

## East Renfrewshire Council: Education Department Practitioner Moderation Template

Prior to the moderation exercise, please complete the following information and submit it to your facilitator with assessment evidence from one learner that you judge to have successfully attained the Es and Os.

Practitioner Code	S43
Curriculum Area(s)	Maths and Numeracy
Level	Second level
Stage(s)	P6

### Experiences and Outcomes:

**MNU 2-07a:** I have investigated the everyday contexts in which simple fractions, percentages or decimal fractions are used and can carry out the necessary calculations to solve related problems.

**MTH 2-21a:** I can display data in a clear way using a suitable scale, by choosing appropriately from an extended range of tables, charts, diagrams and graphs, making effective use of technology.

### Learning Intentions:

1. To carry out calculations to solve fractions, percentage and decimal problems
2. To display data in an appropriate graph, chart or diagram using technology

### Success Criteria:

*Please list SC and give brief detail on how learners were involved in their creation.*

(The \* indicates the SC negotiated with children through discussion prior to the lesson)

1. I can convert fractions to percentages to decimal and vice versa
2. I can choose an appropriated method of working to solve a fpd problem
3. \*I can simplify fractions to solve problems
4. I can use a spreadsheet to produce a pie chart and bar graph (this depended on what a pupil selected)
5. I can choose an appropriate scale
6. \*I can use the correct labels in the graphs/charts
7. \*I can use formulas in 'Excel' to help total my answers

Briefly outline the context and range of quality **learning experiences** that have been planned making reference to the chosen design principles. Make specific reference to **breadth, challenge & application**.

Prior to this series of lessons, the children participated in a whole school maths week that predominantly focused on providing pupils with challenges relating to fractions, decimals and percentages. Some examples include identifying everyday  $\frac{1}{2}$ ,  $\frac{1}{4}$ , etc, locating fractions on a number line, creating their own fraction plates and making information poster demonstrating the relationship between converting fraction, decimal and percentages. The lessons referred to in the moderation documentation were designed to build and expand upon their prior knowledge gained by consolidating existing skills and applying those skills in a different context. **BREADTH**

For calculating the discount of the items, pupils were given the option to select which form they would like to complete their calculations in (fractions, decimal and percentages). This was to encourage them to apply their previous knowledge of conversion and identify which appropriate method would best solve the calculation. **BREADTH**

Pupils were given the opportunity to explore and utilise a wide range of ICT skills by selecting and creating graphs, charts or diagrams to present their data in. Pupils had to accurately produce a table in a spreadsheet based on their previous discount findings in order to generate a bar graph/pie chart using the spreadsheet package. After creating a bar graph/pie chart pupils had to select a suitable title, scale and label the axis's. **BREADTH**

Pupils had to apply previous knowledge of excel in order to create and generate charts, tables, diagrams and graphs that were appropriate for sorting information into a range of categories (food groups) **APPLICATION**

Pupils had to apply previous knowledge of the food groups, taught in Health and Wellbeing lessons, in order to group the items into the correct categories, ensuring that their data was accurately presented. **APPLICATION**

Through group discussions pupils had to analyse and interpret their graphs/charts/diagrams and by referring to their evidence share justifiable conclusions about which food groups were the most discounted. **CHALLENGE**

Some of the discounts were purposefully left blank on the provided table so pupils worked in groups to research discounts from a variety of sources (Tesco, Asda and Morrison online stores). This required them to identify the exact items and then convert these discounts so that they could be entered into the table containing original price and discount information (included in the evidence section). This challenged pupils to independently search, locate and record information as well as apply their learning in a real-life context. **APPLICATION and CHALLENGE**

Record the planned assessment that will be gathered to meet the success criteria (Say, Write, Make, and Do) considering **breadth, challenge and application**.

### **Say**

Pupils can present and share with a peer or group which food group is the most discounted by referring to their graphs, chart, diagrams and tables for justifiable evidence.

