# Unit of Learning 1

# 1st Year Maths

# Numbers, Fractions, Decimals and Ratio

# Timescale: September to Mid term

| Learner outcomes (from specification) U1 to U13, N1a, N1b, N1d, N2a, N2b, N4, | Key Concepts Ability to add, subtract, multiply divide numbers and fractions. Able to apply BIMDAS. |
|---|---|
| **Possible Learning Experiences (Rich Learning activities for students)** 1. Egyptian Number system 2. Simon says with integers 3. Measuring the golden ratio 4. Ratios of miniature buildings | |
| **Evaluation of Student Learning (what will students say, do, write or make to show their understanding)** Students will be able to add, subtract, multiply, divide fractions. They will clearly see the link between fractions and ratio. Students will know the rules of multiplication and division as well as BIMDAS. Students will realise that maths can be seen all around the in their everyday lives. Understanding will be evident due to students completing written questions, answering questions and understanding and applying their knowledge to be able to engage with the rich learning experience. Students will demonstrate their knowledge via written exams and in class work as well as group work and "being the teacher". I will rely on questioning, peer teaching, monitoring of group work as well as a written test to evaluate learning. | |
| **Statements of learning** 1, 15, 16, 17, 18 and 24 | |

**Order of learning unit:**

1. Learning experience: Students will learn about the Egyptian number system and will aim to represent numbers via Egyptian system. They will discover the problem of not having a place value system

2. Students will be able to add, subtract, multiply and divide natural numbers, integers. Students will be comfortable using BIMDAS

3. Learning Experience: Students will play a game of "Simon says" via integers. Eg plus 3 steps (student takes 3 steps forward). Minus 2 steps (go back 2 steps)

4. Students will be able to add, subtract, multiply and divide fractions and decimals.

5. Learning experience: students will be introduced to the golden ratio. This will be done by getting them to compare the width and height of printed TV screens. Then measure each other's faces. And lastly discover the golden ratio embedded in Fibonacci numbers.

6. Students will be able to divide a sum into a given ratio.

7. Learning experience: students will measure the miniature model buildings and write their size as a ratio of the actual building

8. Students will be able to show something as a proportion and will be able to use inverse proportion to find best buys.

# Unit of Learning 2

# 1st Year Maths

# Sets and Algebra

# Time frame: Midterm to Christmas

| Learner outcomes (from specification) U1 to 13, N1a, b, d and e, N5a to E, AF2a,b and c, | Key Concepts Ability to identify elements and put them into a venn diagram, solve and simplify equations and expressions. Ability to add and multiply variables, evaluate expression's, solve equations and multiply and simplify expressions. |
|---|---|

**Possible Learning Experiences (Rich Learning activities for students)**
1. We will go into the sports field and make our own "human Venn diagram"
2. We will spend a week doing our "Maths eyes entry".
3. We will use the Scales to solve the weight of the ball.

**Evaluation of Student Learning  (what will students say, do, write or make to show their understanding)** students will be able to use their knowledge of sets to draw and interpret venn diagrams as well as answer questions relating to sets, union, intersection etc. students will be able to make their own venn diagram based on a question posed to them.  Students will also be able to solve and simplify equations and expressions. Students will demonstrate their knowledge via written exams and in class work as well as group work and "being the teacher". I will rely on questioning, peer teaching, monitoring of group work as well as a written test to evaluate learning.

**Statements of learning: 1, 15, 16, 17, 18 and 24**

**Order of learning unit:**

1. Students will be able draw and interpret a venn diagram. They will be able to identify union, intersection etc in a venn diagram

2. Rich learning Experience: students will go outside and arrange themselves into a venn diagram based on who supports which soccer team. We will take a picture of the arranged venn diagram and use Microsoft paint to make a venn diagram photo.

3. Students will spend time opening their mind to the fascinating aspects of maths around them. They will then try and make a "maths eyes poster" to enter into the maths eyes competition.

