Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Due Date:

**Enzyme Investigation**

***Is the activity of pepsin affected by pH? Does it have an optimum pH? Why/Why not?***

Your task is to design and conduct an experiment to answer this question.

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| --- | --- | --- | --- | --- |
|  | 0 | 1 | 2 | 3 |
| Practical conduct |  |  |  |  |
| Scientific format/  Presentation |  |  |  |  |
| Aim |  |  |  |  |
| Introduction |  |  |  |  |
| Hypothesis |  |  |  |  |
| Independent Variable |  |  |  |  |
| Dependent Variable |  |  |  |  |
| Controlled Variables |  |  |  |  |
| Materials/ Equipment |  |  |  |  |
| Method/ Diagram |  |  |  |  |
| Results |  |  |  |  |
| Discussion |  |  |  |  |
| Conclusion |  |  |  |  |
| References |  |  |  |  |
| Total |  |  |  | /30 |

**Title** – Should tell the reader something about your experiment. Eg NOT “Biology Investigation”, instead “The effect of temperature on enzyme activity”

**Aim** – Why are you doing this experiment? What do you want to find out?

**Introduction** - Give some background on any assumed scientific knowledge or what previous studies have found. Eg if your investigation is about the effect of temperature on enzyme activity you should explain here what an enzyme is and how they work.

You will need to do some research for this section and put your sources in your reference section

**Hypothesis** – Your own prediction on what you think will happen. Do not say ‘I predict” or “I think”. It doesn’t matter if you are right or not.

**If** *we do this to the independent variable*

**Then** *this will happen to the dependent variable*

**Independent variable** - The variable changed

When you change the independent variable the variable you are measuring (the dependent variable) will probably change too.

**Dependent Variable** - The variable you are measuring. Any change in this variable **depends** on what you do to the independent variable.

**Controlled Variables** - All the things you keep the same to make it a fair test. You should usually list at least three. Be specific eg don’t just say temperature, say temperature of the water bath.

**Materials** - A list, not a paragraph, of the equipment you used.

You should include amounts eg 3 x 250ml beakers or 15g of salt.

**Method** - A list of instructions that someone else could follow to repeat your experiment exactly the way you did it.

It should be written in past tense without using I or we. Eg 3 drops of dye were added to the test tubes. NOT add 3 drops of dye.

Including a labelled diagram or photograph to show your set up is usually a good idea.

Including how each of your controlled variables were controlled is important.

**Results** - This will nearly always include quantitative data (numbers) in a table and often a graph. You may also include qualitative data such as diagrams and descriptions.

**Calculations** If applicable you should include your workings for any calculations

**Discussion** - What did your results show? Use quantitative results where possible to explain what you found, eg there were twice as many flies found in the blue tin as in the red tin.

What went wrong? Were there any errors? Note: no experiment is perfect – there are always some errors or improvements to be made.

What may have been the effect of these errors on your results?

What could you improve about your procedure next time?

**Conclusion** - Describe what trend your results have shown (or not)

Was your hypothesis supported or disproved (in Science you are never proven right only supported).

What are the scientific reasons behind your results?

If your results are not what you would have expected state this then explain why you would have expected different results.

You will need to do some research for this section

**References** Set out as shown in your student diary

**Presentation** You should include the above sub headings in the order they are listed

All diagrams/graphs/ tables should have a title

Any diagram should be referred to in the text eg The set up can be seen in figure 2. Ensure you then label the appropriate diagram figure 2.

If you are typing out your work it should be a 12 size font with a 1.5 spacing.