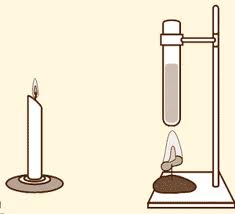
Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Due date: \_\_\_\_\_\_\_\_\_

**Year 8 Physics Investigation**

[](http://www.google.com.au/imgres?q=burning+peanut+experiment&hl=en&safe=strict&tbo=d&biw=1920&bih=931&tbm=isch&tbnid=bw3z_Vx-wQAAjM:&imgrefurl=http://www.pbs.org/saf/1110/teaching/teaching.htm&docid=u2zPn9ERZ7bDVM&imgurl=http://www.pbs.org/saf/1110/images10/icandle.gif&w=300&h=273&ei=qgPQUNGCPaeciAffqoHIBw&zoom=1&iact=hc&vpx=66&vpy=119&dur=8039&hovh=214&hovw=235&tx=155&ty=135&sig=106805348937554123165&page=1&tbnh=148&tbnw=162&start=0&ndsp=54&ved=1t:429,r:1,s:0,i:90)

When a substance is burned energy is converted from one form to another.

**Your task is to compare the amount of energy released when burning a burger ring with the amount of energy listed on the nutritional panel on the packet.**

You will do this by setting a burger ring alight and using it to heat a test tube of water. You will then measure the temperature increase in the water.

Your conclusion will include the scientific reasons why your result differs from the nutritional panel, or why your result is the same.

**Useful Information**

It takes 4.2 Joules of energy to heat 1ml of water by 1oC

Therefore it takes 42J of energy to heat 10ml of water by 1oC

*Burger Ring Nutritional Information*

|  |  |
| --- | --- |
| Nutrition Facts | per 100g |
| Kilojoules Calories | 2200 kj 526 kcal |

As we are only burning 1 burger ring at a time not 100g, we will need to work out how much each individual burger ring weighs and how much energy each burger ring contains.

We will do this as a class. Write your result here:

* 1 burger ring weighs \_\_\_\_\_\_\_\_\_\_\_\_g
* Weight of one burger ring divided by 100 multiplied by the energy contained in 100g of burger rings = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Therefore each burger ring contains \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_J of energy

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Marking Key** | **Available**  **mark** | **Your**  **mark** |
| **Title** | Descriptive NOT Physics Investigation | 1 |  |
| **Introduction** | What scientific knowledge does your reader require to understand this experiment? Eg what sort of energy is found in burger rings? What is energy transformation?  Usually only a paragraph or two long | 2 |  |
| **Aim** | Why are you doing this experiment? What do you want to find out? | 1 |  |
| **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 or photos – referred to in text * Explain how reliable results are achieved - trials/replicates, how variables are controlled HINT: look at your controlled variables | 1  1  1  2  3 |  |
| **Calculations** | Use the correct setting out and show all working. Make sure you include units | 4 |  |
| **Results** | Table – this shows your raw results and your average– neat and clear with title and units | 3 |  |
| **Graph** | Includes Title, labels on each axis, correct units, regular spaced, and legend. Use a ruler, a pencil and make it neat. NOTE you will only include the temperature change after each burning, not the initial and final temperatures. | 5 |  |
| **Discussion** | * Errors (there are always errors, no one is perfect) * 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 and put your sources in the reference section. | 1  1  1  3 |  |
| **References** | * As shown in student diary | 2 |  |
| **Presentation** | * Neat * Correct use of subtitles * In correct order * All diagrams referred to in text. | 2 |  |
| **Total mark** | | **45** |  |