NEA 1 TRACKING BOOKLET

Name

Teacher

The investigation title: ?????

You will conduct a detailed and thorough investigation for the above task, using at least three controlled experiments of your creation. At the same time, you will produce an electronic report (1,700–2,000 words) including photographic evidence of the practical investigation.

Students will individually record their practical investigation and draw conclusions. The report could include a range of communication methods including: charts, graphs and diagrams. Specialist terminology will be used to clearly communicate the research and investigation findings. The report must include photographic evidence authenticating the practical investigation.

30 maximum marks broken down as:

✓ **Research – 6 marks maximum**

✓ **Investigation – 15 marks maximum**

✓ **Analysis and evaluation – 9 marks maximum**

LOVE FOOD LOVE SCIENCE

Institute of Food Science + Technology ifst

The GeorgeEliotSchool

Possible layout of task (7 - 8 pages)

Front cover- Task
Page 1 – Research; aim, analysis of task and research
Page 2 – Research; research, conclusions and **hypothesis**
Page 3 - Investigation; aim of investigation, results and conclusion.
Page 4 – Investigation; aim of investigation, results and conclusion.
Page 5 – Investigation; aim of investigation, results and conclusion.
Page 6 – Analysis and Evaluation. How the hypothesis is proved or disproved
Page 7 - Analysis and evaluation. How the information will be used when preparing and cooking.
Page 8 - Bibliography

Your report of the investigation is to be 6-8 sides of A4.
1500-2000 words.
FONT SIZE 12
The report will be word processed on a word document and saved in a shared area.

Food Science Terminology – learnt in year 10 and applied in NEA food science investigation

Air – egg whites, beating creaming, rubbing in
Steam – profiteroles, choux pastry, Yorkshire pudding
Carbon dioxide – yeast fermentation, baking powder, self raising flour
Chemicals – bicarbonate of soda, baking powder

Sodium bicarbonate
Cream of tartar
Baking powder
Mechanical raising agents
Chemical raising agents
Biological raising agents
Ammonium Bicarbonate

NEED TO CHANGE THIS PAGE ONCE YOU HAVE GOT THE BRIEF

Chemical Raising Agents

https://blog.nutritionprogram.co.uk/2015/06/12/food-science-chemical-raising-agents/

https://www.ifst.org/lovefoodlovescience/resources/raising-agents-chemical

https://getrevising.co.uk/diagrams/chemical-raising-agents

http://www.victoriahansenfood.com/knowledgebase/chemical-raising-agents/

https://resources.eduqas.co.uk/Pages/ResourceSingle.aspx?rlid=698

https://www.dovesfarm.co.uk/hints-tips/types-of-raising-agents

https://www.rockbakehouse.co.uk/blog/different-types-raising-agent/

http://www.yourarticlelibrary.com/home-science/bakery/list-of-5-common-raising-agents-used-in-bakery/86644

ILLUMINATE RESOURCES
http://illuminate,digital/aqafood/
Raising agents – pages 140

GCSE Food Preparation and Nutrition section 1 NEA1 RESEARCH

- Have you used subject specific terminology?
- Have you included the function and chemical properties of all ingredients?
- Have you recorded all sources of information in your bibliography?

page	include			
1 – Title page with brief	Investigation title and outline - copy word for word Images of background theme			
2 – Prior learning	What do you already know? – PRIOR KNOWLEDGE			
3 – Task Analysis	Web or bullet points Analysed the task, explained the background research. What are you going to find out? 10 questions about what else you want to know. Then say how you will research about 4 of these questions			
4 – secondary research	Questions from task analysis Answer them using different sources Bibliography – source of information Internet, text book, leaflets used for research Include working characteristics of main ingredients Include Functional / chemical properties of ingredients Keep it very scientific!!!!			
5 - Research Analysis	Summarise and evaluate your findings Use the findings to fully justify which practical investigations you have chosen to do.			
6 – hypothesis/ prediction	Establish a hypothesis/ prediction for each investigation. Ensure the hypothesis is a statement which may be proven or disproven. Justify the choice for each investigation Ensure full research has been carried out for each investigation.			
7 - conclusion	What did you find out from your research.			

