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| Teacher(s) | Ms.Kanika Suri ,Ms.Manisha Sehgal | Subject group and discipline | Mathematics | | |
| Unit title | Number System | MYP year | 2 | Unit duration (hrs) | 26 hrs |

Inquiry: Establishing the purpose of the unit

| Key concept | Related concept(s) | Global context |
|---|---------------------------|---|
| Logic | System, Quantity | Globalization and Sustainability |
| Statement of inquiry Key Concept + Related Concepts + Global Context <u>Exploration</u> = Statement of Inquiry | | |
| Logical understanding of systems and quantities helps in decision making towards humankind and environment. | | |
| Inquiry questions | | |
| Factual —how do we express quantities? How do we convert fractions to decimals, and vice versa? Conceptual —how do we divide something that was already divided? Do different forms lead to different situations? Debatable — Does money make the world go round? Is money good or bad, neither or both? | | |

| Objectives | Summative assessment | |
|--|--|---|
| <p>Objective-A-Knowing and Understanding</p> <ul style="list-style-type: none"> i. select appropriate mathematics when solving problems in both familiar and unfamiliar situations ii. apply the selected mathematics successfully when solving problems iii. Solve problems correctly in a variety of contexts. <p>Objective-C-Communicating</p> <ul style="list-style-type: none"> i. use appropriate mathematical language (notation, symbols and terminology) in both oral and written statements iii. communicate coherent mathematical lines of reasoning | <p>Outline of summative assessment task(s) including assessment criteria:</p> <p>End of Unit Assessment (Summative task) End of unit assessment will be conducted on Criteria A: Knowledge and understanding and Criteria C: Communicating. The aim of the assessment will be that students should be able to apply their knowledge in familiar and challenging situations and also communicate in mathematical language.</p> | <p>Relationship between summative assessment task(s) and statement of inquiry:</p> <p>The summative task and SOI are related as the Eoua will be having questions based on fair trade coffee. How fair trade is helping farmers by giving proper prices for their coffee crops and is this fair for farmers and other companies selling coffee?</p> |
| Approaches to learning (ATL) | | |
| <p>1.Thinking –</p> <ul style="list-style-type: none"> • Practise observing carefully in order to recognize problems (FA-1 Fraction) <p>2. Communication skill —</p> <ul style="list-style-type: none"> • use and interpret a range of discipline –specific terms and symbols. (FA-1, FA-2) | | |

- Organize and depict information logically (FA-1, FA-2)

3. Self-Management-Organization skills

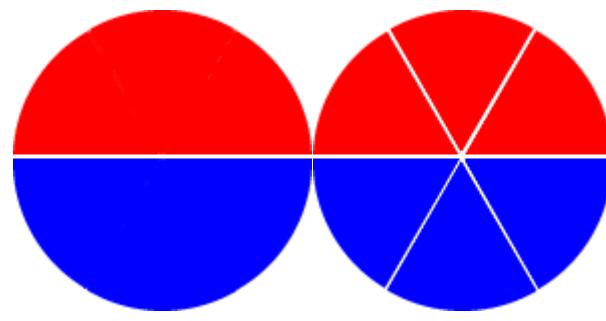
- Bring necessary equipment and supplies to class

