

Quiz 25.

Q1. \therefore we need to compute $\text{div}(P, Q, R)$

$$\therefore \text{div}(P, Q, R) = \text{div}(\text{curl}(F))$$

that means F is conservative,

$$\text{so } \text{div}(\text{curl}(F)) = 0$$

Q2. $0 \leq x \leq 1$, $0 \leq y \leq 4$, $0 \leq z \leq 5$,

$$\text{div}(F) = (z, z, z)$$

$$\iint_S F \, ds = \iiint \text{div}(F) \, dx \, dy \, dz$$

$$= \int_0^5 \int_0^4 \int_0^1 (z + z + z) \, dx \, dy \, dz$$

$$= \int_0^5 \int_0^4 6 \, dy \, dz$$

$$= \int_0^5 24 \, dz$$

$$= 120$$