RESEARCH

Mark	Description
5-6	● Relevant, detailed and concise research into how ingredients work and the reasons why. ● Detailed explanation shows a high level of understanding of how the research has been used to inform the practical investigation. ● Planned and justified a detailed investigation, related to the research with a clear and focused hypothesis or prediction.
3-4	● Relevant research into how ingredients work and the reasons why. ● Explanation of how the research is used to inform the investigation. ● Planned an investigation which relates to the research, some justification given. A hypothesis or prediction has been stated
1-2	● Limited research into how ingredients work and the reasons why. ● Limited explanation of how the research may be used to inform the investigation. ● Limited evidence of planning, with a basic approach to the investigation. A basic hypothesis or prediction has been stated.
0	Nothing worthy of credit.

KEYWORDS

concise, reasons, explanation, research, justify predictions, hypothesis, approach, understanding

Students should:

1. Analyse the task, explaining the background research
2. Carry out secondary research, using different sources, focusing on the working characteristics, functional and chemical properties of the ingredients
3. Analyse the research and use the findings to plan the practical investigation
4. Establish a hypothesis/predict an outcome as a result of the research findings. The hypothesis should be a statement which may be proved or disproved.

FIRST THINGS FIRST (Prior learning)

Your Report Checklist

Tick off this list as you complete it.

- ☐ Created and saved a report document
- ☐ Use the header of the document to add your name and class automatically to each page. Add page numbers to the footer.
- ☐ Create a front page with your: **name and title 'NEA 1: ?????**

For your prior knowledge you need to be able to write a paragraph about what you already know about the topic given by the exam board. ***Give some brief background information here - from what you know already or have researched.***

You can use the space below to make your notes

What is the task asking you to do?

What are the key words in the brief?

What do you need to find out?

Ideas for investigation

Task analysis questions

Why are you doing this experiment? What are you trying to find out? What question are you trying to answer? Are there any formulas that you may need to use? Any websites/books need to be recorded at the bottom of your report.

Examples: If I was researching *'Investigate what type of flour is best for bread making'. My research questions maybe…*

- ***Where do flours come from?***
- ***Which is the main flour used for bread making in the UK?***
- ***How are different types of wheat flour produced?***
- ***What are the main components of wheat flour?***
- ***What is gluten and how is it formed in bread making?***
- ***Why is the amount of gluten in wheat flour important in bread making?***
- ***Which wheat flours have the most / least gluten?***
- ***What are the quality points for freshly baked bread?***

Researching the task
List the information you have found out

Could you include any diagrams or pictures?

How will this information be useful in your investigation?

What are you going to investigate?

Do you need to include a glossary of key words?

Where did you find the information you've used in your research? What have you found out?

Put of your 10 task analysis questions – choose at least 4 to relate back to your experiments and say what you are going to research and how?

Action Plan

Researching the task
List the information you have found out

Could you include any diagrams or pictures?

How will this information be useful in your investigation?

What are you going to investigate?

Do you need to include a glossary of key words?

Where did you find the information you've used in your research? What have you found out?

Research

Use the internet and books to help you research the four questions you have concluded to what you want to find out.
Make sure you DO NOT copy and paste the text – you need to read and put into your own words.
Make sure you add a hyperlink for all the websites you have used.
You can copy and paste pictures / diagrams.
Make sure all research relates back to the four questions you have selected as your chosen research.

Mark	Description
5-6	● Relevant, detailed and concise research into how ingredients work and the reasons why. ● Detailed explanation shows a high level of understanding of how the research has been used to inform the practical investigation. ● Planned and justified a detailed investigation, related to the research with a clear and focused hypothesis or prediction.
3-4	● Relevant research into how ingredients work and the reasons why. ● Explanation of how the research is used to inform the investigation. ● Planned an investigation which relates to the research, some justification given. A hypothesis or prediction has been stated
1-2	● Limited research into how ingredients work and the reasons why. ● Limited explanation of how the research may be used to inform the investigation. ● Limited evidence of planning, with a basic approach to the investigation. A basic hypothesis or prediction has been stated.
0	Nothing worthy of credit.

Researching the task
List the information you have found out

Could you include any diagrams or pictures?