Pupils can either explain to the teacher or a peer as to why they opted to choose a certain method to solve a calculation. For example, why did they opt to only use fractions when calculating the discount of a whole number.

### **Write**

Pupils can record a range of discounts (fractions, decimals, percentages) from a website and input this information into their tables.

Worksheets completed evidencing that pupils can convert between fractions, decimals and percentages. Some of the questions will also demonstrate that pupils can write their addition and subtraction workings to complete their calculations.

### **Make**

Pupils can create a table with suitable headings and the items are organised based on their food groups.

The graphs/charts/diagrams will be appropriately titled, scaled and have a labelled axis

### **Do**

Pupils will have inputted their findings into an excel spreadsheet.

Pupils will have used a formula to sub-total their food group discounts. Then pupils will select the correct cells and choose a suitable diagram/chart using the chart function

Briefly outline the oral/written **feedback** given to the pupil on progress and **next steps**, referring to the learning intention and success criteria.

Throughout all the exercises verbal feedback was given so that the pupils felt appropriately supported (this is stamped as 'verbal feedback given' on evidence) As this was a series of linked lessons, worksheets were marked, annotated and re-issued so that pupils could reflect and correct their work. The teacher modelled examples providing pupils with an opportunity to clarify questions, allow the teacher to feedback on their queries and ensure they felt confident with the tasks (this was achieved through fist of 5, thumbs or growth mindset emoji cards).

Whilst Pupil X was inputting their information and converting fractions, decimals and percentages the teacher questioned their approach to ensure they were confident with applying previous learning. Similarly, when it came to the pupils calculating the discounts and subtracting it from the original price, the teacher applied questioning to challenge the pupils to critically think about the best approach. In addition, as Pupil X was meeting the Success Criteria it was recorded in the maths planner to inform next steps.

Upon concluding the first part of the series, the pupils were issued a feedback card so that they could reflect and comment on their progress towards the first Learning Intention. It also provided the teacher with an opportunity to comment on how the pupils met the Success Criteria - through colour coding and brief written commentary.

**Next steps** – having marked and observed the pupil it was concluded that they could now input their findings into an excel spreadsheet and generate diagrams/charts/graphs. It was suggested that in future pupil X should try to simplify all the fractions if possible to make calculations easier.

By using Google Classroom, the teacher was able to monitor the progress of the pupils with their spreadsheets and diagrams/charts/graphs. This allowed the teacher to offer commentary and advice throughout the ICT lesson. It was observed that Pupil X was entering the formula incorrectly so support and modelling was required. Later when Pupil X was deciding on an appropriate scale for the bar graph the teacher used this as an opportunity to query how it could be accomplished, allowing the pupil to lead the conversation. Finally, peer feedback was given, in the form of two stars and a wish, based on the presentation of the pupil's findings.

**Next steps** – Pupil X and the teacher shared feedback and it was concluded that the pupil had met the SC and LI and was ready to progress onto the next topic having demonstrated the required skills in this particular area. The pupil highlighted how much they had enjoyed the series and would like to repeat a similar exercise for another maths topic.

**Pupil Voice:**

What have you learned? How did you learn? What skills have you developed?

**What have you learned?**

“I have learned how to use decimals, fractions and percentage in real life situations”

“I have learned how to create and display my answers from my calculations in different graphs”

**How did you learn?**

“I looked for discounts on different websites and used my converting methods of fractions, decimals and percentages to enter them into my tables”.... “I also sometimes had to simplify the fractions to make it easier to calculate, I did this by finding a common number that the denominator and numerator go into”

“First I typed up the items in order of their food groups. Then I entered my discount answers into the cells under titles that I thought made sense. Next I highlighted some cells and used a formula to get the total. After that I highlighted the total cell and the chart function to create graphs and diagrams. I need had to create titles and codes for the information in my charts and diagrams so that they could be understood”

**What skills have you developed?**

“I am now more confident with applying my knowledge of percentages and fractions to find discounts of whole number”

“The ability to use information to make graphs and diagrams and how to use formulas”.... “I also feel I have a better understanding of how to use charts and diagrams to support my conclusions when presenting to others”

**Did the learner successfully attain the outcomes?**

**YES/NO**

## Learning Intention

- To carry out calculations to solve fractions, percentage and decimal problems
- To display data in an appropriate graph, chart or diagram using technology

### Benchmarks –

Uses knowledge of equivalent forms of common fractions, decimal fractions and percentages, for example,  $3/4 = 0.75 = 75\%$ , to solve problems.

