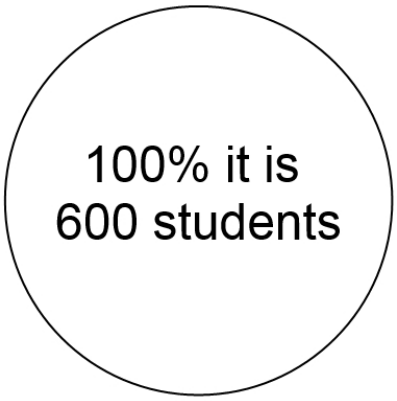
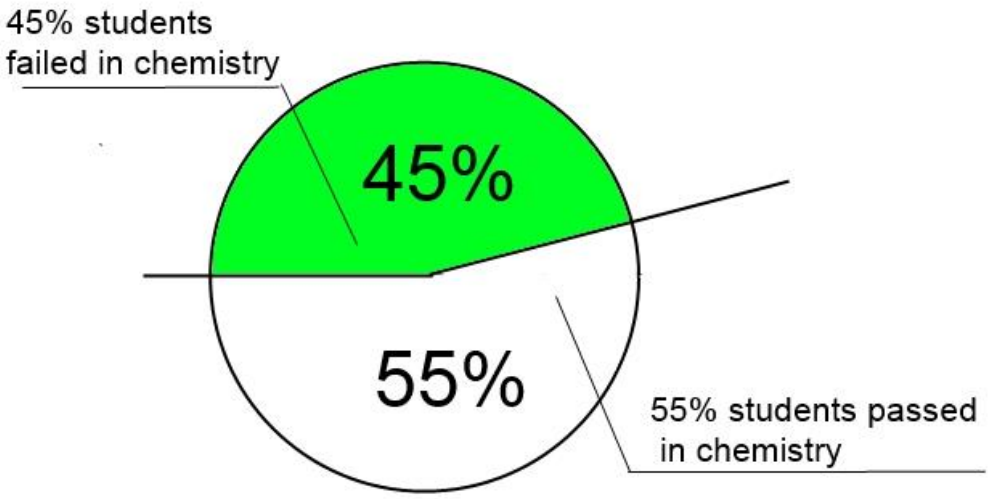
Answer on Question#38782 - Math - Other

600 students took test on physics and chemistry. 35% students failed in physics and 45% students failed in chemistry and 40% of those who passed in chemistry also in physics, then how many students failed in both.

1.



2.



35% students failed in physics, that is why 100%-35%=65% students passed in physics.

600 students – 100%

X students – 55 %

$$X = \frac{600\ students * 55\%}{100\%} = 330\ passed\ in\ chemistry$$

3. We know that 40% of those who passed in chemistry (330 students) also in physics

330 students – 100%

Y students – 40 %

$$Y = \frac{330\ students * 40\%}{100\%} = 132\ passed\ in\ chemistry\ \ also\ in\ physics$$

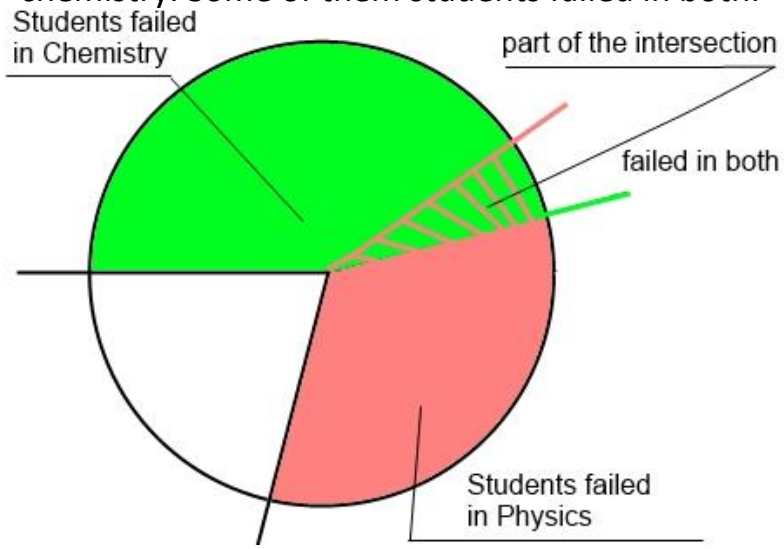
4. That is why 132 students passed in both.

600 students – 100%

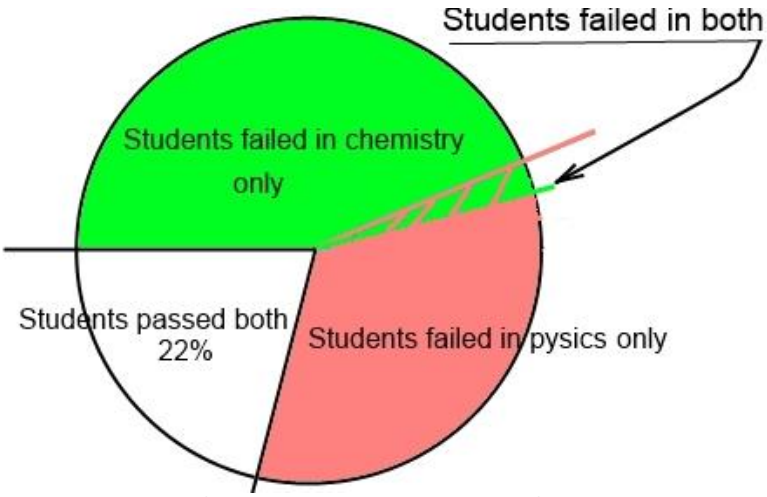
132 students – d %

$$d = \frac{132\ students * \ 100\%}{600\ students} = 22\%\ passed\ in\ both$$

5. We know that 35% students failed in physics and 45% students failed in chemistry. Some of them students failed in both.



