

SCIENTIFIC METHOD REVIEW

NAME _____ HR _____

HYPOTHESIS - a person's best guess about what will happen in the experiment	SAMPLE SIZE - how many items, organisms, or humans are being tested in the experiment (the more the better!)
CLAIM – a statement of truth about what you learned from doing the experiment	DATA – numbers or information you collect in an experiment
EVIDENCE – data/ findings from an experiment that prove your claim	INDEPENDENT VARIABLE - The variable you are changing/manipulating in the experiment-(the cause)
ARGUMENT - your claim and evidence added together	DEPENDENT VARIABLE - the final result that you measure in the experiment (the effect)
EXPERIMENTAL GROUP - participants who receive the experimental treatment	CONTROLLED VARIABLES - variables that you keep the same to make it a "fair test."
CONTROL GROUP - participants who do not receive any treatment—(everything stays the same for them)	

Two young scientists wondered if heating water allowed it to dissolve more sugar than normal. They followed this procedure -- First they got 3 cups of equal size. All cups had a cube of sugar put into it. All cups had the same amount of water. All cups had different temperatures of water added to the cup. The experimenters used a stopwatch to time how long it took for the sugar cube to dissolve completely. They were careful not to stir any of the cups (which might accidentally help out the dissolving process). The results are summarized in the table below:

	Sugar placed in cup	Temperature of water in Celsius	Time it took to dissolve
Cup 1	1 cube	49 Celsius (the hottest water out of the tap)	12 seconds
Cup 2	1 cube	21 Celsius (water at room temperature)	5 minutes, 2 seconds
Cup 3	1 cube	3 Celsius (water from the refrigerator)	30 minutes

1. What was the scientific question?
2. What is the independent variable?
3. What is the dependent variable?
4. What are the controlled variables? (list at least 3)
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5. How big was the sample size?
6. What claim could the students make when they were done?
7. What is the evidence that proves their claim is correct?
8. What is it called when you make a claim AND prove it with evidence?
9. Which column above shows the DATA that was collected?
10. What might make this experiment better?

EXERCISE EXPERIMENT SCENARIO

50 students in Willtown's 7th grade volunteered to be in an exercise program as part of an experiment. 50 other students agreed to be the control group, so they didn't do anything different than normal. After 3 months, here are the results the researchers collected.

	Workout time per day	Grade point average	Number of RTC visits
Exercising group (Experimental group)	60 minutes	88% -- B+	1
Non exercising group (control group)	0 minutes	72% -- C-	5

1. What might be the **scientific question**?
2. What was the scientist's **hypothesis**?
3. This chart contains _____.
4. What is the **independent variable**?
5. What is the **dependent variable**?
6. What does it mean to be a **control group**?
7. What **CLAIM** could be made based on this experiment?
8. What **EVIDENCE** helps to prove the claim you made?
9. What are some possible **experimental errors** in this study?