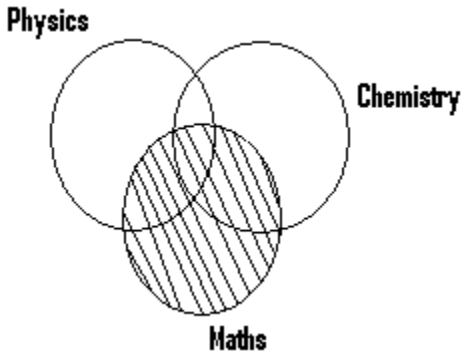
CHAPTER ONE

SET – PART TWO

THREE SET PROBLEM

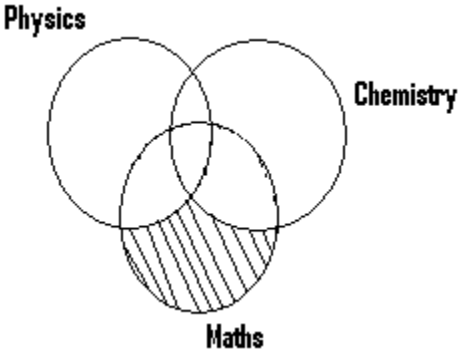
Note the following:

1.



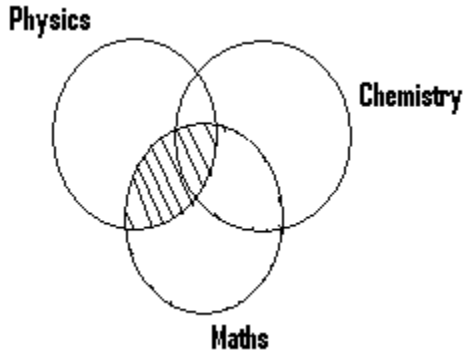
The shaded portion represents those who study maths.

2.



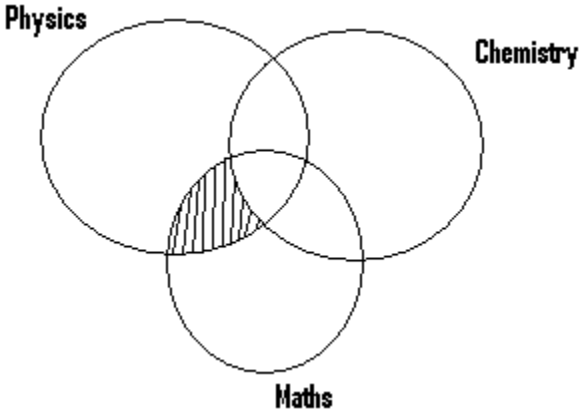
The shaded portion represents those who study only maths.

3.



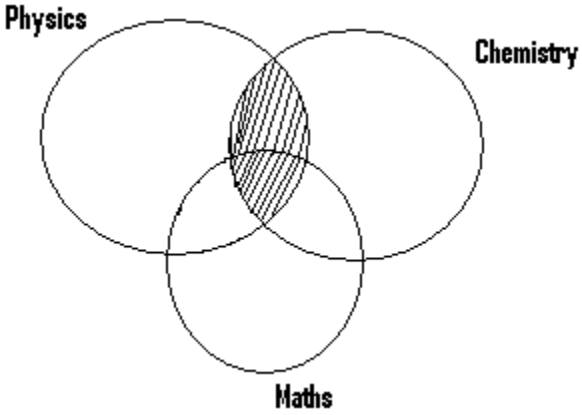
Shaded portion represents those who study physics and maths.

4.



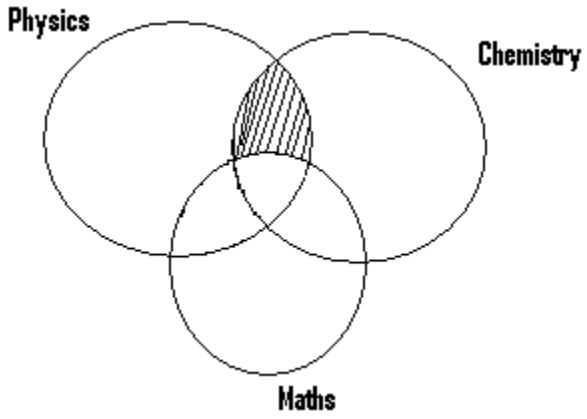
The shaded portion represents those who study only physics and math (or physics and maths only).