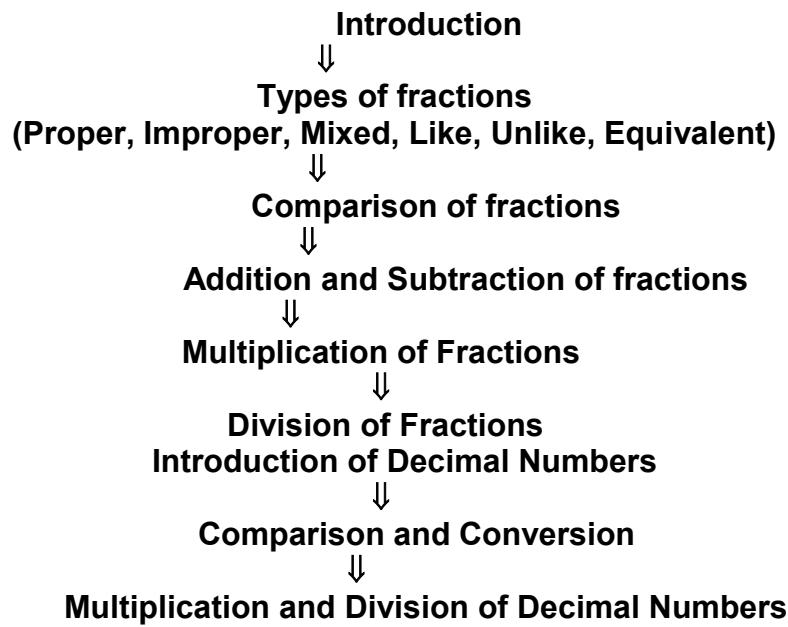
4. Social Skills- Collaboration skills

- Listen actively to other perspectives and ideas
- Build consensus

Action: Teaching and learning through inquiry

| Content | Learning process |
|-------------------------------------|--|
| Ch-3 Positive and negative numbers. | <p>Learning experiences and teaching strategies</p> <p>Introduction of lesson with various forms of number system.</p> <p>An opening problem will be given to scholars to assess the knowledge of addition and subtraction of integers (Pg-62 Hasse)</p> <p>The opening problem: Credit Cards are a common way to pay for things .When you buy something ,its value is subtracted from the card balance .When you make payments onto the card ,the amount is added to the card balance.</p> <p>Things to think about:</p> <ul style="list-style-type: none"> • Graham's credit card has a balance of - \$1230.He purchases a table for \$799 using his card .What will his new balance be? • Jill's credit card has a balance of -\$271.She pays some money onto the card, and her balance now reads +\$105.How much money did Jill put on the card ? |

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| <p>Ch-5 Fractions</p>  | <ul style="list-style-type: none"> Kate buys \$75 worth of groceries each week using her credit card .If her starting balance is -\$330.What will her balance be after 5 weeks ? <p>Concept of multiplication and division of integers will be explained. Scholars will be asked to practice from the book to enhance their skill.</p> <p>Rules of order of operations will be discussed and application of these rules will be taught using various problem solving questions.</p> <p>Students will be introduced to the way that fractions appear in daily aspects of life and that knowledge of fractions helps us to solve difficult situations and issues.</p> <p>Equivalent Fractions will be explained using following diagram</p>  |
|--|---|



$\frac{1}{2}$ is red $\frac{3}{6}$ is red

The first one says that $\frac{1}{2}$ is red and the second one says that $\frac{3}{6}$ is red...

But, the same amount is red on both circles! So, $\frac{1}{2}$ must be the same

$$\frac{3}{6} \text{ amount as } \frac{1}{2}. \text{ Therefore, } \frac{1}{2} = \frac{3}{6}$$

These are called equivalent fractions. (Since they are equal amounts)

Look at another one:



$$\frac{1}{3} = \frac{3}{9}$$

The same amount is green on both so

After this discussion various fractions will be written on the board and the students will be asked to classify the fractions as: like, unlike, proper, improper and then they will be asked to find their equivalent fractions. Also then they will be asked to convert the fractions in their lowest form.

Recap of addition and subtraction of fractions will be done with the help of examples and the method will also be discussed again for the students to understand i.e. There are two cases of addition and subtraction of fractions:

1. Fractions with same denominator
 2. Fractions with different denominator
- We use the following **steps to add or subtract fractions:**

- ✓ **Change any mixed numbers to improper fractions.**
- ✓ **Find the lowest common multiple of the denominators.**
- ✓ **Express all fractions with the same denominator.**
- ✓ Perform addition or subtraction using the numerators to obtain the numerator of the answer; and then simplify the fraction, if possible.
- ✓ Write the answer either as an improper fraction or as a mixed number.

Multiplication of Fractions (Fraction with a whole number)

- The fact that multiplication by a fraction does not increase the value of the product may confuse those who remember the definition of multiplication presented earlier for whole numbers.
- Another way of thinking about the multiplication of $1/12$ by 4 is as follows:

$$\begin{aligned}4 \times \frac{1}{12} &= \frac{1}{12} + \frac{1}{12} + \frac{1}{12} + \frac{1}{12} \\&= \frac{4}{12} = \frac{1}{3}\end{aligned}$$

- In the same manner, we will evaluate $3 \times \frac{2}{7}$ as $\frac{2}{7} + \frac{2}{7} + \frac{2}{7}$ (since $3 \times \frac{2}{7}$ means adding $\frac{2}{7}$ three times) $= \frac{2+2+2}{7} = \frac{6}{7}$ or $3 \times \frac{2}{7} = \frac{6}{7}$

On the basis of this illustration we may generalize it as: If a fraction is multiplied by a whole number then only the numerator of the fraction is multiplied by that number keeping the denominator as it is.

- Represent pictorially $2 \times \frac{2}{5} = \frac{4}{5}$

Can you tell what is a) $\frac{1}{2}$ of 10? b) $\frac{1}{4}$ of 16? c) $\frac{2}{5}$ of 25?

Multiplication of a Fraction with another fraction.

