Answer on Question #82493 – Math – Algebra

Question

Three persons enter into a partnership by investing in the ratio of 4:5:8. After one year A invest more 4300 and B withdraws 3200. Now, the ratio of investment changes to 5:4:7. Approximately how much A invested initially.

Solution

Initial total investment(sum of shares):

$S_0 = A + B + C$;
$A = 4x$, $B = 5x$, $C = 8x$.

Total sum of shares in a year:

$S_1 = S_0$,

After redistribution:

$S_1' = A' + B' + C'$;
$A' = 5y = A + 4300$,
$B' = 4y = B - 3200$,
$C' = 7y = C$.

So, we have a system of 4 linear equations for 4 variables:

1) $C = A * 8 / 4$,
2) $C' = A' * 7 / 5$,
3) $C' = C$,
4) $A' = A + 4300$.

From the third equation:

$A * 8 / 4 = A' * 7 / 5 \Rightarrow A' = A * 10 / 7$

Finally, from the fourth equation:

$A * 10 / 7 = A + 4300 \Rightarrow A = 10033.33$

Answer: A = 10033.