



# CLASS-Chemistry

## (Colorado Learning Attitudes about Science Survey)

Name: \_\_\_\_\_

Last 6 digits of your Student ID #: \_\_\_\_\_

### Introduction

Here are a number of statements that may or may not describe your beliefs about learning chemistry. You are asked to rate each statement by circling a number between 1 and 5 where the numbers mean the following:

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

Choose one of the above five choices that best expresses your feeling about the statement. If you don't understand a statement, leave it blank. If you understand, but have no strong opinion, choose 3.

### Survey

1. A significant problem in learning chemistry is being able to memorize all the information I need to know.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

2. To understand a chemical reaction, I think about the interactions between atoms and molecules.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

3. When I am solving a chemistry problem, I try to decide what would be a reasonable value for the answer.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

4. I think about the chemistry I experience in everyday life.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

5. It is useful for me to do lots and lots of problems when learning chemistry.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

6. After I study a topic in chemistry and feel that I understand it, I have difficulty solving problems on the same topic.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

7. Knowledge in chemistry consists of many disconnected topics.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

8. As chemists learn more, most chemistry ideas we use today are likely to be proven wrong.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

9. When I solve a chemistry problem, I locate an equation that uses the variables given in the problem and plug in the values.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

10. I find that reading the text in detail is a good way for me to learn chemistry.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

11. I think about how the atoms are arranged in a molecule to help my understanding of its behavior in chemical reactions.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

12. If I have not memorized the chemical behavior needed to answer a question on an exam, there's nothing much I can do (legally!) to figure out the behavior.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

13. I am not satisfied until I understand why something works the way it does.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

14. I cannot learn chemistry if the teacher does not explain things well in class.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

15. I do not expect equations to help my understanding of the ideas in chemistry; they are just for doing calculations.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

16. I study chemistry to learn knowledge that will be useful in my life outside of school.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

17. I can usually make sense of how two chemicals react with one another.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

18. If I get stuck on a chemistry problem on my first try, I usually try to figure out a different way that works.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

19. Nearly everyone is capable of understanding chemistry if they work at it.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

20. Understanding chemistry basically means being able to recall something you've read or been shown.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

21. Why chemicals react the way they do does not usually make sense to me; I just memorize what happens.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

22. To understand chemistry I discuss it with friends and other students.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

23. I do not spend more than five minutes stuck on a chemistry problem before giving up or seeking help from someone else.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

24. If I don't remember a particular equation needed to solve a problem on an exam, there's nothing much I can do (legally!) to come up with it.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

25. If I want to apply a method used for solving one chemistry problem to another problem, the problems must involve very similar situations.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

26. In doing a chemistry problem, if my calculation gives a result very different from what I'd expect, I'd trust the calculation rather than going back through the problem.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

27. In chemistry, it is important for me to make sense out of formulas before I can use them correctly.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

28. I enjoy solving chemistry problems.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

29. When I see a chemical formula, I try to picture how the atoms are arranged and connected.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

30. In chemistry, mathematical formulas express meaningful relationships among measurable quantities.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

31. We use this statement to discard the survey of people who are not reading the questions. Please select agree (not strongly agree) for this question.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

32. It is important for the government to approve new scientific ideas before they can be widely accepted.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

33. The arrangement of the atoms in a molecule determines its behavior in chemical reactions.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

34. Learning chemistry changes my ideas about how the world works.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

35. To learn chemistry, I only need to memorize how to solve sample problems.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

36. Reasoning skills used to understand chemistry can be helpful to me in my everyday life.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

37. In learning chemistry, I usually memorize reactions rather than make sense of the underlying physical concepts.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

38. Spending a lot of time understanding where mathematical formulas come from is a waste of time.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

39. I find carefully analyzing only a few problems in detail is a good way for me to learn chemistry.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

40. I can usually figure out a way to solve chemistry problems.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

41. The subject of chemistry has little relation to what I experience in the real world.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

42. There are times I solve a chemistry problem more than one way to help my understanding.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

43. To understand chemistry, I sometimes think about my personal experiences and relate them to the topic being analyzed.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

44. Thinking about a molecule's three-dimensional structure is important for learning chemistry.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

45. It is possible to explain chemistry ideas without mathematical formulas.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

46. When I solve a chemistry problem, I explicitly think about which chemistry ideas apply to the problem.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

47. If I get stuck on a chemistry problem, there is no chance I'll figure it out on my own.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

48. Spending a lot of time understanding why chemicals behave and react the way they do is a waste of time.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

49. When studying chemistry, I relate the important information to what I already know rather than just memorizing it the way it is presented.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------

50. When I'm solving chemistry problems, I often don't really understand what I am doing.

Strongly Disagree	1	2	3	4	5	Strongly Agree
-------------------	---	---	---	---	---	----------------