How will this information be useful in your investigation?

What are you going to investigate?

Do you need to include a glossary of key words?

Where did you find the information you've used in your research? What have you found out?

Proposed experiments

Research Conclusion – What have you found out from your research?

What are you going to investigate?

Describe the practical investigations you plan to carry out

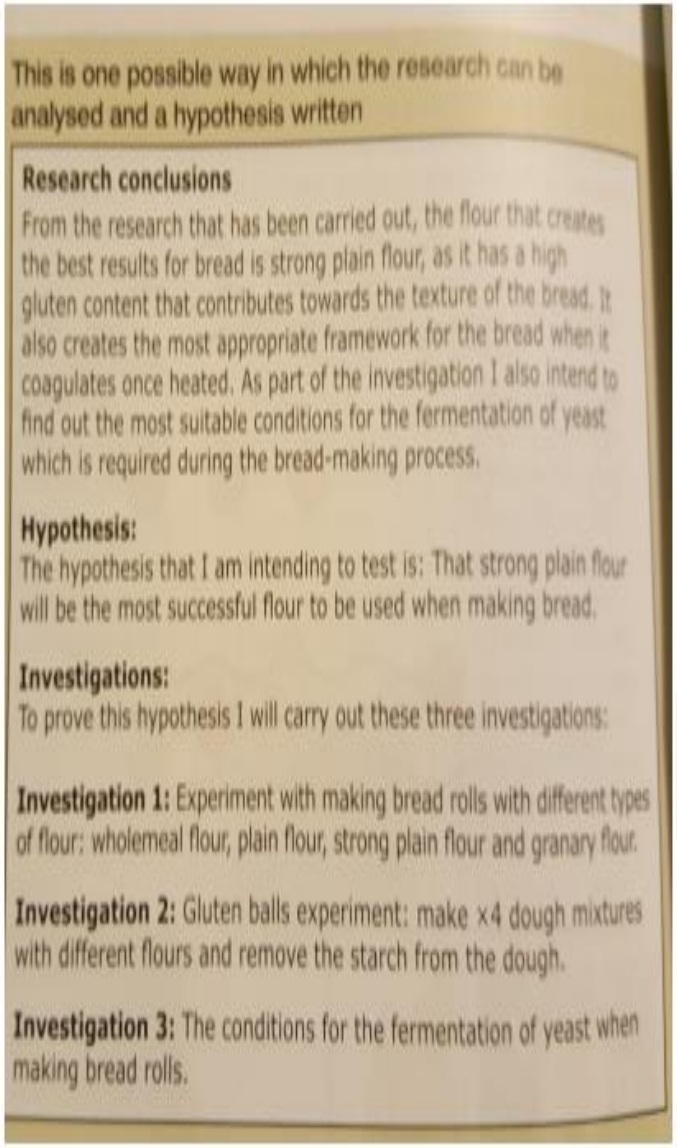
What is your hypothesis?

What will the aim of each investigation be?

How will you measure and collect the results to each experiment?

How much time will each experiment take?

Example of research analysis and experiment planning



This is one possible way in which the research can be analysed and a hypothesis written

Research conclusions

From the research that has been carried out, the flour that creates the best results for bread is strong plain flour, as it has a high gluten content that contributes towards the texture of the bread. It also creates the most appropriate framework for the bread when it coagulates once heated. As part of the investigation I also intend to find out the most suitable conditions for the fermentation of yeast which is required during the bread-making process.

Hypothesis:

The hypothesis that I am intending to test is: That strong plain flour will be the most successful flour to be used when making bread.

Investigations:

To prove this hypothesis I will carry out these three investigations:

Investigation 1: Experiment with making bread rolls with different types of flour: wholemeal flour, plain flour, strong plain flour and granary flour.

Investigation 2: Gluten balls experiment: make ×4 dough mixtures with different flours and remove the starch from the dough.

Investigation 3: The conditions for the fermentation of yeast when making bread rolls.

Hypothesis – What do you think the result is going to be? Fully justify.
What is the main aim of your investigation?
What 3 or 4 investigations are you going to do and how?

PLANNING

1. We could change…..

investigation	Different measurements
	control

Prediction. When we change …….

we think that …….. Will happen.

