Controlled variable investigation: Find the mistakes

Education in Chemistry
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A student is investigating how long sugar takes to dissolve in water. They have written up their work, but unfortunately there are a few mistakes.

a) Identify the mistakes in the investigation below and correct them.

b) **Extension:** What else could be added to the method to improve it?

How does changing the type of sugar used affect the time it takes to dissolve?

Independent variable: The time that is taken for all of the sugar to dissolve.

Dependent variable: If we use caster sugar or icing sugar, the type of sugar.

Control variables: The mass of sugar used; the temperature of the water; the amount of water.

Method:

1. Use a spoon to measure out 5 g of the sugar.
2. Use a 100 cm^3 measuring cylinder to measure 20 cm of water. Ensure the water is at exactly 27.00°C.
3. Put the water into a beaker and then add the sugar, stir it until it dissolves.
4. When the sugar is added, start the timer and record the time (m) it takes to dissolve.
5. Repeat with different types of sugar.
6. Repeat each sugar three times to make sure it is a fair test.

Results:

Type of sugar	Time it takes for sugar to dissolve			
	Test 1	Test 2	Test 3	Average
Caster	1m 4s	15s	1m 20s	53s
Icing	23s	31s	42s	32s
Demerara	2m 15s	2m 2s	1m 59s	2m 5s