5



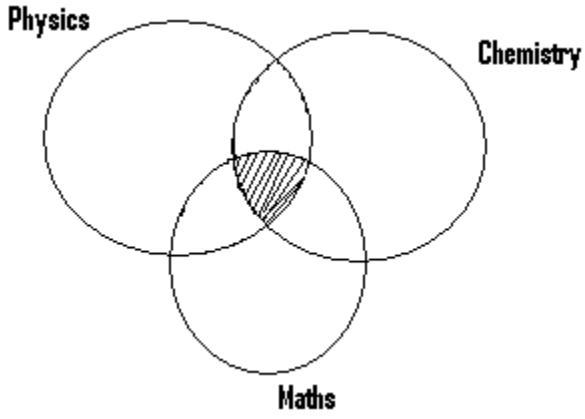
The shaded portion represents those who study physics and chemistry.

6



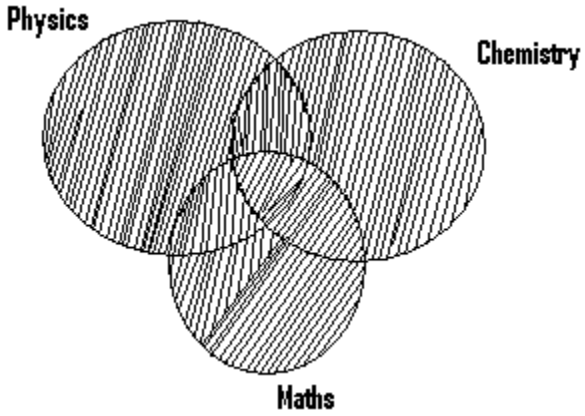
The shaded portion represents those who study physics and chemistry only i.e only physics and Chemistry.

7



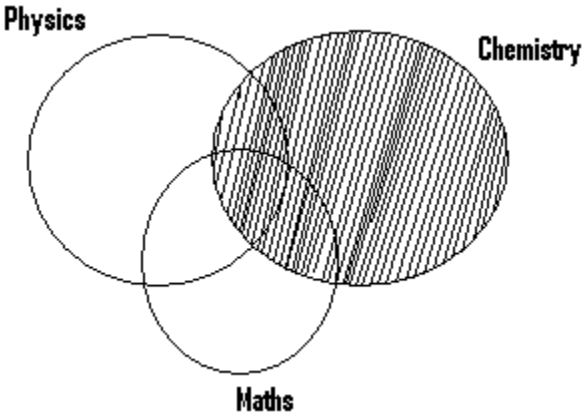
The shaded portion represents those who study physics, chemistry and maths (ie those who study all the three subjects).

8



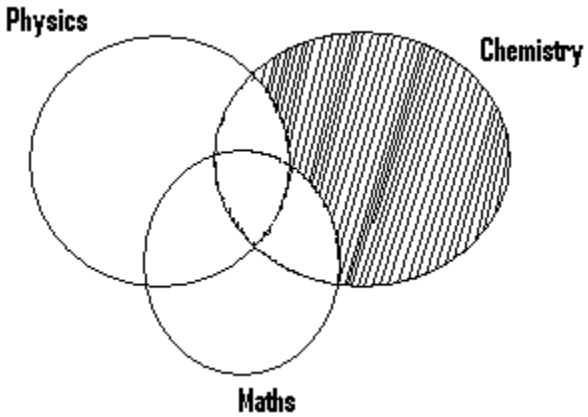
The shaded portion represents those who study physics or chemistry or maths.

9



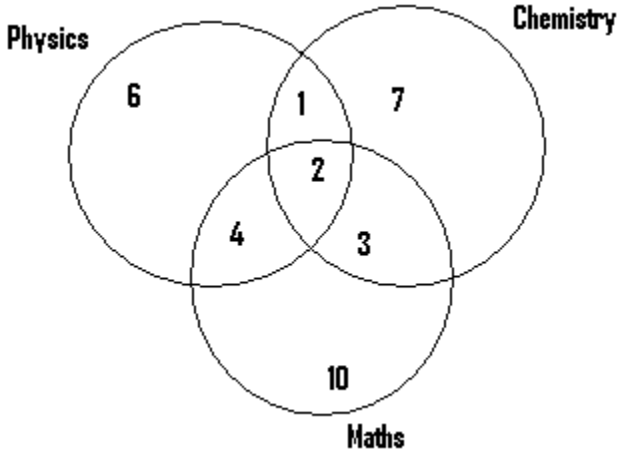
The shaded portion represents those who study chemistry.

10



The shaded portion represents those study chemistry only or only chemistry.