This is because

2. We could change…..

investigation	Different measurements
	control

Prediction. When we change …….. we think that …….. Will happen.

This is because

3. We could change…..

investigation	Different measurements
	control

Prediction. When we change …….

we think that …….. Will happen.

This is because

4. We could change…..

investigation	Different measurements
	control

Prediction. When we change …….. we think that …….. Will happen.

This is because

INVESTIGATION

Mark	Description
11-15	● Practical investigations show detailed and high level knowledge and understanding of how ingredients work and why with a clear link to the hypothesis or prediction. ● A wide range of testing has been carried out to formulate the results. ● Practical investigations are recorded and meticulously explained using methods such as: graphs, tables, charts, sensory analysis methods, labelled diagrams, annotated photographic evidence
6-10	● Practical investigations/experiments show very good knowledge and understanding of how ingredients work and why with a link to the hypothesis or prediction. ● A range of testing has been carried out to formulate the results. ● Practical investigations are recorded with very good explanation using methods such as: graphs, tables, charts, sensory analysis methods, labelled diagrams, annotated photographic evidence
1-5	● Practical investigations/experiments show some knowledge and understanding of how ingredients work with some links to the hypothesis or prediction. ● Some testing has been carried out to formulate the results. ● Practical investigations are recorded with limited explanation
0	Nothing worthy of credit.

KEYWORDS

Hypothesis, prediction range, formulate modifying, feedback,

Students should:

1. Investigate and evaluate how ingredients work and why through practical experimentation. Each investigation should be related to the research and have a clear aim which can then be concluded.
2. The number of investigations will be determined by the complexity of the investigations.
3. A range of appropriate testing methods should be identified and carried out to record the results e.g. annotated photographs, labelled diagrams, tables, charts, sensory testing methods, viscosity tests.

GCSE Food Preparation and Nutrition section 2 NEA1 INVESTAGATING - planning

Measuring, weighing, timing, colour chart, viscosity, temperature, results

Page Title	Include…			
For each of your 3 – 4 investigations you must prepare for the practical, using the following information.	Aim written for each investigation (What are you trying to find out?)			
	Description of each investigation and why chosen			
	Cooking times and temperatures for each investigation			
	Codes and a description for each sample. (ingredient list needed for shopping – do not put this detail in your coursework)			
	All Tests to be carried out for each:- Sensory testing (if relevant) Star profile Viscosity test (if relevant) Colour testing (all must use) Either Threshold/ paired/ comparison Temperature (if relevant) Predict on your paperwork the results. This will allow you to compare with the actual result.			
	Plan what photographs you are going to take.			

- Have you used subject specific terminology?
- Have you included the function and chemical properties of all ingredients?
- Have you recorded all sources of information in your bibliography?

INVESTIGATION 1 PLANNED INVESTIGATION

We are investigating

Control	Code Measurement/ observation Ingredients	Code Measurement/ observation Ingredients	Code Measurement/ observation Ingredients

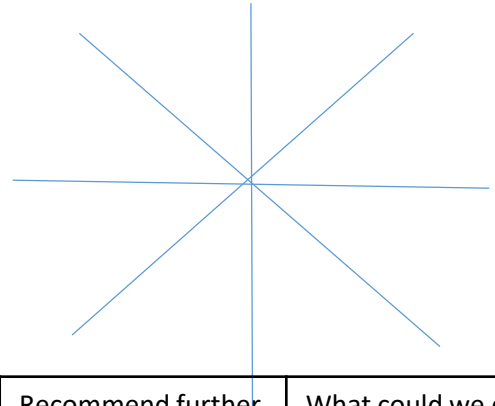
Prediction. When we change We think that will happen.

Because

Results table selected	
Photographs texture	
Colour charts	
Temperature probe	
Consistency charts	

Results. When we changed

This happened



Why did this happen?	Was the predication correct?	Were there any unusual readings?	This happened because?	Recommend further improvements	What could we do next?

Investigation 1
What is the aim?
What are the functions of the ingredients you used?

What are you going to do?

Which ingredients are you going to test?

What do you expect to happen?

How will you make sure it's a fair test?

