THE pH OF SHAMPOO

Name:_____   Teacher:_____

Form:_____   Due date:_____

MARKING KEY

IMPORTANT INFORMATION

Plagiarism

- The experiment is to be done in your science group but your write-up and results are to be done individually.
- Plagiarising = instant zero on assignment and you will have to re-do it.

Presentation

- Neat writing (if you struggle with this, type your information).
- Correct spelling, grammar and full sentences.
- Clear, labeled diagrams using pencil.
- Assignment neatly stapled together with this sheet attached to the front.

Assessment policy

Have sick note/legitimate reason from parent = new negotiated due date.
Assignment not submitted on due date and no sick note from parents = -20% mark
Assignment not submitted on new negotiated due date = -40% mark
   + Letter home to parents
   + Must attend academic completion to complete assignment
                     OR
   Submit assignment to student services before academic completion date and
   academic completion not necessary.
Academic completion not attended = zero on assignment + Saturday detention

If you know that you cannot submit your assignment on the due date, let your teacher know BEFORE the due date (email them if you are not in school) or just email them your assignment the night before.

Aim: To investigate how shampoos designed for different hair types will have different pH.

Materials:

* Diluted Palmolive shampoo for normal hair
* Diluted Palmolive shampoo for coloured hair
* Diluted Palmolive shampoo for dry hair
* Diluted Garnier Fructis shampoo for normal hair
* Diluted Garnier Fructis shampoo for coloured hair
* Diluted Garnier Fructis shampoo for dry hair
* Diluted Organic Care shampoo for normal hair
* Diluted Organic Care shampoo for coloured hair
* Diluted Organic Care shampoo for dry hair
* Distilled water
* Spot tray
* Universal indicator
* Colour matching chart

Hypothesis (one sentence statement of what you think will happen): (2 marks)

~~Palmolive~~ shampoo for normal hair will ① have a higher pH than shampoo for coloured or dry hair. ①

↑ example

Independent variable: (what you are changing)   (1 mark)

The types of shampoo

Dependent variable: (what you are measuring)   (1 mark)

pH of shampoo

Two controlled variables: (2 marks)

The type of indicator used, amount of shampoo put in spot tray, ~~dilution~~ dilutions of shampoo

(any two)

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

1. One drop of each shampoo type was placed in
   the spot tray.

2.

- numbered
- in PAST tense
- in list form
- covers all info

Results:

Table (show results taken from experiment). (3 marks)

shampoo type	description of colour	pH of shampoo	something similar

Graph (show your group results, <u>draw on graph paper and attach</u>). (6 marks)

- Use graph paper.
- Use a sharp pencil and ruler.
- Have a title at the top (independent variable versus dependent variable).
- Work out whether you need to draw a bar graph (different groups of data) or a line graph (showing data changing over time).
- Put the independent variable and dependent variable on the correct axis.
- Label each axis.
- Record the units of measurement in brackets next to each label.
- Use an appropriate scale that has the same pattern the whole way along.

Discussion (describe at least two mistakes/errors that occurred, explain how these affected the results and how they could be avoided next time): (6 marks)

eg.

① Some of the spot tray indents had more shampoo sample than others, this may have affected the results by . . . . ①