Progression of the concept:

- There are 3 simple steps to multiply fractions
 - Multiply the numerators of the fractions**
 - Multiply the denominators of the fractions**
 - Place the product of the numerators over the product of the denominators**

4. Simplify the Fraction

Example 1. $\frac{1}{4} \times \frac{2}{5}$

1. Multiply the numerators:

$$\frac{1}{4} \times \frac{2}{5} = \frac{1 \times 2}{\cancel{4} \times \cancel{5}} = \frac{2}{\underline{20}}$$

2. Multiply the denominators:

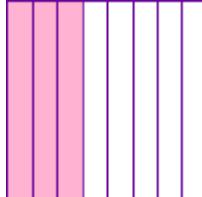
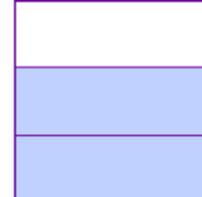
$$\frac{1}{4} \times \frac{2}{5} = \frac{1 \times 2}{\cancel{4} \times \cancel{5}} = \frac{2}{\underline{20}}$$

3. Simplify the fraction if possible:

$$\begin{aligned}\frac{1}{4} \times \frac{2}{5} &= \frac{2 \div 2}{\cancel{20} \div 2} \\ &= \frac{1}{\underline{10}}\end{aligned}$$

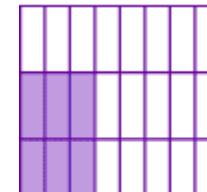
Example2: $\frac{1}{3} \times \frac{9}{16}$

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| | <p>Step 1. Multiply the top numbers: $\frac{1}{3} \times \frac{9}{16} = \frac{1 \times 9}{3 \times 16} =$</p> <p>Step 2. Multiply the bottom numbers: $\frac{1}{3} \times \frac{9}{16} = \frac{1 \times 9}{3 \times 16} = \frac{9}{48}$</p> <p>Step 3. Simplify the fraction: $\frac{9}{48} = \frac{3}{16}$</p> <ul style="list-style-type: none"> The problem with multiplication is the numbers can get quite big , which means it is easy to make mistakes in the multiplication and hard to simplify the resulting fraction. To prevent this we do not multiply out the numerators (tops) and denominators (bottoms) immediately. First of all we break all the numbers involved down in to there factors and then look for common factors between the numerators (tops) and denominators (bottoms), any that are found are cancelled out. To clarify what happens when you multiply fractions. For example, here's how we would use the area model to demonstrate the problem $3/8 \times 2/3$: |
| | <p>Shade one square, partitioned vertically, to represent $3/8$ (shown below in pink):</p> <p>Shade another square, partitioned horizontally, to represent $2/3$</p> <p>Superimpose the two squares. The product is the area that is double-</p> |

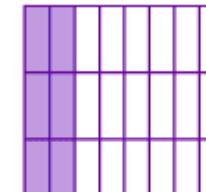
| | (shown below in blue): | shaded (shown below in purple): |
|--|---|---|
| |  <p>$\frac{3}{8}$</p> |  <p>$\frac{2}{3}$</p> |

- What is the value of this purple area? There are 3×2 , or 6, purple parts out of 8×3 , or 24, parts in all, so the value of the purple area is $6/24$.
- This model visually demonstrates the familiar algorithm: To multiply two fractions, multiply the numerators and then multiply the denominators. This algorithm "counts" both the purple parts (the product of the two numerators) and the total number of parts (the product of the two denominators).
- We can also use this model to "reduce" the fraction. First we swap the positions of some of the purple parts. Two of the purple parts can be moved to the top, and thus, two of the eighths are now shaded.

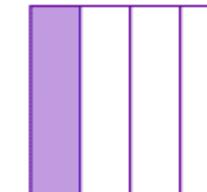
These two eighths are the same area as one quarter:



$$= \frac{6}{24}$$



$$= \frac{2}{8}$$



$$= \frac{1}{4}$$

Division of fractions

Progression of the concept:

The Reciprocal Method: The word "reciprocal" denotes an interchangeable relationship. It is used in mathematics to describe a specific relationship between two numbers. We say that two numbers are reciprocals of each other if their product is one.

- In the example $4 \times \frac{1}{4} = 1$ the fractions $4/1$ and $1/4$ are reciprocals. Notice the interchange ability: 4 is the reciprocal of $1/4$ and $1/4$ is the reciprocal of 4.

What is the reciprocal of $3/7$? It must be a number which, when multiplied by $3/7$, produces the product, 1. Therefore,

$$\frac{3}{7} \times ? = 1$$

$$\frac{1}{\cancel{3}} \times \frac{\cancel{7}}{7} = 1$$

$$\frac{1}{1} \quad \frac{1}{1}$$

We see that $\frac{7}{3}$ is the only number that could fulfill the requirement.

Notice that the numerator and denominator of $\frac{3}{7}$ were simply interchanged to get its reciprocal. If we know a number, we can always find its reciprocal by dividing 1 by the number.