Collects, organises and displays data accurately in a variety of ways including through the use of digital technologies, for example, creating surveys, tables, bar graphs, line graphs, frequency tables, simple pie charts and spreadsheets.

### Success Criteria

- I can convert fractions to percentages to decimal and vice versa
- I can choose an appropriated method of working to solve a fpd problem
- \*I can simplify fractions to solve problems
- I can use a spreadsheet to produce a **pie chart and bar graph** (this depended on what a pupil selected)
- I can choose an appropriate scale
- \*I can use the correct labels in the graphs/charts
- \*I can use formulas in 'Excel' to help total my answers

### Experiences & Outcomes

**MNU 2-07a:** I have investigated the everyday contexts in which **simple fractions, percentages or decimal fractions** are used and can carry **out the necessary calculations to solve related problems.**

**MTH 2-21a:** **I can display data in a clear way using a suitable scale, by choosing appropriately from an extended range of tables, charts, diagrams and graphs, making effective use of technology.**

### Second Level – Evidence of Learning

1. To carry out calculations to solve fraction, percentages and decimal fractions problems

2. (TEACHER INPUT) I can convert fractions to percentages to decimal fractions and vice versa

3. (PUPIL INPUT) *I understood the relationship between F, D, P*

4. (PUPIL INPUT) *I can simplify fractions to solve problems*

Mr Ferguson owns a restaurant in Glasgow, below is a copy of his overall weekly order list. He chooses to buy in large quantities as it will save him money because of the bulk order discount. For some of the items we will search Tesco's online store/website to find the most relevant discounts.

Item	Original price (£)	Discount
Boxes of apples	250	5%
Boxes of strawberries	300	30%
Bags of carrots	230	25%
Bags of lettuce	100	5%
Crates of cooked Chicken	700	0.1
Crates of Steaks	750	50%
Boxes of Sausages	480	25%
Trays of Lamb	400	0.8
Boxes of crisps	100	10%
Boxes of Eggs	50	5%
Trays of Bread	20	2%
Boxes of Cheese	5	10%
Bottles of Milk	5	5%
Bottles of Water	5	25%
Another of Coke	5	10%
Boxes of Dairy milk bar	5	30%
Boxes of Mars bar	5	50%
Boxes of Chocolate cake	5	0.6
Crates of bananas	5	0.25
Crates of Onions	5	0.75

Orange is Monday's order, red is Tuesday's order and Blue is Wednesday's order

Item	Fraction	Decimal	Percent
✓ Boxes of apples	1/4	0.25	25%
✓ Boxes of strawberries	3/10	0.3	30%
✓ Bags of carrots	1/4	0.25	25%
✓ Bags of lettuce	1/20	0.05	5%
✓ Crates of Cooked Chicken	1/10	0.1	10%
✓ Crates of Steaks	1/2	0.5	50%
✓ Boxes of Sausages	1/4	0.25	25%
✓ Trays of Lamb	4/5	0.8	80%
✓ Boxes of Crisps	1/10	0.1	10%
✓ Boxes of Eggs	1/20	0.05	5%
✓ Trays of Bread	1/50	0.02	2%
✓ Boxes of Cheese	1/10	0.1	10%
✓ Bottles of Milk	1/20	0.05	5%
✓ Bottles of Water	1/4	0.25	25%
✓ Another of Coke	1/10	0.1	10%
✓ Boxes of Dairy milk bar	3/10	0.3	30%
✓ Boxes of Mars bar	1/2	0.5	50%
✓ Boxes of Chocolate cake	6/10	0.6	60%
✓ Crates of bananas	1/4	0.25	25%
✓ Crates of Onions	3/4	0.75	75%

Excellent work! You have converted between f, d and p as outlined in the SC and I have noticed you simplified 80/100 to 8/10 will done!

