# IIT Madras

## ONLINE DEGREE

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Six flat, thick iron sheets each of length, breadth, and thickness as $(x + 4)$, $(x + 3)$, and $x$ respectively are melted to make solid boxes of dimensions $\frac{x}{2}$, $\frac{(2x+6)}{3}$, and $\frac{(x+4)}{5}$. How many solid boxes can be made this way?.

$$6\left[(x+4)(x+3)(x)\right] = n\left(\frac{x}{2}\right)\left(\frac{2x+6}{3}\right)\left(\frac{x+4}{5}\right)$$

$$\Rightarrow \quad 6 = \frac{n \times 2}{2 \times 3 \times 5} \quad \Rightarrow n = 6 \times 3 \times 5$$

$$= \underline{90}$$

There are 6 flat, 6 of them, thick iron sheets each of length, breath and thickness $x + 4, x + 3$ and $x$ respectively and they are melted to make solid boxes of dimensions $\frac{x}{2}, \frac{2x+6}{3}, \frac{x+4}{5}$. How many solid boxes can be made this way? So, basically the volume will have to be equal. So, first we find the volume of our 6 sheets put together that would be $6\left[(x+4) \times (x+3) \times x\right]$ and this would be equal to the volume of the solid boxes.

So, let us say there are $n$ solid boxes and then the volume of each is $\frac{x}{2}, \frac{2x+6}{3}$ and $\frac{x+4}{5}$. So, now this $x$ and this $x$ cancels and this $x + 4$ and this numerator here cancels and $2x + 6$ is $(x + 3) \times 2$ so, this is one time and this is 2 times. So, what we get is $6 = \frac{n \times 2}{2 \times 3 \times 5}$. So, 2 and 2 also cancels. This implies $n = 6 \times 3 \times 5$ and that is 90. So, you get 90 boxes overall.