4. Students will know how to simplify expressions

5. Rich learning experience: students will use the weighing scales to try and solve the weight of objects.

6. Students will learn how to solve equations with one unknown

7 Rich learning experience: students will solve the fruit algebra game cards

# Unit of Learning 3

## 1st Year Maths

## Percentage and measure

## Timescale: Christmas to end of January

| Learner outcomes (from specification) | Key Concepts (knowledge, understanding, skills and values) |
|---|---|
| U1 to 13, N2a, b and c. | Ability to convert fractions/decimals to percentages<br>Ability to find the % of a number<br>Ability to increase or decrease a value by a given percentage<br>Ability to deal with VAT and percentage profit/loss<br>Ability to convert units of measure |

**Possible Learning Experiences (Rich Learning activities for students)**
Kahoot game to reinforce converting of fractions/decimals to percentages
Racing/exercise game where we find the percentage of students who ran in under 10 seconds etc.
Measure the school and signpost it and change to meters/cm/km

**Evaluation of Student Learning (what will students say, do, write or make to show their understanding)** students will see the link between fractions/decimals and % and will understand that they are simply different ways of presenting the data. Students will understand what it is to increase or decrease something by a given %. Students will understand how VAT and percentage profit adds to the price of our everyday goods we buy. Students will be able to identify best value per gram/ml in a shop. Students will understand the reason behind converting units of measure and will be able to do so as well as identify the best unit of measure to us when measuring a given length/weight/volume. Students will demonstrate their knowledge via written exams and in class work as well as group work and "being the teacher". I will rely on questioning, peer teaching, monitoring of group work as well as a written test to evaluate learning.

**Statements of learning: 1, 15, 16, 17, 18 and 24**

**Order of learning unit:**

1. Students will be taught how to convert from fractions/decimals to percentages (estimations and trial and error with calculator will be used in order to engage the students at the beginning of the lesson)
2. Rich learning experience: kahoot will be used to reinforce 1 above
3. Students will learn how to increase/decrease a value by a percentage
4. Rich learning experience: students will take part in a race and will identify the percentage of students who finished the race in under 10 seconds. Now we will try and INCREASE that percentage by a given percent.
5. Students will learn how to apply VAT and percentage profit/loss to an item

6. Students will learn how to convert units of measure
7. Rich learning experience: students will make signposts around the school showing the distance to a given room and will show the distance in cm/m/km

# Unit of Learning 4

## 1st Year Maths

## Probability and Statistics

## Time frame: End of January to mid term

| Learner outcomes (from specification)<br>U1 to 13, SP2a and b, SP3a, b and c | Key Concepts Students will understand how to find the probability of an event happening<br>Students will be able understand and us the fundamental principles of counting. Students will be able to draw and interpret bar charts and line plots. Students will understand the different types of data. Students will be able to use and interpret different types of average |
|---|---|
| **Possible Learning Experiences (Rich Learning activities for students)**<br>Students will play deal or no deal and use knowledge of probability to influence choices during the game. Students will play deal of no deal again and this time combine their knowledge of probability and statistics to influence their decisions in the game. Students will conduct a price of research. Students will find the probability of getting eg a red M&M from the bag (they will get to eat the sweets for every correct answer they give) ||
| **Evaluation of Student Learning  (what will students say, do, write or make to show their understanding) .**<br>Students will understand why the need a knowledge of probability and statistics. They wil also understand that both these subjects are no mathematics in the purest sense. Students will be able to identify the best average to use in certain situations as well as the probability of events happening. Students will be assesses informally using questions during the lesson to ensure understanding. Students will demonstrate their knowledge via written exams and in class work as well as group work and "being the teacher".  I will rely on questioning, peer teaching, monitoring of group work as well as a written test to evaluate learning. ||
| **Statements of learnig: 1, 15, 16, 17, 18 and 24** ||

## Order of learning unit:

1. Students will be introduced to how probability began begun.
2. Students will learn how to list outcome and then use the fundamental principles of counting
3. Students will learn how to find the probability of an event happening
4. Rich learning experience: students will play " Deal or no Deal" for real money and will use their knowledge of probability to help then with decision making
5. Rich learning experience: students will find the probability of getting an eg red sweet from a packet of sweets (they can then eat the sweets)
6. Students will learn about the different types of data
7. Students will learn how to present data in different ways
8. Rich learning experience: students will undertake their own piece of research
9. Students will be able to use mean, mode and median to find averages

10. Rick Learning experience: students will use their knowledge of averages and probability to aid them playing "Deal or no Deal".
11. Students will be introduced to simple volume of rectangular solids
12. Rich learning experience: Students will find the volume of packets of sweets (which they can then eat)