Let's look at the green and white parts of next picture:

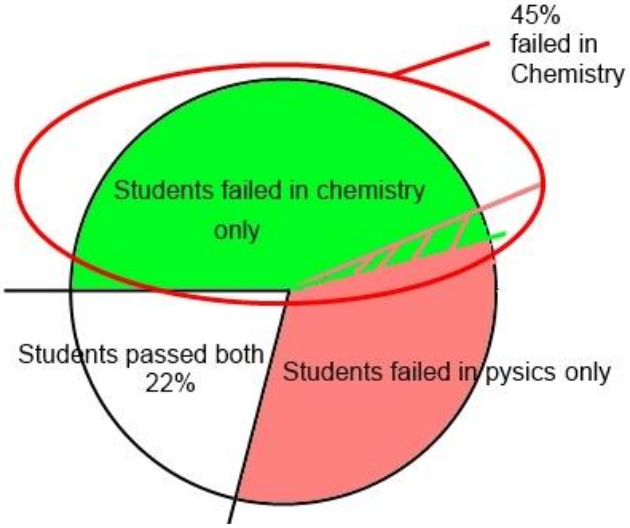


Green part without intersection + white part =

there are students who passed in Physics

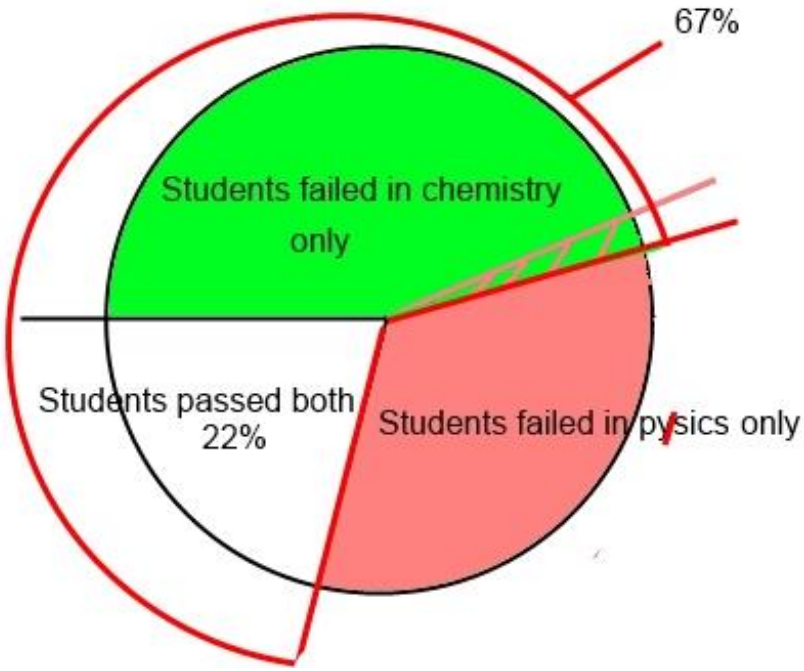
Pink part without intersection + white part =

there are students who passed in Chemistry



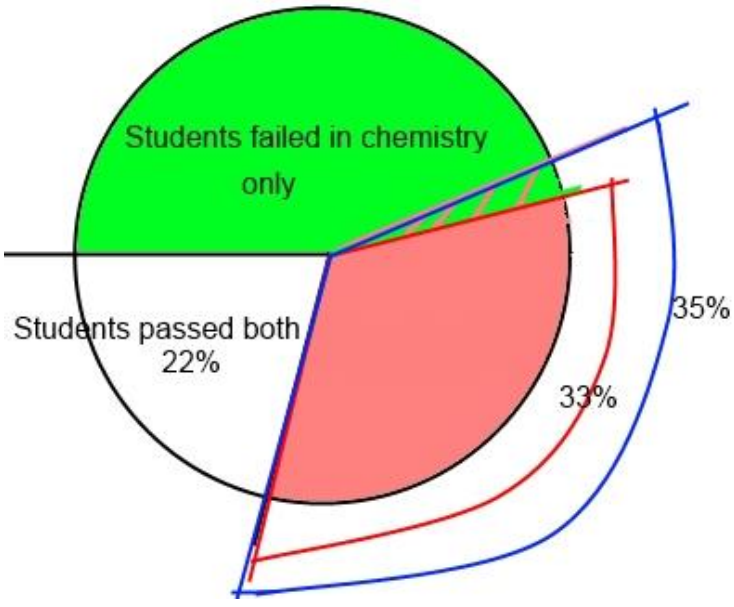
6. Let's find pink part without intersection:

Green part with intersection + white part = 45% + 22% = 67 % - they passed in Physics and some of them failed both



And pink part without intersection is 100%-67%=33%

7. Pink part without intersection is 33% and pink part with intersection is 35%:



35%-33%=2%

Answer: 2% students failed in both

$$\frac{600\ students * 2\%}{100\%} = 12\ students\ failed\ in\ both$$