The rule for finding the reciprocal of any number: The reciprocal of a number is the fraction formed when 1 is divided by the number. (If the final result is a whole number, it can be considered as a fraction whose denominator is 1.) A shortcut rule which is purely mechanical and does not involve reasoning may be stated as follows: To find the reciprocal of a number, express the number as a fraction and then invert the fraction. When the numerator of a fraction is 1, the reciprocal is a whole number. The smaller the fraction, the greater is the reciprocal. For example, the reciprocal of $\frac{1}{1,000}$ is 1,000

Then **the rules of division of fractions** will be discussed with the help of examples.

- **To divide a whole number by any fraction, multiply that whole number by the reciprocal of that fraction.**
- **While dividing a whole number by a mixed fraction, first convert the mixed fraction into improper fraction and then solve it**

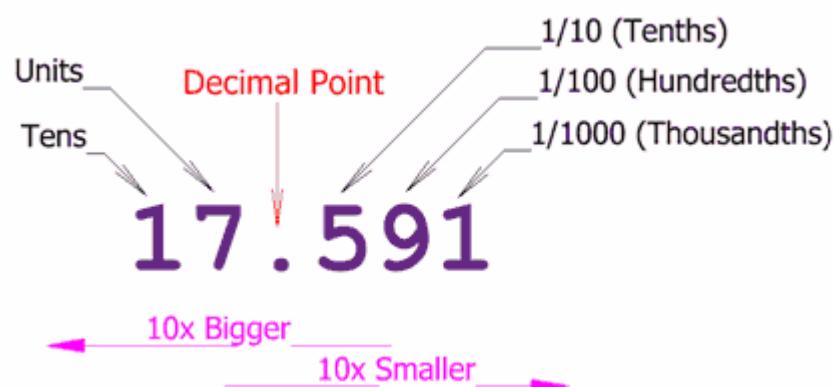
Will the reciprocal of a proper fraction be again a proper fraction? Will the reciprocal of an improper fraction be again an improper fraction?
Concepts of fractions were revised with various maths games on

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| | <p>www.sheppardsoftware.com</p> <p>1. Formative Assessment 1 on Fractions: Criteria A: Knowledge and Understanding</p> <p>Description of the Topic: The aim of the activity is that student should be able to apply all the four operations on fractions and simplify them.</p> <p>Instructions for FA:</p> <ol style="list-style-type: none"> 1. Each student will be provided with 10 dominoes. 2. Students will operate on the fractions mentioned in dominoes and arrange them in rectangular shape and paste in the answer script. 3. Time limit to arrange the dominoes for each student is 35 minutes. <p>Decimal Numbers</p> <p>Introduction of the lesson with an opening problem to assess the knowledge of scholars.</p> <p>A small activity will be conducted where students will be asked to work in pairs and list examples of where you have seen decimals.</p> <ul style="list-style-type: none"> • At home • On the news • At school • In sport • At the shops <p>Rounding off decimal numbers: Rules for rounding off decimal numbers will be discussed and students will be asked to apply these rules on various decimal numbers</p> <p style="text-align: center;">Comparison of Decimal Numbers</p> |
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- After the recap of decimal numbers , how to compare two decimal numbers will be discussed
 - If there are two decimal numbers we can compare them. One number is either greater than, less than or equal to the other number.
 - A decimal number is just a fractional number. Comparing 0.7 and 0.07 is clearer if we compared $7/10$ to $7/100$. The fraction $7/10$ is equivalent to $70/100$ which is clearly larger than $7/100$.
- Ordering decimals can be tricky. Because often we look at 0.42 and 0.402 and say that 0.402 must be bigger because there are more digits. But no! If you follow the following method you will see which decimals are bigger.
 - Set up a table with the **decimal point in the same place** for each number.
 - Put in each number.
 - Fill in the **empty squares with zeros**.
 - Compare using the **first column** on the left, and pick out the highest in order.
 - If the digits are equal move to the **next column** to the right until one number wins.