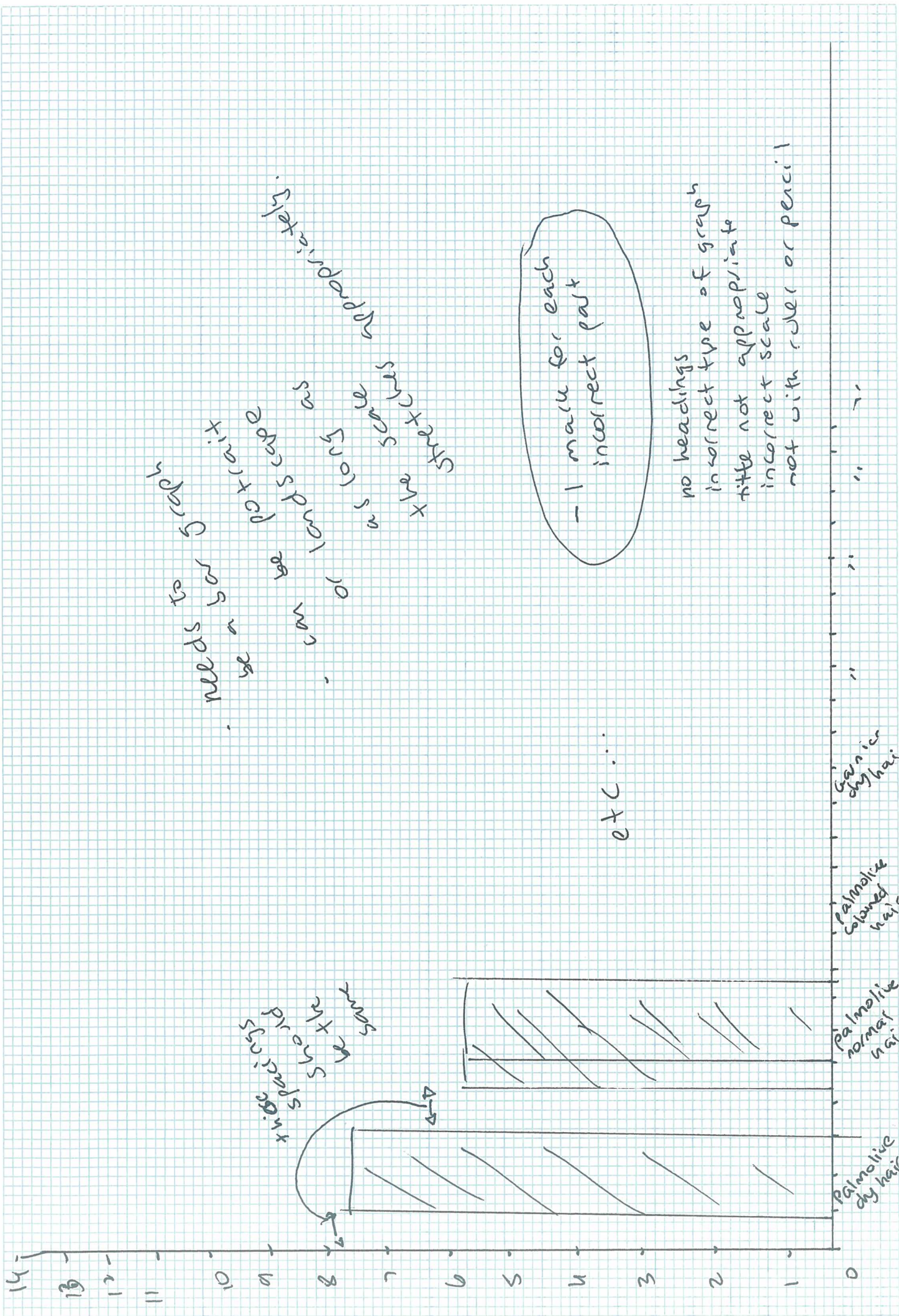① next time more care will need to be taken with the dropper bottle to only place one drop.

and another one

①

①

①

Types of shampoo

pH of shampoo

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

Palmolive dry hair
Palmolive normal hair
Palmolive coloured hair
Palmolive "
Garnier dry hair

individual bars the same width + same space in between

needs to graph all (part)

use a scale as spread out as you can.

the scale should extend gradually

etc...

– 1 mark for each incorrect part

no headings
incorrect type of graph
title not appropriate
incorrect scale
not with ruler or pencil

1. Explain two reasons why the pH of distilled water was tested in the experiment. **(2 marks)**

① To see whether the universal indicator was working correctly.

① To act as a 'control' or reference point.

2. Why was universal indicator rather than litmus paper used in this experiment? **(2 marks)**

Universal indicator shows the specific ① pH of a substance whereas litmus paper only shows whether a substance is acidic or basic.

①

Conclusion (two sentence statement. First sentence gives general result of experiment, second sentence states whether the hypothesis was proven or not proven.) **(2 marks)**

The shampoo for normal hair had a higher pH than the shampoo ① for dry or coloured hair. Therefore the hypothesis was proven.

①

MARKING KEY

Content	Description		Your mark
Hypothesis	Includes both independent and dependent variable.	1	
	Does not use 'I', 'we' etc.	1	
Independent Variable	Listed the independent variable.	1	
Dependent Variable	Listed the dependent variable.	1	
Controlled Variables	Listed two controlled variables.	2	
Method	Is written in past tense.	1	
	Is written in numbered step-by-step.	1	
	Includes all the steps completed in experiment.	1	
Results table	Drawn neatly in pencil and using a ruler.	1	
	Includes the headings and units of measurement.	1	
	Includes all the data collected during the experiment.	1	
Results graph		6	
Discussion	Describes at least two mistakes/errors that occurred.	2	
	Explains how these mistakes/error have affected the results.	2	
	Explains how these mistakes/errors could be avoided	2	
Discussion questions	Question 1 completed correctly	2	
	Question 2 completed correctly	2	
Conclusion	One sentence stating the result of the experiment.	1	
	One sentence stating whether the hypothesis was proven or disproven.	1	
Presentation	Correct spelling, grammar, full sentences.	1	
	Written neatly or typed up neatly.	1	
	Total mark	32	

Mark as percentage   %

Teacher's comments:

_____

_____

_____