Results tables/ graphs/ photographs
WHAT did you find out?

What conclusions can you draw?

INVESTIGATION 2 PLANNED INVESTIGATION

We are investigating

Control	Code Measurement/ observation Ingredients	Code Measurement/ observation Ingredients	Code Measurement/ observation Ingredients

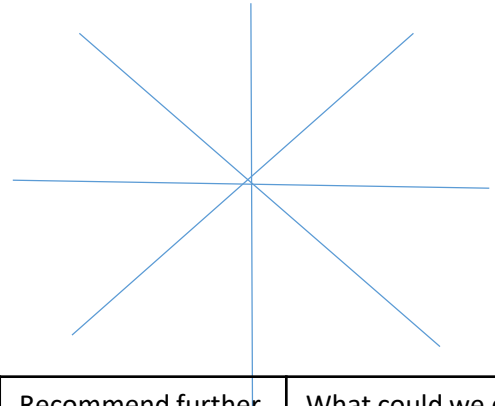
Prediction. When we change We think that will happen.

Because

Results table selected	
Photographs texture	
Colour charts	
Temperature probe	
Consistency charts	

Results. When we changed

This happened



Why did this happen?	Was the predication correct?	Were there any unusual readings?	This happened because?	Recommend further improvements	What could we do next?

Investigation 1
What is the aim?
What are the functions of the ingredients you used?

What are you going to do?

Which ingredients are you going to test?

What do you expect to happen?

How will you make sure it's a fair test?

Results tables/ graphs/ photographs
WHAT did you find out?

What conclusions can you draw?

INVESTIGATION 3 PLANNED INVESTIGATION

We are investigating

Control	Code Measurement/ observation Ingredients	Code Measurement/ observation Ingredients	Code Measurement/ observation Ingredients

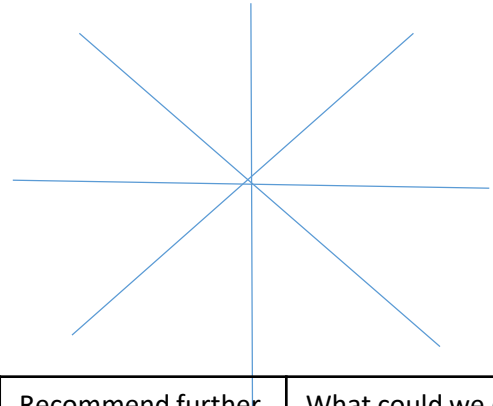
Prediction. When we change We think that will happen.

Because

Results table selected	
Photographs texture	
Colour charts	
Temperature probe	
Consistency charts	

Results. When we changed

This happened



Why did this happen?	Was the predication correct?	Were there any unusual readings?	This happened because?	Recommend further improvements	What could we do next?

Investigation 1
What is the aim?
What are the functions of the ingredients you used?

What are you going to do?

Which ingredients are you going to test?

What do you expect to happen?

How will you make sure it's a fair test?

Results tables/ graphs/ photographs
WHAT did you find out?

What conclusions can you draw?

INVESTIGATION 4 PLANNED INVESTIGATION

We are investigating

Control	Code Measurement/ observation Ingredients	Code Measurement/ observation Ingredients	Code Measurement/ observation Ingredients

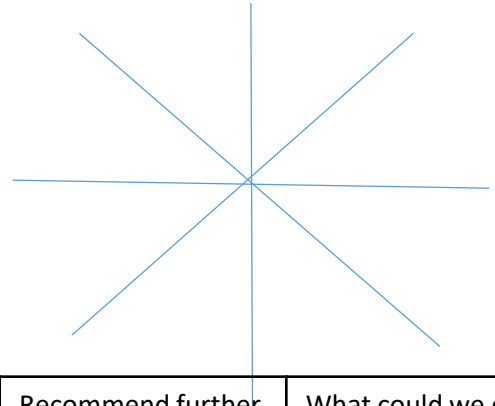
Prediction. When we change We think that will happen.

Because

Results table selected	
Photographs texture	
Colour charts	
Temperature probe	
Consistency charts	

Results. When we changed

This happened



Why did this happen?	Was the predication correct?	Were there any unusual readings?	This happened because?	Recommend further improvements	What could we do next?