Example: Order the following decimals: 0.402, 0.42, 0.375, 1.2, 0.85

| Ch-6 Decimal Number | <p>Step 1: Set up the place value table and put in each number</p> <p>Step 2: Fill in the empty squares with zeros:</p> <table border="1" data-bbox="1123 333 1965 659"> <thead> <tr> <th>Units</th><th>Decimal Point</th><th>Tenths</th><th>Hundredths</th><th>Thousands</th></tr> </thead> <tbody> <tr> <td>0</td><td>.</td><td>4</td><td>0</td><td>2</td></tr> <tr> <td>0</td><td>.</td><td>4</td><td>2</td><td>0</td></tr> <tr> <td>0</td><td>.</td><td>3</td><td>7</td><td>5</td></tr> <tr> <td>1</td><td>.</td><td>2</td><td>0</td><td>0</td></tr> <tr> <td>0</td><td>.</td><td>8</td><td>5</td><td>0</td></tr> </tbody> </table> <p>Step 3: Compare using the first column (Units): then the second column (Tenths): and if the digits at the tenths place are also same then compare the digits at the hundredths place and so on.</p> <p>Multiplication of decimals</p> <p>To multiply a decimal number by a whole number:</p> <ul style="list-style-type: none"> ✓ ignore the decimal point and multiply the digits ✓ place the decimal point in the answer so that it has the same number of decimal places as the number being multiplied • After this discussion, concept of multiplication of decimal numbers with 10, 100 or 1000 will be taken up with the help of various examples like: $3.23 \times 10 = \frac{323}{100} \times 10 = 32.3$ | Units | Decimal Point | Tenths | Hundredths | Thousands | 0 | . | 4 | 0 | 2 | 0 | . | 4 | 2 | 0 | 0 | . | 3 | 7 | 5 | 1 | . | 2 | 0 | 0 | 0 | . | 8 | 5 | 0 |
|---------------------|---|--------|---------------|-----------|------------|-----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Units | Decimal Point | Tenths | Hundredths | Thousands | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | . | 4 | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | . | 4 | 2 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | . | 3 | 7 | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | . | 2 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | . | 8 | 5 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | |



Decimal point shifted to the right by one place since 10 has one zero .

$$3.23 \times 100 = \underline{323} \times 100 = 323$$

Decimal point shifted to the right by two places since 100 has two zeros .

$$3.23 \times 1000 = \underline{323} \times 1000 = 3230$$

- Then they will be told about a "mental math" shortcut: When multiplying a number by a multiple of ten, just move the decimal point one space to the right for every zero.

$$10 \times 0.6284 = 6.284 \text{ (1 zero, 1 place right)}$$

$$100 \times 0.6284 = 62.84 \text{ (2 zeroes, 2 places right)}$$

$$1000 \times 0.6284 = 628.4 \text{ (3 zeroes, 3 places right)}$$

$$10,000 \times 0.6284 = 6284 \text{ (4 zeroes, 4 places right)}$$

$$100,000 \times 0.6284 = 62,840 \text{ (5 zeroes, 5 places right)}$$

To multiply decimal numbers:

- Multiply the numbers just as if they were whole numbers.
- Line up the numbers on the right - **do not align the decimal points**.
- Starting on the right, multiply each digit in the top number by each digit in the bottom number, just as with whole numbers.
- Add the products.
- Place the decimal point in the answer by starting at the right and moving a number of places equal to the sum of the decimal places in both numbers multiplied.

$$3.77 \times 2.8 = ?$$

$$\begin{array}{r} 3.77 \text{ (2 decimal places)} \\ \times 2.8 \text{ (1 decimal place)} \\ \hline 3016 \\ +754 \\ \hline 10.556 \text{ (3 decimal places)} \end{array}$$

Division of decimals

- Then division of a decimal number by 10, 100 or 1000 will be done. While dividing a number by 10, 100 or 1000, the digits of the number and the quotient are same but the decimal point in the quotient shifts to the left by as many places as there are zeros over one.

To divide a decimal number by a whole number:

- Use Long Division (ignoring the decimal point)
- Then put the decimal point in the same spot as the dividend (the number being divided)
- The trick is to convert the number you are dividing by to a whole number first, by **shifting the decimal point of both numbers** to the

right:

$$\begin{array}{r} 6.625 \div 0.53 \\ \text{---} \\ \text{ } \end{array} \rightarrow 662.5 \div 53$$

Now you are **dividing by a whole number**, and can continue as normal.
It is safe to do this if you remember to shift the decimal point of **both numbers** the same number of places.

Students revisited the concepts of decimals with the help of **Kahoot Quiz** made by students and also played maths games on www.sheppardsoftware.com

2. Formative Assessment 2 on Decimals: Criteria C-Communicating

Description of the Topic: The aim of the activity is that student should be able to multiply and divide decimal numbers by powers of 10.

Solve the Riddle:

Complete each of the multiplication problems carefully. Write each letter from the top boxes in the box below with the matching answer. The shaded and unshaded areas make up the words that answer this riddle:

en the little girl's father encouraged her to study, so she could get
ead, what did she say?

