Venn Diagram Problems [DCGS]

1. In a class of 50 students, 18 attend choir, 26 attend jazz band, and 2 attend both choir and jazz band. How many students in the class are not enrolled in either choir or jazz band?

2. In a school of 320 students, 85 students are in the band, 200 students are on sports teams, and 60 students participate in both activities. How many students are involved in either the band or sports?

3. A veterinarian surveys 26 of his patrons. He discovers that 14 have dogs, 10 have cats, and 5 have fish. Four have dogs and cats, 3 have dogs and fish, and one has a cat and fish. If no one has all three kinds of pets, how many patrons have none of these pets?

4. Information was collected about 100 people.

   - 28 people in the group wear glasses
   - 24 have blue eyes
   - 33 have blonde hair
   - 17 have glasses and blonde hair
   - 10 have blue eyes and blonde hair
   - 12 wear glasses and have blue eyes
   - 7 wear glasses, have blue eyes and blonde hair.

   A person is selected at random. Find the probability that this person

   (i) wears glasses and has blonde hair
   (ii) has blonde hair but does not wear glasses
   (iii) does not have any of the attributes
   (iv) wears glasses, given that they have blue eyes
   (v) has blue eyes, given that they have blonde hair.

5. 85 students were asked which subjects they preferred.

   - 28 liked English
   - 45 liked Maths
   - 37 liked Science
   - 17 liked both Science and English
   - 13 liked both Maths and English
   - 21 liked both Maths and Science
   - 12 liked all three subjects.

   Find the probability that a randomly selected student in the group

   (i) likes both Maths and Science
   (ii) likes either Maths or English
   (iv) does not like Science but does like English
   (v) likes Maths, or doesn't like English
   (vi) likes Science, given that they like English
   (vii) likes English, given that they like Science
   (viii) likes English, given that they don't like Science.