Using the space below can you calculate Monday's overall value?

$2005$

Using the space below can you calculate Tuesday's overall value?

$550.25$

Using the space below can you calculate Wednesday's overall value?

$256.50$

How much is Mr Ferguson's weekly overall order?

$2811.75$

Mr Ferguson has to report to the Health Inspectors his percentages of items grouped into the food groups. Using prior knowledge create a pie chart to reflect Mr Ferguson's order.

20 items is the equivalent of 100%  
this is because if you divide 100% by 20  
this will equal five percent.  $20 = 100\%$   
 $1 = 5\%$

Excellent work! You have correctly divided the circle into segments by calculating the percentage of 1 item. You also recalled your food groups!

Category	Items
Protein	Costed chicken, Steaks, Sausages, Lamb, Fish
Dairy	Milk, Cheese
Fruit/Veg	Apples, Strawberries, Carrots, Lettuce, Onions, Bananas
Fat & Sweets	Mars bar, Dairy milk bar, chocolate cake
Cereals	Bread, Crisps

Well done, you have successfully researched some discounts and applied your previous knowledge to convert f, d and p

Pupil X has used online supermarket websites to find out discounts and note it on their table

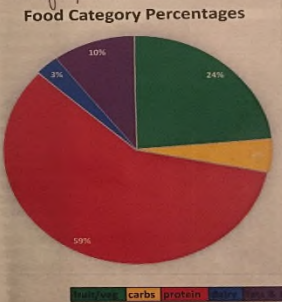
Pupil X has met SC1 and SC3 as they have been able to convert fraction, decimals and percentages as well as simplify them

Pupil X has met SC2 as they have been able to calculate the discount using f, d and p conversion methods and subtract from the total price

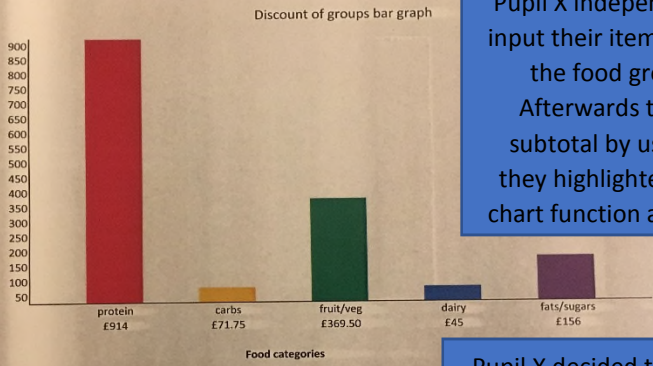
Pupil X has successfully been able to apply previous learning of food groups to group the items together. They have also calculated the percentage of 1 item and divided the circle appropriately

Item	original price (£)	discount a decimal	(as discount (£)	Group	Discount for group (£)
apples	250	0.25	62.5	fruit/veg	369.5
strawberries	300	0.5	150		
carrots	230	0.25	57.5		
lettuce	100	0.5	50		
onions	60	0.75	45		
bananas	18	0.25	4.5	carbs	71.75
bread	35	0.75	26.25		
cereal	400	0.1	40		
crisps	55	0.1	5.5		
chicken	700	0.1	70		
steaks	750	0.5	375	protein	914
sausages	480	0.25	120		
lamb	400	0.8	320		
fish	36	0.25	9		
eggs	40	0.5	20		
milk	80	0.5	40	dairy	45
cheese	50	0.1	5		
mars bar	58	0.5	29		
dairy milk	180	0.3	54		
choc cake	146	0.5	73		
					1556.25

At first Pupil X entered the formula incorrectly but after a brief input was able to correct this.