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| | <p>Formative assessment</p> <p>Activity-1) Description of the Topic: The aim of the activity is that student should be able to apply all the four operations on fractions and simplify them.</p> <p>Instructions:</p> <ol style="list-style-type: none"> 1. Each student will be provided with 10 dominoes. 3. Students will operate on the fractions mentioned in dominoes and arrange them in rectangular shape and paste in the answer script. 4. Time limit to arrange the dominoes for each student is 35 minutes. <p>Activity –2) Description of the Topic: The aim of the activity is that student should be able to multiply and divide decimal numbers by powers of 10.</p> <p>Solve the Riddle:</p> <p>Complete each of the multiplication problems carefully. Write each letter from the top boxes in the box below with the matching answer. The shaded and unshaded areas make up the words that answer this riddle:</p> |

| | |
|-------------------------|---|
| | <p>the little girl's father encouraged her to study, so she could get ahead, what else can we say?</p> |
| | <p>End of Unit Assessment (Summative task)</p> <p>End of unit assessment will be conducted on Criteria A: Knowledge and understanding and Criteria C: Communicating.</p> <p>The aim of the assessment is that the students are able to apply their knowledge in familiar and challenging situations and also communicate in mathematical language.</p> |
| | <p>Differentiation</p> <ul style="list-style-type: none">• Differential worksheet will be given.• Students revisited the concepts of decimals with the help of Kahoot Quiz made by students and also played maths games on www.sheppardsoftware.com |
| <p>Resources</p> | |

- MYP by Concept 2 –Hodder Education
- Hasse Mathematics-Mathematics for the international students MYP 2
- www.sheppardsoftware.com
- www.kahoot.com
- www.youtube.com

Reflection: Considering the planning, process and impact of the inquiry

| Prior to teaching the unit | During teaching | After teaching the unit |
|---|---|--|
| The students have fair idea about integers, fractions and decimals .So our main focus will be operations on various number forms. | The students were thorough with the concepts of integers and fractions. But some students still need to work on the operations of fractions. Students needs to practice decimal more in order to be clear with the concept. | The students knew most of the concepts and Fractions took very less time while in decimals more time was spent on multiplication and division of decimals. |

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|-------------------|--|-------------------------------------|--------------------|----------------------------|--------------|
| Teacher(s) | Ms.Kanika Suri ,Ms.Manisha Sehgal | Subject group and discipline | Mathematics | | |
| Unit title | Commercial Mathematics | MYP year | 2 | Unit duration (hrs) | 17hrs |

Inquiry: Establishing the purpose of the unit

| Key concept | Related concept(s) | Global context |
|--|----------------------------------|---|
| Relationship | Change and Simplification | Globalization and Sustainability |
| Statement of inquiry Key Concept + Related Concepts + Global Context <u>Exploration</u> = Statement of Inquiry | | |
| Financial, personal and economic change can be understood and simplified using proportional relationships like ratios and percentages. | | |
| Inquiry questions | | |
| <p>Factual</p> <ul style="list-style-type: none"> • What is a ratio? • How do we reason with ratios? • What is the difference between percentage 'of' and percentage 'off'? <p>Conceptual</p> <ul style="list-style-type: none"> • How do we simplify a ratio? • How do we share quantities in a given ratio? | | |

- Can ratios shed light on problems?

Debatable

- What is the best way to find the percentage of something?
- Can percentage go over 100%?
- Does money make the world go round? Is money good or bad, neither or both?

| Objectives | Summative assessment | |
|--|--|--|
| <p>Objective-B-Investigating Patterns</p> <p>i. Apply mathematical problem-solving techniques to recognize patterns.</p> <p>ii. Describe patterns as relationships or general rules consistent with correct findings.</p> <p>iii. Verify whether the pattern works for other examples.</p> <p>Objective –D-Applying Mathematics in real life context</p> <p>i. Identify relevant elements of authentic real-life situations</p> <p>iii. Apply the selected mathematical</p> | <p>Outline of summative assessment task(s) including assessment criteria:</p> <p>End of Unit Assessment (Summative task)</p> <p>End of unit assessment was clubbed with End of term assessment. The aim of the assessment was that students should be able to apply their knowledge in investigating patterns and challenging situations.</p> | <p>Relationship between summative assessment task(s) and statement of inquiry:</p> <p>Questions based on financial changes like profit and loss were given in Eota to apply the concept of percentage.</p> |

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| <p>strategies successfully to reach a solution</p> <p>v. Describe whether a solution makes sense in the context of the authentic real-life situation.</p> | | |
| Approaches to learning (ATL) | | |
| 1. Communication skills —Exchanging thoughts, messages and information effectively through interaction | | |
| <ul style="list-style-type: none"> • Give and receive meaningful feedback (Fa-2) | | |
| 2. Creative thinking skills | | |
| <ul style="list-style-type: none"> • Draw reasonable conclusions and generalizations (Fa-1) | | |
| 3. Collaborative skills | | |
| <ul style="list-style-type: none"> • Delegate and share responsibility for decision-making. (Jigsaw) • Manage and resolve conflict, and work collaboratively in teams. | | |
| 4. Affective skills | | |
| <ul style="list-style-type: none"> • Demonstrate persistence and perseverance (Jigsaw puzzle) | | |
| 5. Organization skills | | |
| <ul style="list-style-type: none"> • Bring necessary equipment and supplies to class | | |

