[](http://crystalmeditationretreat.com/wp-content/uploads/Blue-sign-crystal.jpg)Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Year 8 Geology Investigation**

**Due date: \_\_\_\_\_\_\_\_\_**

*Based on Pearson Science 8 Pg 287*

**Does cooling rate affect the size of crystals formed?**

[](http://www.google.com.au/url?sa=i&rct=j&q=crystal+in+rock&source=images&cd=&cad=rja&docid=CdTFNTuauDVOTM&tbnid=Woqxm0no-zRYzM:&ved=0CAUQjRw&url=http://www.crystalmethaddiction.org/Crystal_Meth_Pictures.htm&ei=4MdDUudoyYyQBbLngYgB&psig=AFQjCNGRht6lKJ5AM8L4b2bwFkl0pnp5eQ&ust=1380260166653223)Before starting this investigation you will need to do some background research on crystals in rocks. This will form the introduction to your Investigation

* What are crystals?
* Where can they be found?
* How are they formed?

As we are not able to heat rocks to melting point you will be provided with copper sulphate solution which your group will heat in class.

Your group will need to devise a method to create different rates of cooling for different batches of copper sulphate.

You will also need to devise a method of measuring the size of the crystals which are formed.

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

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| --- | --- | --- | --- |
| **Part**  *These should form subheadings in your work* | **Details** | **Available**  **mark** | **Your**  **mark** |
| **Title** | Descriptive NOT Biology Investigation | 1 |  |
| **Aim** | Why are you doing this experiment? What do you want to find out? | 1 |  |
| **Introduction** | What are crystals?  Where are they found?  How are crystals formed?  YOU NEED TO DO SOME RESEARCH FOR THIS PART | 3 |  |
| **Hypothesis** | Correctly worded  Includes dependent and independent variables | 2 |  |
| **Independent Variable** | The variable I change (I for independent). When you change the independent variable the variable you are measuring (the dependent variable) will probably change too. | 1 |  |
| **Dependent Variable** | The variable you are measuring. Any change in this variable depends on what you do to the independent variable. | 1 |  |
| **Controlled Variables** | All the things you keep the same to make it a fair test. You should usually list at least three. | 2 |  |
| **Materials** | Complete  Listed  Detail eg 25g of salt or 3 x 250ml beakers | 2 |  |
| **Method** | * Step by step with numbers * Written in past tense * Complete * Labelled Diagrams * Explain how reliable results are achieved - trials/replicates, how variables are controlled | 1  1  1  2  3 |  |
| **Results** | Table - neat & clear with units | 3 |  |
| **Graph** | Includes Title, labels on each axis, correct units, regular spaced, legend for each line graph. Use a ruler, do it in pencil and make it neat | 5 |  |
| **Discussion** | * Errors * Effects of errors on results * Solutions | 1  1  1 |  |
| **Conclusion** | * What did the results show ? * Use figures from your results * Does this support your hypothesis? * Scientific reasons – YOU NEED TO DO SOME RESEARCH FOR THIS PART | 1  1  1  3 |  |
| **Total mark** | | **38** |  |

**TITLE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** (1 mark)

Aim: **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** (1 mark)

**Introduction:** *(you may wish to include diagrams)*  (3 marks)

**Hypothesis**  (2 marks)

What is the independent variable? (factor you changed) (1 mark)

What is the dependent variable? (factor you measure) (1 mark)

List 3 controlled variables? (factors you keep the same) (2 marks)

Materials: List the Materials apparatus/equipment you will use? (2 marks)

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Method : Write, in point form, what you plan to do in your experiment. (3 marks)

(step by step with numbers, write in past tense, is complete)

Labelled Diagrams of your set up (2 marks)

How will your group make sure reliable results are obtained? (2 marks)

RESULTS TABLE**:** Record your results in an **appropriate** table into this space. (3 marks)

What type of graph will best suit your results?

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**GRAPH ----** Draw the line graph. (5 marks)

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(Title, Label Axis, Measurements, Regular Scale, Neat, Accurate, Use Pencil & ruler

legend for each line graph)

DISCUSSION . How could the fairness /accuracy of the experiment be improved? (3 marks)

Errors

Effect of Errors on your results

Solutions -Ways to improve experiment

#### CONCLUSION

What did the results show? Use figures from your results (2marks)

Does this support your hypothesis? (1mark)

RESEARCH scientific reasons for how cooling rate and crystal size are related (3 marks)