Feedback was given when discussing Scales. Discount value (to nearest £50)



Pupil X independently opted to first input their items into excel based on the food groups - SC 4 and 7. Afterwards they calculated the subtotal by using formulas. Then they highlighted the cells, selected chart function and chose a pie chart.

Pupil X decided to create a bar graph after mastering how to create a pie chart. They repeated the same process, however, this time they recorded the (£)value of the overall discount per food group and they had to consider a suitable scale SC5 and 6

For your spreadsheet, pie chart and bar graph, you have used suitable titles and appropriate scales. Your evidence is well organised and colour coded so that it is easier to read for your peer - well done!

Pupil Voice: " At first I found finding the total challenging in the spreadsheet as I kept on entering the wrong formula but the class teacher showed me how to do and since then I was able to do it confidently - with no help"

Fractions, decimals and Percentages - Hotel Shopping	
<b>Learning Intention -</b> To carry out calculations to solve fractions, decimal and percentages problems	
<b>Success Criteria -</b>	
I can convert fractions to percentages to decimal fractions and vice versa	<input checked="" type="checkbox"/>
I can choose an appropriated method of working to solve a fpd problem	<input checked="" type="checkbox"/>
I understand the relationship between Fractions, Decimals & Percentages.	<input checked="" type="checkbox"/>
I can simplify fractions to solve problems.	<input checked="" type="checkbox"/>
<b>Self-Evaluation</b> I enjoyed converting Decimals & Percentages into fraction vice versa. I'm confident simplifying fractions. you independently simplify	
<b>Teacher - Evaluation</b> Well done, you have been able to recall the strategies of conversion and apply them in a different context. I was impressed to see you independently simplify	
What have you learned? I have learnt how to use Decimals, fractions & Percentages in real life situations	
How did you learn? I looked at discounts on different websites & used different conversion methods.	
What skills have you developed? I was able to apply my understanding as percentages to find the discount of a whole number.	

Input Information into Diagrams and Graphs - Hotel Shopping	
<b>Learning Intention -</b> Display data in a selection of graphs or diagrams using technology	
<b>Success Criteria -</b>	
I can select an appropriate graph or diagram to represent my data	<input checked="" type="checkbox"/>
I can use a spreadsheet to produce a pie chart & bar graph	<input checked="" type="checkbox"/>
I can use the correct labels in graphs.	<input checked="" type="checkbox"/>
I can use formulas in 'Excel'.	<input checked="" type="checkbox"/>
<b>Self-Evaluation</b> I found it challenging making diagrams. I feel my information is well presented	
<b>Teacher - Evaluation</b> ★ You successful created different types of tables/charts/diagrams to record your information. Your information is well organised and presented. I was impressed to see you independently simplify formulas as the first few attempts did not work.	
What have you learned? I have learned how to display my work in graphs.	
How did you learn? I learned by making a table & putting my data in it. I also used a spreadsheet to create my graphs.	
What skills have you developed? I learned how to use my information to make the ability to use my information to make it into pictures, graphs & diagrams. I also learned how to put my information into the some format.	

**Context for learning overview:**  
The pupils were given this series of lessons to challenge them to apply previous learning in a real-life context. In pairs pupils researched discounts and recorded it in their tables and then they had to convert either a decimal, fraction or percentage into the other two forms. Selecting their own method; they calculated the discount, subtracted it from the original price and totalled the daily cost to the owner. Pupils were then asked to record the items into food groups in the pie chart format. To achieve this, they had to determine the percentage value of 1 item and then group the items into their food groups. Using this information, they inputted it into an excel spreadsheet, which they had to create themselves. This required them to choose appropriate titles and logically organise the information. To find the total of each food group they had to use formulas and then generate their own graphs/diagrams/charts. Subsequently they had to colour code and label their chosen graphs and charts. Finally, they presented their findings to their group/peer for review.