Action: Teaching and learning through inquiry

| Content | Learning process |
|----------------------------|--|
| Ch-14 Ratio | Learning experiences and teaching strategies |
| Ratio | Introduction of Ratios with the help of opening Problem. |
| Writing Ratios as Fraction | Then the video by Math Antics on introduction to Ratios will be shown. https://www.youtube.com/watch?v=RQ2nYUBVvql |
| Equal Ratios | Through this video students will be able to find the difference between a fraction and a ratio. Also, they will be able to write the ratios in correct representations |
| | |
| | |
| | Concept of Equal ratios will be discussed, and questions based on the same will be done from the book. After doing the questions the student will have the clarity that we have to simplify the ratios before comparing to find whether the ratios are equal or not. |
| | Also various situations will be given to students to identify whether the ratios involved are equal or not. |
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| | Problems based on ratios will be discussed and the method to solve the problems based on ratios will be developed through solving various questions. |

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| <p>Problem Solving using Ratios</p> <p>Using Ratios to divide quantities</p> | <p>How can we divide quantities using ratios will be discussed.</p> <p>Students will be given situations where total quantity and the ratio in which the quantity is divided will be given. The students have to find the quantity in each part of the ratio.</p> <p>Formative Assessment-1 –Criteria B(i,ii,iii) will be conducted</p> <p>Description of the Topic: The aim of the activity will be that student should be able to find the pattern and form a generalized formula</p> <p>The students will be provided with examples of Equal ratios and using these examples the students have to find the generalized formula and show that this formula works for another example too.</p> <p>Also, the students will be provided with particular questions of dividing a quantity in the given ratio and then they will be asked to derive a particular formula and show that the formula works for another example.</p> <p>Introduction to percentages by a video from Math Antics. Below is the link https://www.youtube.com/watch?v=JeVSmq1Nrpw</p> |
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| <p>Ch-8 Percentage</p> <p>Understanding Percentages</p> | <p>Through this video the students will have clarity about What are percentages? Where are they used in real life? What is the relationship between percentage and fraction? How can a percentage be converted into a fraction? Also, they will discover what is 0% and what is 100%. Can we have something more than 100 %.</p> <p>After the video there will be discussion on use of percentages in real life where students will be asked to cite examples from real life where they are using percentages.</p> <p>How to change percentage into fraction and percentage into decimals and vice versa will be discussed. Questions based on the same will be solved by the students.</p> <p>Activity-Jigsaw Puzzle</p> <p>Activity Based on Percentages where students are supposed to identify the fraction and decimal that are representing the same percentage and arrange them in such a way that they form a hexagonal shape. Activity Jigsaw puzzle.docx</p> <p>After finishing the activity students will get clarity that percentages can be converted to fractions and fractions can be converted to decimal numbers. Also, percentages can be directly converted to decimal numbers. This implies that percentage can be written in terms of fractions and in terms of decimal numbers also.</p> |
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| Interchanging number forms | <p>The concept of calculating a percentage of a quantity will be discussed using different examples where students will be asked to calculate percentages of various quantities and then they will solve problems based on the same.</p> <p>The concept of profit and loss will be introduced by citing examples from real life. Example of a shop owner selling pens will be discussed that how the cost price and selling price plays an important role in finding whether the business will have profit or loss.</p> <p>Students will be asked to cite examples on the same.</p> <p>After that students will solve some challenging problems on the same.</p> <p>Formative Assessment-2 –Criteria D(i,iii,v) will be conducted</p> <p>Students are supposed to apply the concept of percentages and answer the following questions.</p> <p>Students will be provided with some simple, challenging and complex problems of</p> |
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| Finding a percentage of a quantity | <p>percentages in real life. So, students have to apply their knowledge to solve it and describe the solutions of the same.</p> |
| Business Application (Applying the concepts of percentages for obtaining profit and loss) | <p>Formative assessment</p> <ol style="list-style-type: none"> 1. Formative Assessment-1 –Criteria B(i,ii,iii) will be conducted <p>Description of the Topic: The aim of the activity will be that student should be able to find the pattern and form a generalized formula Students will be provided with examples of Equal ratios and using these examples the students have to find the generalized formula and show that this formula works for another example too. Also the students will be provided with particular questions of dividing a quantity in the given ratio and then they will be asked to derive a particular formula and show that the formula works for another example.</p> <ol style="list-style-type: none"> 2. Formative Assessment-2 –Criteria D(i,iii,v) will be conducted <p>Students are supposed to apply the concept of percentages and answer the following questions. Students will be provided with some simple, challenging and complex problems of percentages in real life. So, students have to apply their knowledge to solve it and describe the solutions of the same.</p> |