Examples



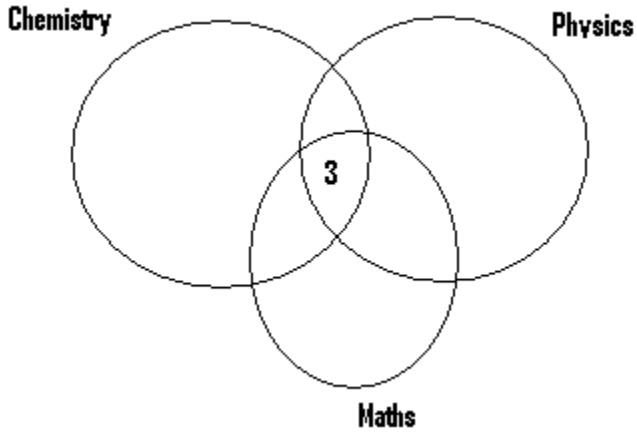
1. n(those whose study physics)
   = 6 + 4 + 2 + 1 = 13.
2. n(those whose study only physics) = 6.
3. n(those who study only physics and chemistry) = 1.
4. n(those who study physics and chemistry
   = 1 + 2 = 3.
5. n(those who study maths and physics)
   = 4 + 2 = 6.
6. n(those who study maths and physics only) = 4.
7. n(those who study all the three subjects) = 2.
8. n(those who study study only chemistry) = 7.
9. n(those who study chemistry).
   = 1 + 2 + 3 + 7 = 13.
10. n(those who study only one subject
    = 6 + 7 + 10 = 23.
11. n(those who study only two subjects
    = 1 + 3 + 4 = 8.
12. n(those who study three subjects) = 2.
13. n(those who study physics or chemistry or maths = 6 + 1 + 2 + 4 + 10 + 3 + 7 = 33.

Q1. In a sixth form, 12 students study maths, 16 study chemistry and 21 study physics.
Only three study all the three subjects. Five students study maths and chemistry.
Eight study maths and physics and twelve study physics and chemistry.
Find the number of those who study.

i. Chemistry only.
ii. Chemistry and maths only.
iii. Physics only.
iv. Physics and maths.
v. Physics and maths only.
vi. Physics and chemistry only.
vii. Physics only.

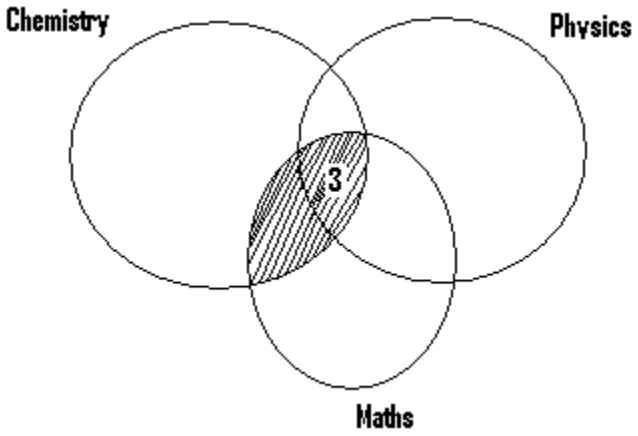
N/B: for better understanding, the steps to be used in solving questions, will be increased, but in solving questions, you must use only a few steps as possible.

Soln.

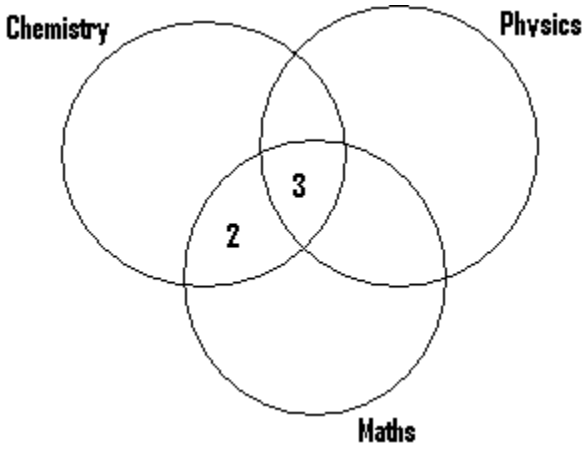


The 3 people who study all the three subjects must be represented as indicated.

- Also we are told that 5 students study maths and chemistry.



- This implies that the number of those to be found within the shaded portion must be 5.
- Since 3 out of this 5 has been indicated in one part of the shaded portion, then the remaining 2 must occupy the other portion as shown next.



Also we are told that 8 study student maths and physics.