**1. A leak in the bottom of a tank can empty the full tank in 6 hours. An inlet pipe fills**

**water at the rate of 4 litres per minute. When the tank is full, the inlet is opened,**

**and due to the leak, the tank is empty in 8 hours. Find the capacity of the tank.**

Ans: Part emptied by the leak in 1 hr=61​

Net part emptied by the leak and the inlet pipe in 1 hr=81​

Part fill by the inlet pipe in 1 hr=61​−81​=241​

i.e inlet pipe fills the tank in 24 hr=24×60=1440min.

According to the question inlet pipe fills water at the rate of 4 liters per minute.

Hence, water fills in 1440 min=1440×4=**5760L**

**2. Of the 1000 inhabitants in a town, 60% are males, 20% are literate. If 25% of all the**

**inhabitants 25%, are literate, then what percentage of females are literate?**

Ans: Given:

Total inhabitants in a town = 1000

Formula Used: Required Percentage = Number of literate female/ Total female × 100

Solution: Number of male in a town = 60 × 1000/100 = 600

Number of females in a town = 1000 − 600 = 400

Total number of literate people = 25 × 1000/100 = 250

Number of literate males = 20 × 600/100 = 120

So the number of literate females are = 250 − 120 = 130

Percent of literate female in a town = 130 × 100/400 = 32.5

∴ Required Percentage is **32.5%.**

**3. In an examination 80% candidates passed in English and 85% candidates passed**

**in Mathematics. If 73% of candidates passed in both these subjects, what percent**

**of candidates failed in both the subjects?**

Ans: Students passed in English = 80%  
Students passed in Math's = 85%  
Students passed in both subjects = 73%  
Then, number of students passed in at least one subject  
= (80+85)-73  
= 92%. [The percentage of students passed in English and Maths individually, have already included the percentage of students passed in both subjects. So, We are subtracting percentage of students who have passed in both subjects to find out percentage of students at least passed in one subject.]  
  
Thus, students failed in both subjects = 100-92 = **8%.**

**4. The monthly income of a person is 13,500, and his monthly expenditure is 9,000.**

**Next year's income increased by 14%, and his expenditure increased by 7%. Find**

**percent increase in his savings is?**

Ans: Let's solve the problem step by step:

Given:

Monthly income = $13,500

Monthly expenditure = $9,000

Next year's income increased by 14%

Next year's expenditure increased by 7%

To find the percentage increase in his savings, we need to calculate the difference between the savings of the current year and the savings of the next year, and then express it as a percentage of the savings of the current year.

Savings = Income - Expenditure

Current year's savings = $13,500 - $9,000 = $4,500

Next year's income = Current year's income + (14% of current year's income)

= $13,500 + (0.14 \* $13,500)

= $13,500 + $1,890

= $15,390

Next year's expenditure = Current year's expenditure + (7% of current year's expenditure)

= $9,000 + (0.07 \* $9,000)

= $9,000 + $630

= $9,630

Next year's savings = Next year's income - Next year's expenditure

= $15,390 - $9,630

= $5,760

Difference in savings = Next year's savings - Current year's savings

= $5,760 - $4,500

= $1,260

Percentage increase in savings = (Difference in savings / Current year's savings) \* 100

= ($1,260 / $4,500) \* 100

= 28%

Therefore, the percent increase in his savings is **28%.**

**5. 49 pumps can empty a tank in 10 days, working 10 hours a day. if 70 pumps are**

**used for 7 hours each day then in how many days the tank can be emptied?**

Ans: Let's solve the problem step by step:

Given:

49 pumps can empty a tank in 10 days, working 10 hours a day.

Now, 70 pumps are used for 7 hours each day.

We can start by calculating the total work done by the 49 pumps in 10 days.

Total work done = Number of pumps \* Hours per day \* Number of days

= 49 \* 10 \* 10

= 4900 pump-hours

Now, we need to determine the number of days it would take for 70 pumps, working 7 hours each day, to complete the same amount of work.

Let's assume the number of days required is D.

Total work done = Number of pumps \* Hours per day \* Number of days

= 70 \* 7 \* D

= 490D

Since the total work done should be the same, we can set up the equation:

4900 = 490D

Simplifying the equation, we find:

D = 4900 / 490

D = 10

Therefore, with 70 pumps working 7 hours each day, the tank can be emptied in **10 days.**

Please note that in this solution, we assumed that the rate of pumping remains constant and that all pumps are equally efficient.