1. Integrate $f(x, y, z) = x^2 + y + z$ over the pentahedron with vertices $(0, 0, 0)$, $(1, 0, 0)$, $(0, 2, 0)$, $(1, 2, 0)$, $(0, 0, 4)$ and $(1, 0, 4)$.

Solution. We evaluate

$$\int_0^1 \int_0^2 \int_0^{4-2y} x^2 + y + z \, dz \, dy \, dx = \boxed{28/3}.$$
□