22. The quadratic equations $x^2-6x+a=0$ and $x^2-cx+6=0$ have one root in common. The other roots of the first and second equations are integers in the ratio 4 : 3. Then the common root is (2008)

1) 1 2) 4 3) 3 4) 2

Ans.

(**4**) Let α and 4β be roots of $x^2-6x+a=0$ and $\alpha, 3\beta$ be the roots of $x^2-cx+6=0$, then

$\alpha+4\beta=6$ and $4\alpha\beta=a$

$\alpha+3\beta=c$ and $3\alpha\beta=6$

we get $\alpha\beta=2 \Rightarrow a=8$

So the first equation is $x^2-6x+8=0 \Rightarrow x=2, 4$

If $\alpha=2$ and $4\beta=4$ then $3\beta=3$

If $\alpha=4$ and $4\beta=2$, then $3\beta=3/2$(non-integer)

$\therefore$ common root is $x=2$