# Unit of Learning 5

# 1st Year Maths

# Perimeter and Area

# Time frame: February mid term to before Easter

| Learner outcomes (from specification)<br>U1 to 13, GTc | Key Concepts<br>Students will understand how to find the perimeter and area of regular 2d shapes<br>Students will be able to find the area and perimeter of irregular shapes. Students will be able to find the length of side when given areas. Students will be introduced to the notion of Pi and where it comes from. |
|---|---|
| **Possible Learning Experiences (Rich Learning activities for students)**<br>Students will find the perimeter of the school<br>Students will find the area of the school<br>Students will find the area of sides of packets of sweets (before being allowed eat them) | |
| **Evaluation of Student Learning  (what will students say, do, write or make to show their understanding) .**<br>Students will understand the need for finding the area and perimeter of objects. Students will understand the units of measure associate with perimeter and area. Students will know how to use their skills to find the areas and perimeter of irregular shapes. Students will demonstrate their knowledge via written exams and in class work as well as group work and "being the teacher".  I will rely on questioning, peer teaching, monitoring of group work as well as a written test to evaluate learning. | |
| **Statements of learning** 1, 15, 16, 17 18 and 24 | |

**Order of learning unit:**

1. Students will be introduced to how the concept of area and perimeter begun.
2. Students will learn how to find the perimeter of regular shapes.
3. Students will learn how to find the perimeter of irregular shapes
4. Rich learning experience: students will find the perimeter of the school
5. Students will learn how to find the area of regular shapes
6. Students will learn how to find the area of irregular shapes
7. Rich learning experience: students will find the area of the school using trundle wheels, paces and measuring tapes.
8. Students will practice finding the area and perimeter of irregular shapes and real life problems.
9. Rich learning experience: Students will find the area of packets of sweets
10. Rich learning experience: students will be brought down the town with measuring instruments and asked to find circles (top of bins etc). I will ask them to estimate and calculate home many times the diameter of the circle will wrap around its circumference.

# Unit of Learning 6

# 1st Year Maths

# Geometry and Coordinate Geometry

# Time frame: Easter to Summer

| Learner outcomes (from specification)<br>U1 to 13, GT3c and e, GT5 a (part of) | Key Concepts<br>Students will understand properties of angles and triangles and will be able to use these properties in solving problems. Students will be able to plot points on a coordinate plane and find the distance and midpoint. |
|---|---|
| **Possible Learning Experiences (Rich Learning activities for students)**<br>Students will try draw a line that DOES not have 180 degrees.<br>Students will try draw a triangle that internal angles DO NOT add to 180 degrees<br>Students will observe geometry in the local town in the form of buildings etc.<br>Students will try and come up with a method for showing their blindfolded friend where the dot they drew on the board was after it was rubbed out (while they are now blind folded) ||
| **Evaluation of Student Learning (what will students say, do, write or make to show their understanding) .**<br>Students will demonstrate their knowledge via classroom discussions, identifying geometry properties in the world around them, identifying the size of angles based on their knowledge. I will check for understanding via monitoring of peer teaching, group work, questioning, homework and written test. ||
| **Statements of learning: 1, 15, 16, 17, 18 and 24** ||

## Order of learning unit:

1. Rich learning experience: students will be asked to draw a straight line and measure its angle. They will also be asked to draw any triangle and measure its 3 angles and add them together. If anyone can identify a line which does not measure 180 degrees or a triangles who angles do not add to 180 degree….i will give them 100 euro.
2. Students will understand the properties of angles, transversals, parallel lines and triangles
3. Students will practice solving questions in groups and peer teaching solutions to questions which require them to use said learned knowledge.
4. Rich Learning Experience. A student will be blindfolded (student A). Another student (student) will come to the board and draw a draw on it. Now the dot will be erased. Now student B is blindfolded and student A comes to the board. Student A must explain to student B where the dot WAS drawn on the board and student A must try and redraw it in its original place. All students must now devise a way in which student A and B can ensure that no matter where the first dot was drawn, it can be replicated easily by any student.
5. Students will play "battle ships".
6. Students will practice plotting, reading coordinates as well as finding the distance and midpoint.