

Date ___/___/___

A survey was conducted on 2000 students from various colleges. It was found that 1200 from them on an avg. spent 50 hours monthly for Instagram activities. If the avg. time spent by entire group is 54 hours, find the avg. time spent by remaining students.

Solⁿ:

	Group 1	Group 2	Total
obs.	1200 (n_1)	800 (n_2)	2000
monthly Avg. time spent on insta.	50 (\bar{x}_1)	$\bar{x}_2 = ?$	$\bar{x} = 54$

We know that

$$\bar{x} = \frac{n_1 \bar{x}_1 + n_2 \bar{x}_2}{n_1 + n_2}$$

$$\therefore 54 = \frac{60000 + 800 \bar{x}_2}{2000}$$

$$\therefore 54 = \frac{100 (600 + 8 \bar{x}_2)}{100 (20)}$$

$$\therefore 1080 = 600 + 8 \bar{x}_2$$

$$\therefore 480 = 8 \bar{x}_2$$

$$\therefore 60 = \bar{x}_2$$

i.e. $\bar{x}_2 = 60$ hours

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The avg. attendance of boys is 40% & the avg. attendance of girls in the class is 70%. The avg. attendance of the whole class is 52%. Then find proportion of boys & girls in the class. If there are 85 students in a class then find the number of girls in the class.

Solⁿ: Let $\bar{x}_1 = 40$ (Boys) $\bar{x}_2 = 70$ (Girls)

Let there be n_1 boys & n_2 girls.
Given that $\bar{x} = 52$

We know that

$$\bar{x} = \frac{n_1 \bar{x}_1 + n_2 \bar{x}_2}{n_1 + n_2}$$

$$\therefore 52 = \frac{40n_1 + 70n_2}{n_1 + n_2}$$

$$\therefore 52n_1 + 52n_2 = 40n_1 + 70n_2$$

$$\therefore 12n_1 = 18n_2$$

$$\therefore \frac{n_1}{n_2} = \frac{18}{12} = \frac{3}{2}$$

\therefore The ratio of boys to girls is 3:2

Suppose number of boys are $3a$

\therefore number of girls are $2a$

Given that $3a + 2a = 85$

$$\therefore a = 17$$

$$\therefore \text{number of girls in the class} = 2 \times 17 = 34$$