

Did I Get This? What do our hypotheses mean in context?

Question 1:

The null hypothesis in this case is $\mu_1 - \mu_2 = 0$.

This claims that pregnancy length IS related to (or associated with) whether or not the woman smokes during pregnancy.

Incorrect. The null hypothesis $\mu_1 - \mu_2 = 0$ claims that the mean pregnancy length of women who smoke is equal to that of women who do not smoke. In other words, the null hypothesis claims that pregnancy length is NOT related to whether or not the woman smokes during pregnancy.

This claims that pregnancy length IS NOT related to (or associated with) whether or not the woman smokes during pregnancy.

Correct. Indeed, the null hypothesis $\mu_1 - \mu_2 = 0$ claims that the mean pregnancy length of women who smoke is equal to that of women who do not smoke. In other words, the null hypothesis claims that pregnancy length is NOT related to whether or not the woman smokes during pregnancy.

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Question 2:

The alternative hypothesis in this case is $\mu_1 - \mu_2 \neq 0$.

This claims that pregnancy length IS related to (or associated with) whether or not the woman smokes during pregnancy.

Correct. Indeed, the alternative hypothesis $\mu_1 - \mu_2 \neq 0$ claims that the mean pregnancy length of women who smoke differs from that of women who do not smoke. In other words, the alternative hypothesis claims that pregnancy length IS related to whether or not the woman smokes during pregnancy.

This claims that pregnancy length IS NOT related to (or associated with) whether or not the woman smokes during pregnancy.

Incorrect. The alternative hypothesis $\mu_1 - \mu_2 \neq 0$ claims that the mean pregnancy length of women who smoke differs from that of women who do not smoke. In other words, the alternative hypothesis claims that pregnancy length IS related to whether or not the woman smokes during pregnancy.