20. A positive number $a = [a] + \{a\}$ where $[a]$ is the integer part of a and $\{a\}$ is the fractional part of a.
Given that $x + [y] + \{z\} = 4.2$, $y + [z] + \{x\} = 3.6$, $z + [x] + \{y\} = 2.0$, and $x, y, z > 0$, what is the value of $\{y\}$?

A 0.1 B 0.3 C 0.5 D 0.7 E 0.9

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20. D Adding all three equations: $x + [y] + \{z\} + y + [z] + \{x\} + z + [x] + \{y\} = 4.2 + 3.6 + 2.0 = 9.8$.
Now $[x] + \{x\} = x$, $[y] + \{y\} = y$, $[z] + \{z\} = z$, so $2x + 2y + 2z = 9.8$, that is $x + y + z = 4.9$.
Therefore: $x + y + z - (x + [y] + \{z\}) = 4.9 - 4.2$, that is $\{y\} + [z] = 0.7$. So $[z] = 0$, $\{y\} = 0.7$.
(*It is not necessary to find the values of x, y, z to solve this problem, but their values may be shown to be* 1.9, 2.7, 0.3 *respectively*.)