2. What is an appropriate set of hypotheses for this task? What kind of statistical test do you expect to perform? Justify your choices.

An appropriate set of hypothesis for this task is to check if there is a significant difference in the average time taken to name the ink colors. Thus the null and alternative hypotheses are:

H_0: There is no significant difference in the population mean **time taken** to name the ink colors between congruent words and incongruent words.

H_1: There is a significant difference in the population mean **time taken** to name the ink colors between the congruent words and incongruent words

Mathematically, these set of hypotheses can be written as:

H_0: $\_{congruent} - \_{incongruent} = 0$

H_0: $\_{congruent} - \_{incongruent} 6= 0$

Where $\_{congruent}$ is the population mean time taken for congruent words and $\_{incongruent}$ is the population mean time taken for incongruent words.

An appropriate statistical test to perform is the dependent sample T-test. We are using a T test because we are comparing values (**time taken**) between two groups (congruent words and incongruent words).

We're using a dependent sample T test is appropriate because each participant names the ink color for both congruent words and incongruent words which makes the responses dependent (or related) rather than independent.
In order to perform dependent samples T-test, we are making the following assumptions:

1. The measured time taken is in interval or ration scale.
2. The respondents/participants were randomly sampled from the population.
3. Each participant produced repeated or matched measurements.
4. We are assuming that the measurements follow normal distribution.