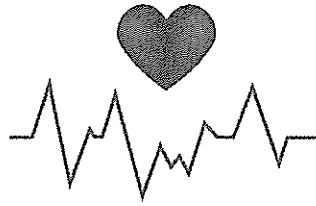# 8 SCIENCE INVESTIGATION 2016

OBSERVING HEART RATE OR BREATHING RATE

Name:_____

Form:_____

Teacher:_____

Due date:_____

MARKING KEY

Plagiarism

You must write in your own words, not copy sentences word for word from another student or another source.
Plagiarising = instant zero on assignment and you will have to re-do it.

Assessment policy

Give me a sick note/legitimate reason from parent BEFORE due date = new negotiated due date.
One day late = -20% taken off mark
Two days late = -40% taken off mark
Three days late = mark of zero given
After three days, students are required to attend a detention and are still required to submit the assignment.

Introduction: Your body systems do not work independently. Each one relies on and affects the other. Your group will design and perform an experiment to work out a way to either increase or decrease breathing rate or heart rate and see what happens to the other. You want to find out how breathing rate and heart rate are related.

Some options you could try are:

- Exercise to increase the heart rate.
- A period of slow, deep breathing to reduce the breathing rate.

Hint: you will need to repeat the experiment 2-4 times to obtain an average.

MARKING KEY

Background research

Is your group investigating heart rate or breathing rate? _____

Describe how you will measure heart rate/breathing rate during your investigation. Include the units of measurement you will use to measure heart rate or breathing rate. (2 marks)

_____ 1 mark for description_____

_____ 1 mark for unit of measurement._____

_____

Heart rate unit of measurement: bpm (beats per minute)

Breathing rate unit of measurement: breaths per minute

Research information to help you reach a hypothesis. For example, if you want to investigate whether exercise increases or decreases heart rate, or whether exercise increases or decreases breathing rate, you would find information to help you form an educated prediction of what would occur in your investigation.
(Write in **summarised dot points** – minimum of three). (3 marks)

_____ Needs to be in own words._____

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Title (descriptive, not 'biology investigation') (1 mark)

_____

Aim (one sentence that describes what you are trying to find out in the investigation) (1 mark)

EXAMPLE
To investigate how exercise affects breathing rate.

_____

Hypothesis (one sentence prediction including dependent and independent variables which does not use personal language like 'I', 'we') (2 marks)

EXAMPLE

It is hypothesised that people who exercise will have
a higher breathing rate compared to people
who do not exercise.

_____

Materials (detailed, how many of each item that was used) (1 mark)

1 x stopwatch   (any other materials used)

_____

Dependent variable (what is being measured). (1 mark)

   Heart rate   OR Breathing rate

Independent variable (what is being changed). (1 mark)

eg. Exercise or no exercise
eg. Taking deep breaths or not taking deep breaths.

Two controlled variables (variables kept constant throughout the experiment to keep it fair) (2 marks)

   eg. Person who is using stopwatch
       Type of exercise (running on spot).
       Time spent running on sport.

(1) mark
for each

Method (starting from step one, list the steps that <u>were</u> taken) (3 marks)

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Results

Table (show the results taken from experiment, trials and averages, in pencil and using a ruler)   (3 marks)

(1) In pencil & using a ruler.

(1) Includes headings with unit of measurement.

(1) Includes all data.

Graph (show your group's **average** results in a graph using a sharp lead pencil and ruler)   (6 marks)

1. Is the data you are putting in your graph discrete (each piece of data does not have a relationship with each other, categories being compared are not continuous) or continuous (each piece of data is related to the next)?   (1 mark)

