

## Answer on Question #53691 – Math – Set Theory

### Question

Out of 500 car owners investigated, 400 owned car A and 200 owned car B, 50 owned both A and B. Is this data correct? Explain.

### Solution

We shall use the following inclusion-exclusion formula:

$$\mu(A \cup B) = \mu(A) + \mu(B) - \mu(A \cap B).$$

By conditions of the question,  $\mu(A \cup B) = 500$ ,  $\mu(A) = 400$ ,  $\mu(B) = 200$ ,  $\mu(A \cap B) = 50$ .  
But

$$\mu(A) + \mu(B) - \mu(A \cap B) = 400 + 200 - 50 = 550 \neq 500 = \mu(A \cup B). \text{ This data is incorrect.}$$

**Answer:** incorrect.