a cat?
   (c) How many of these people had neither a dog nor a cat?
   (d) How many of these people had a dog or a cat?

3. In a Las Vegas casino, a survey of 125 gamblers was taken and the following data were collected: 71 gamblers played roulette, 72 gamblers played poker, and 80 gamblers played blackjack, while 33 gamblers played roulette and poker, 42 gamblers played roulette and blackjack, and 47 gamblers played poker and blackjack. Eleven gamblers played all three games.
   (a) How many of these gamblers played only blackjack?
   (b) How many of these gamblers played poker and blackjack, but not roulette?
   (c) How many gamblers in this group did not play any of these three games?
   (d) How many gamblers did not play poker?

4. Seventy-five students participated in a survey at a local college and the following data were collected: there were 27 students taking accounting, 26 taking psychology, and 41 students taking statistics. Twelve students were taking accounting and psychology, 13 students were taking accounting and statistics, and 17 were taking psychology and statistics. Five students were taking all three courses.
   (a) How many students were taking only psychology?
   (b) How many students in the group were not taking any of the three subjects?
   (c) How many students were taking accounting and statistics, but not psychology?
   (d) How many students were taking just one of these subjects?

5. In a recent survey of 300 people regarding television programming, the following information was gathered: 160 people watched ABC, 150 people watched CBS, and 150 people watched NBC, while 90 people watched both ABC and CBS, 70 people watched CBS and NBC, and 100 people watched ABC and NBC. Forty people watched all three networks.
   (a) How many people watched ABC or NBC?
   (b) How many people watched only one of the networks?
   (c) How many people did not watch any of the networks?
   (d) How many people did not watch NBC?

6. An automobile dealership completed an inventory of new cars on its lot. The inventory showed that there are 30 full-size, four-door, automatic-transmission cars on the premises. Of the 60 automatic transmission cars, 50 are classified as full-size, while 35 are four-door. Also, of the 70 four-door cars on the premises, 55 are classified as full-size. There are 100 full-size new cars on its lot. The inventory also revealed that the dealership has 25 compact, two-door, standard-transmission cars on the premises.
   (a) How many of the automatic-transmission cars are not full-size?
   (b) How many of the four-door cars with automatic transmission are not full-size?
   (c) How many full-size cars have automatics transmission, but are not the four-door type?

7. In a typical year, 20% of the days have a high temperature >22°C. On 40% of these days, there is no rain. In the rest of the year, when the high temperature <= 22°C, 70% of the days have no rain. What percentage of the days in the year have rain and a high temperature <= 22°C?

8. Of the Students taking 2A Math:
   o 22% have a math average >= 80%
   o 24% have a STAT 230 mark >= 80%
   o 20% have an overall average >= 80%
   o 14% have both a math average and STAT 230 >= 80%
   o 13% have both an overall average and STAT 230 >= 80%
   o 10% have all 3 averages >= 80%
   o 67% have none of these 3 averages >= 80%
What is the probability a randomly chosen math student finishing 2A has a math and overall averages both >= 80% and STAT 230 < 80%?
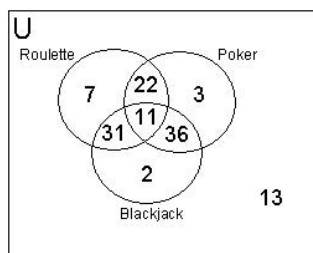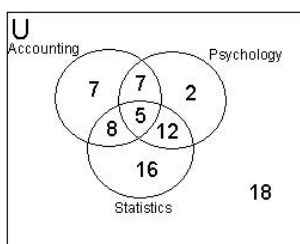
Answers
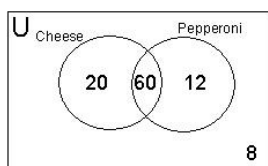
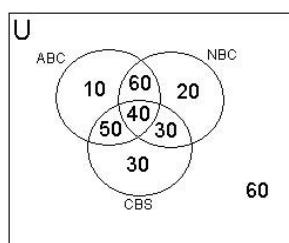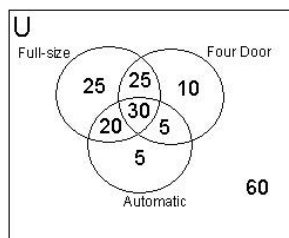1.
a. 20 b. 12 c. 8
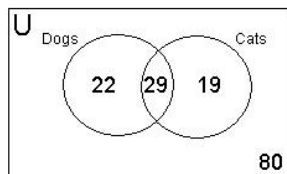
2.
a. 22 b. 102 c. 80 d. 70

3.
a. 2 b. 36 c. 13 d. 53

4.
a. 2 b. 18 c. 8 d. 25

5.
a. 210 b. 60 c. 60 d. 150

6.
a. 10 b. 5 c. 20 d. 145.

7. 24
8. 0.06