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

**INTEGRATED SCIENCE ATAR**

***Task 6 – Investigation – Effect of Age on Hearing***

**Date**: 30th May 2018 (Due th June 2018)

**Weighting**: 10%

**Task Outline:**

Hearing range describes the range of frequencies that can be heard by humans or other animals. The human range is commonly given as 20 to 20,000 Hz, though there is considerable variation between individuals, especially at high frequencies, and a gradual loss of sensitivity to higher frequencies with age is considered normal. Routine investigation for hearing loss usually involves an audiogram which shows threshold levels relative to a normal.

Several animal species can hear frequencies well beyond the human hearing range. Some dolphins and bats, for example, can hear ultrasonic frequencies up to 100,000 Hz. Elephants can hear sounds at 14–16 Hz, while some whales can hear infrasonic sounds as low as 7 Hz (in water).

In this investigation, you will be exploring the effect of age on the ability to hear high frequency sounds.

**Materials:**

* Headphones
* Graph paper and lined paper.
* The following two websites:

<https://www.youtube.com/watch?v=h5l4Rt4Ol7M>

<https://www.youtube.com/watch?v=H-iCZElJ8m0>

**What You Will Need to Include in Your Report**

You will be provided with lined paper and graph paper. Make sure to include all required headings (Introduction, Variables, Hypothesis, Method, Results, Graph, Analysis, Evaluation, and Conclusion)

**Marking rubric:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Section** | **Description** | **Marks Allocated** | **Marks Received** |
| Introduction | * Provides background information on hearing relevant to the investigation. * Explains what the investigation is simulating in terms of hearing, age and the range of sound heard by humans. | 1  2 |  |
| Independent Variable | * Correctly names independent variable * Names units for independent variable | 1  1 |  |
| Dependent Variable | * Correctly names dependent variable * Names units for dependent variable | 1  1 |  |
| Controlled Variables | * Correctly names at least two controlled variables * Names manner in which variables will be controlled | 1  1 |  |
| Hypothesis | * Includes independent variable in hypothesis * Includes dependent variable in hypothesis | 1  1 |  |
| Method | * Lists all materials * Creates a numbered, repeatable list of instructions for conducting this experiment * Methods section includes strategies for minimising uncontrolled variables and other factors | 1  2  1 |  |
| Results (Table and Notes) | * Records observations using a table * Includes dependent and independent variable labels in table * Identifies outliers in the raw data | 1  1  1 |  |
| Graph | * Includes an appropriate title for the graph stating dependent and independent variables * Correctly labels axes * Includes units with labelled axes * Uses correct type of graph * Includes a line-of-best fit * Correctly plots points on the graph * Pencil and Ruler | 1  1  1  1  1  1  1 |  |
| Analysis (Discussion) | * Describes patterns and trends in the data * Suggests a scientific reason for the results obtained * Accurately relates the patterns observed in the data to the hypothesis | 2  2  1 |  |
| Evaluation | * Comments on the reliability of the data collected * Comments on the validity of the data collected * Describes at least two limitations with the experiment that may affect the accuracy of the data * Suggests at least two improvements for the experiment in the future | 1  1  2  2 |  |
| Conclusion | * Summarises findings from the investigation * States whether the hypothesis was supported or not | 1  1 |  |
| **TOTAL MARKS** | | **38** |  |