1 Find the ratio of the least and the greatest four digit numbers which are exactly divisible by 34.

Ratio of two numbers a and b : $a:b$, $\dfrac{a}{b}$

For example   Ratio of 15 and 10 = $15:10 = \dfrac{15}{10} = \dfrac{3}{2}$

$= 3:2$

2 The price of sugar being raised 50%, by how much percent must a man reduce his consumption of that article so as not to increase his expenditure ?

3 90% of the boys of a school pass in English and 85% in Arithmetic, 150 boys pass in both the subjects and no boy fails in both. How many boys are there in the school?

4 Find the digit values of x and y in order that the number 5x16y5 may be divisible by 275.
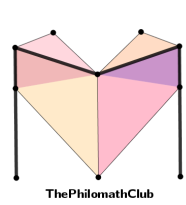
① Find the ratio of the least and the greatest four digit numbers which are exactly divisible by 34.

Ans :— Smallest 4 digit number = 1000

$$1000 = 29 \times 34 + 14$$

so the least four digit number divisible by 34 =

$$1000 - 14 + 34 = 30 \times 34 = 1020$$

largest 4 digit number = 9999
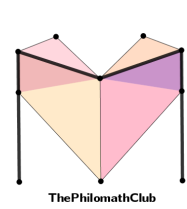
$$9999 = 294 \times 34 + 3$$

so the largest 4 digit divisible by 34 = 9999 − 3

$$= 9996 = 34 \times 294$$

So the ratio = 1020 : 9996 = 30 × 34 : 294 × 34

$$= 30 : 294$$

$$= 5 : 49$$

②

The price of sugar being raised 50%, by how much percent must a man reduce his consumption of that article so as not to increase his expenditure ?

Answer : $33\frac{1}{3}\% = 33.333\ldots\% = 33.\overline{3}\%$

Solution :- Suppose the price of sugar $= 100$

when the price is being raised by $50\% = 100 + 50 = 150$

$$\frac{150 - 100}{150}\% = \frac{50}{150}\% = 33 + \frac{1}{3}\%$$

Original solution :- Let price of sugar be X. And the monthly consumption of sugar be y.
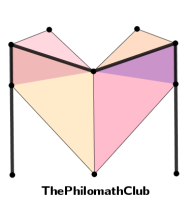
Since, the price of sugar is raised by 50%.

New price of sugar is $\frac{50}{100} \times X + X = \frac{3X}{2}$

The man buys y amount of sugar of price X,

Total money $= Xy$

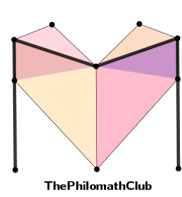New price of sugar is $\frac{3X}{2}$, So new amount of sugar (monthly) $= \frac{2}{3}y$.

Originally, the consumption was Y.

Now, he buys $\frac{2}{3}Y$ amount of sugar

So the reduction $(\%) = \dfrac{Y - \frac{2}{3}Y}{Y} \times 100\% = \dfrac{\frac{1}{3}Y}{Y} \times 100\% = \frac{1}{3} \% \times 100$

$= \dfrac{100}{3} = 33.\overline{3}\%$

reduction $\% = \dfrac{\text{original price} - \text{new price}}{\text{original price}}$

③ 90% of the boys of a school pass in English and 85% in Arithmetic, 150 boys pass in both the subjects and no boy fails in both. How many boys are there in the school?

let the total number of boys be x.

let E denote the no of boys who passed in English

let A denote the no of boy who passed in arithmetic
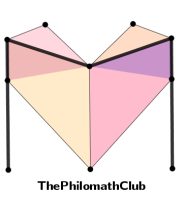
let M denote the no of boys who passed in both
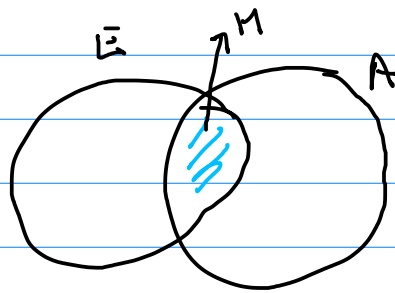
So basically $x = E + A - M$

$$= \frac{90 \cdot x}{100} + \frac{85}{100} x - 150$$

$100 x = 90x + 85x - 150 \, 0 \, 0$

$\quad\quad = 175x - 150$

$15000 = 75x$

$\Rightarrow x = 200$

Find the digit values of x and y in order that the number 5x16y5 may be divisible by 275.

(4)

Solution :— $275 = 25 \times 11$

Thus $5x16y5$ is divisible by 275

$\Rightarrow$ $5x16y5$ is divisible by both 25 and 11.

but the $5x16y5$ is divisible by 11

if $5+1+y - (x+6+5)$ is divisible by 11

$= y - x - 5$ is divisible by 11

Test divisibility of 25 .

$5x16y5 = 5x1600 + y5$

So $25 \mid y5$ $\Rightarrow$ $y = 2, 7$

Now we have $y - x - 5$ divisible by 11

If $y = 2$, then $x = 8$ $\Rightarrow$ $581625 \div 275$
$= 2115$

if $y = 7$, then $x = 2$ $\Rightarrow$ $521675 \div 275$
$= 1897$