**Task 12: Science Inquiry**

**Validation-Solution**

Chemical Reactions In The Body

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

Mark: ­­­­\_\_\_\_\_\_  
Comment: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Assessment type:** Science Inquiry   
(practical and investigation)

**Conditions**

2 periods of practical

1 period for a write-up/validation

**Task weighting**

10% of the school mark for this pair of units

6% for Assignment

4% for Validation

**Your Investigation:**

1. Did the results from your investigation support your hypothesis? (Restate your hypothesis)

* Correctly restated hypothesis
* Stating whether the hypothesis was supported \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(2 marks)

1. Explain why your chosen skill/s related to a person’s ability to drive.

Correct explanation linking skills to driving \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(1 mark)

**Another Investigation:**

Your friend also investigated alcohol’s impact on driving ability. She had ten volunteers stack plastic cups in the configuration to the right. She timed them stacking the cups with and without the ‘Alcohol Impairment Goggles’.

1. Predict how the times will compare with and without the ‘Alcohol Impairment Goggles’.

Any reasonable prediction (1 mark)

1. Use your own investigation results and research to support the prediction you made in question 3.

* State your investigation results
* Link your investigation results to alcohol impact
* You’re your investigation results to research
* Link to prediction above (4 marks)

1. Suggest how the skills required to stack cups would also be useful in operating a vehicle.

Reasonable link between hand-eye coordination and driving (1 mark)

1. In this cup investigation what are the:

Independent Variable: Goggle Wearing

Dependent Variable: Time taken to stack cups

1. Controlled Variables: Any two reasonable variables

(4 marks)

Below are the results your friend recorded.

|  |  |  |
| --- | --- | --- |
| Volunteer Number | Time **With** Goggles (seconds) | Time **Without** Goggles (seconds) |
| 1 | 25.7 | 18.3 |
| 2 | 24.0 | 15.2 |
| 3 | 25.2 | 17.2 |
| 4 | 27.8 | 17.3 |
| 5 | 40.5 | 18.6 |
| 6 | 26.7 | 22.4 |
| 7 | 27.4 | 23.0 |
| 8 | 20.1 | 15.8 |
| 9 | 20.6 | 16.0 |
| 10 | 27.8 | 17.8 |
| Average | 26.58 | 18.16 |

1. Calculate the averages with and without the goggles and put them into the table.

(2 marks)

1. Was your prediction correct? Use your friend’s data to support you answer.

Yes/no-refer to prediction

Refer to friend’s data (2 marks)

1. Your teacher reviewed your friend’s investigation and said that the getting the volunteers to complete the same task with and without the goggles may be unfair. Suggest a reason for this

Any reasonable reason (1 mark)

A new Australian study published in December 2020 found *“Blood alcohol levels much lower than the legal limit impair hand-eye coordination”.*

1. Explain what the study means by *‘legal limit’*.

the maximum concentration of alcohol in the blood that the law allows in the driver of a motor vehicle. (1 mark)

1. Does this study support your friend’s cup study findings?

Yes (1 mark)

The study found that hand-eye coordination is significantly impacted by a BAC of 0.015%

1. Define BAC

blood-alcohol concentration: the percentage of alcohol in the bloodstream (1 mark)

Your friend is suggesting they might drive home under the influence of alcohol.

1. Write a three-sentence statement convincing them otherwise. Reference at least two of the following: the Australian study, your friends cup results, your own investigation results, or your prelab research.

Any reasonable response including two of the following (3 marks)