Investigation 1
What is the aim?
What are the functions of the ingredients you used?

What are you going to do?

Which ingredients are you going to test?

What do you expect to happen?

How will you make sure it's a fair test?

Results tables/ graphs/ photographs
WHAT did you find out?

What conclusions can you draw?

GCSE Food Preparation and Nutrition section 2 NEA1 INVESTAGATING

Measuring, weighing, timing, colour chart, viscosity, temperature, results

Page Title	Include…			
Practical investigation 1 • **Must relate to the research** • **Have a clear aim** • **Be concluded**	Practical investigation aim and description			
	Link to hypothesis			
	Link to research			
	Ingredients/ codes for control and each sample			
	Photographs – fully annotated			
	data such as: sensory testing data, star profile, sensory testing, viscosity test, diagrams and graphs.			
	Table of results			
	Analysis of results			
	Brief conclusion – referred back to hypothesis and results			
Practical investigation 2 • **Must relate to the research** • **Have a clear aim** • **Be concluded**	Practical investigation aim and description			
	Link to hypothesis			
	Link to research			
	Ingredients/ codes for control and each sample			
	Photographs – fully annotated			
	data such as: sensory testing data, star profile, sensory testing, viscosity test, diagrams and graphs.			
	Table of results			
	Analysis of results			
	Brief conclusion – referred back to hypothesis and results			

GCSE Food Preparation and Nutrition section 3 NEA1 ANALYSIS AND EVALUATION

- Have you used subject specific terminology?
- Have you included the function and chemical properties of all ingredients?
- Have you recorded all sources of information in your bibliography?

Page Title	Include…			
Practical investigation 3 • **Must relate to the research** • **Have a clear aim** • **Be concluded**	Practical investigation aim and description			
	Link to hypothesis			
	Link to research			
	Ingredients/ codes for control and each sample			
	Photographs – fully annotated			
	data such as: sensory testing data, star profile, sensory testing, viscosity test, diagrams and graphs.			
	Table of results			
	Analysis of results			
	Brief conclusion – referred back to hypothesis and results			
Check investigation Write ups.	Are the investigations thoroughly planned with clear aims and conclusions throughout?			
	Does the task include appropriate, relevant and well planned practical investigations?			
	Have the practical experiments been carried out under controlled conditions to ensure fair and accurate results?			
	Has a wide range of testing been carried out?			
	Are the results of the investigations clearly recorded?			

What went well (WWW)

Even Better If (EBI)

ANALYSIS AND CONCLUSION

Mark	Description
7-9	● Detailed, accurate interpretation and analysis of the results with justified conclusions for all aspects of the hypothesis/investigation. ● The report demonstrates an in-depth and specialist understanding of how ingredients work and why. ● Detailed explanation/reflection of how the results can be applied when preparing and cooking food. ● The report is communicated in a structured and coherent manner with accurate use of technical language.
4-6	● Relevant interpretation and analysis of the results with conclusions of the hypothesis/investigation with some justification. ● The report demonstrates good understanding of how ingredients work and why. ● Explanation and review of how the results can be applied when preparing and cooking food. ● The report is communicated with clarity and with use of technical language
1-3	● Some analysis of the results from the hypothesis/investigation and an attempt at drawing conclusions. ● The report demonstrates some understanding of how ingredients work and why. ● Limited explanation of how the results can be applied when preparing and cooking food. ● The report is communicated at a simplistic level with a limited use of technical vocabulary.

KEYWORDS

Results, recorded, reflection, clarity, conclusions, understanding, coherent, accurate, interpretation.

Students should:

1. Analyse and interpret the results of the investigative work. The results will be linked to the research and data explaining the working characteristics, functional and chemical properties of the ingredient(s)
2. Evaluate the hypothesis/prediction with justification
3. Explain how the results/findings can be applied in practical food preparation and cooking.

Analysis and conclusion

Summarise what you have found out

Did you get any unexpected results?

If you did the investigations again, would you do anything differently?

Did you prove or disprove your hypothesis?

How do your findings link to the research you did? What's the science?

How would this information help a cook?

What conclusions can you draw?