Response depends on data collected. _____

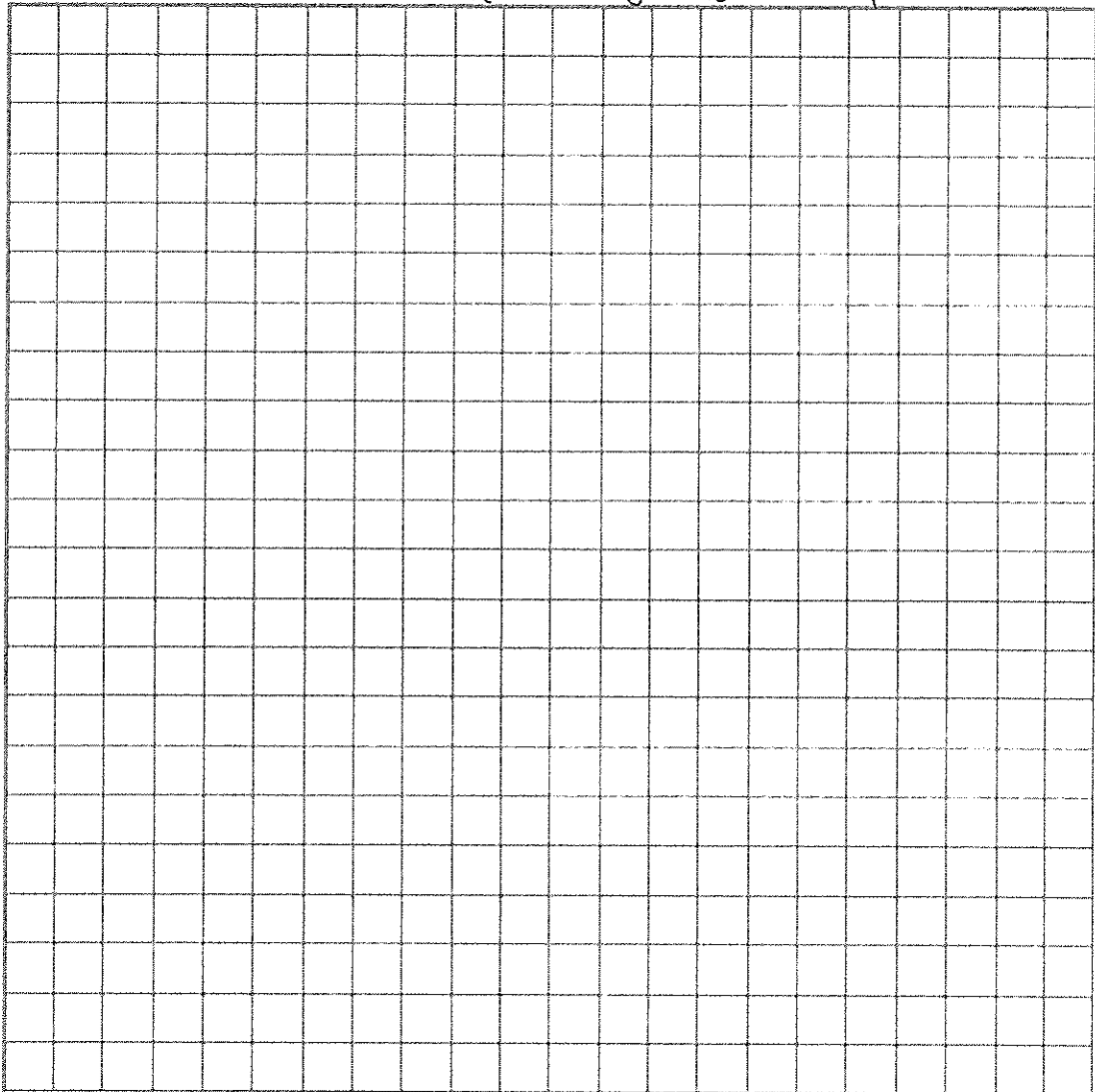Appropriate heading ① (has both variables)

Correct type of graph ① (for data collected)

Appropriate scale/spacing ①

Headings on both axes ①
Units of measurement included ①
All average data is plotted (complete) ①

Discussion (describe one mistake or error that occurred, explain how it affected the results and how it could be avoided next time)
Remember that a mistake can be avoided with care and an error is a small change to measurement that cannot be avoided (parallax error, reading error, instrument error, human reflex etc.) (3 marks)

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Conclusion (state the result of the experiment one state whether the hypothesis was supported or not supported)
(2 marks)

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Reference list

Referenced using the APA style shown on the next page.   (1 mark)

Minimum of two references.   (1 mark)

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Assignment is neatly written or typed.   (1 mark)

Correct spelling and grammar.   (1 mark)

/37

Mark as percentage: %

Teacher comment: on Seqta

How to reference

Book

Last name
of author   Year   Book title

↓   ↓   ↓

Gray, T. (2009). *The Elements: a Visual Exploration of Every Known Atom in the Universe.*
       ↑ New York, USA: Black Dog & Leventhal Publishers, Inc.

Initial of first
name of author   ↑   ↑

Place of publication   Publisher

Book with two authors

Shermer, M., & Benjamin, A. (2006). *Secrets of Mental Math: The Mathemagician's Guide to Lightning Calculation and Amazing Mental Math Tricks.* New York, USA: Three Rivers Press.

Book with different editions

Nagle, G., & Cooke, B. (2012). *Geography Study Guide: Oxford Ib Diploma Programme* (2nd ed.). Oxford, UK: Oxford University Press.

Website

Initial of first
name of author Year   Web page title

↓   ↓   ↓

Vloothuis, J. (2015). Insight on Painting Seascapes. Retrieved from
↑ http://www.artistsnetwork.com/articles/art-demos-techniques/insight-on-painting-seascapes

Last name
of author   ↑

URL of the web page

Website with no author (put the title from the top of the website at the front)

Aranmore Catholic College. (2014). Retrieved from http://www.aranmore.wa.edu.au/

Website with no date (put n.d in brackets instead of a year)

The Zadkine Museum. (n.d). Retrieved from http://www.france.fr/en/museums/zadkine-museum.html

Video file

Screen name   Date   Title of video

↓   ↓   ↓

NeverlandHeroes. (2015, February 19). *Peter Pan: Return to Neverland* [Video file]. Retrieved from
https://www.youtube.com/watch?v=WZIAiuUo6XI

↑

URL of video

Encyclopaedia or dictionary

Last name   Initial of first
of editor   name of editor Year   Book title   Edition of book   Volume

↓   ↓   ↓   ↓   ↓   ↓

Sadie, S. (Ed.). (1980). *The new Grove dictionary of music and musicians* (6th ed., Vols. 1-20). London, UK:
Macmillan.   ↑

↑   Place of publication

Publisher