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| | <p>End of Unit Assessment (Summative task)- Criteria B(I,ii,iii) and criteria-D(I,iii,v)</p> <p>End of unit assessment will be clubbed with End of term assessment. The aim of the assessment was that students should be able to apply their knowledge in investigating patterns and challenging situations and also apply the mathematics in real life.</p> |
| | <p>Differentiation</p> <ul style="list-style-type: none">• Differential worksheet will be given.• Jigsaw puzzle activity-Students will perform the activity in groups which will promote peer learning as we have mixed learners in the group and students can share their strategies to complete the activity. Also, there are simple problems and challenging problems which cater to different group of learners. |
| Resources | <ul style="list-style-type: none">• MYP by Concept 2 –Hodder Education• Hasse Mathematics-Mathematics for the international students MYP 2• www.youtube.com |

Reflection: Considering the planning, process and impact of the inquiry

| Prior to teaching the unit | During teaching | After teaching the unit |
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| Students will be learning ratios for the first time. So, it can take more than the dedicated time. Also, they will find applications of percentages very interesting | Students are quite happy to learn ratios and they are finding it very easy. Also, they need to observe more in order to recognize patterns in daily life. | Teaching ratios and percentages was quite fun. Students were citing new examples in the activities. Students are thorough with the concept of percentages, but they still face difficulty in finding profit and loss. |

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| Teacher(s) | Ms.Kanika Suri ,Ms.Manisha Sehgal | Subject group and discipline | Mathematics | | |
| Unit title | Algebra | MYP year | 2 | Unit duration (hrs) | 20-25 hours |

Inquiry: Establishing the purpose of the unit

| Key concept | Related concept(s) | Global context |
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| Relationship | Simplification, Patterns | personal and cultural expression (artistry, craft, creation, beauty) |

Statement of inquiry Key Concept + Related Concepts + Global Context Exploration = Statement of Inquiry

The relationship among the different patterns and their simplifications can be used for beautiful creation.

Inquiry questions

Factual

- What are like terms and how do we collect them?
- How can I tell if terms are like or not? What are algebraic products?
- What are equal algebraic expressions?
- What is the difference between algebraic expression and equation?

Conceptual

- What is the language of Algebra? How does the language of Algebra tell us what is happening in a problem?
- How to maintain the balance of an equation?

Debatable:

- Could algebra be a universal language?

| Objectives | Summative assessment | |
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| <p>Objective-B-Investigating Patterns</p> <ul style="list-style-type: none">i) apply mathematical problem-solving techniques to recognize patternsii) describe patterns as relationships or general rules consistent with correct findings <p>Objective-C-Communicating</p> <ul style="list-style-type: none">i) use appropriate mathematical language (notation, symbols and terminology) in both oral and written statementsii) use different forms of mathematical representation to present informationiii) communicate coherent mathematical lines of reasoning | <p>Outline of summative assessment task(s) including assessment criteria:</p> <p>End of Unit Assessment (Summative task)</p> <p>Activity: Mystic roses</p> <p>Students will create beautiful patterns in circles by joining different number of points and generalise them.</p> | <p>Relationship between summative assessment task(s) and statement of inquiry:</p> <p>The Eoua is well aligned with SOI as the students will create beautiful pattern by joining different number of dots (Points)in the circle.</p> |

Approaches to learning (ATL)

1. Communication skills -Exchanging thoughts, messages and information effectively through interaction

- Interpret and use effectively modes of non-verbal communication
- Give and receive meaningful feedback

2. Creative thinking skills

- Generating new ideas and considering new perspectives
- Make unexpected or unusual connections between objects and/or ideas
- Create original works and ideas; Use existing works and ideas in new ways
- Apply existing knowledge to generate new ideas, products or processes

3. Transfer skills

- Using skills and knowledge in multiple contexts
- Apply skills and knowledge in unfamiliar situations

4. Affective skills

- Demonstrate persistence and perseverance.

5. Research-Information literacy skills

- Understand and use technology system (Kahoot quiz)

6.Organisation skills

- Bring necessary equipment and supplies to class

Action: Teaching and learning through inquiry

| Content | Learning process |
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| Algebra: | Learning experiences and teaching strategies Topic will be introduce with the help of the video “What is Algebra by Math Antics”. Below is the link https://www.youtube.com/watch?v=NybHckSEQBI . |
| Writing Algebraic Expressions: | Rules to write algebraic expressions will be discussed in the class and students will practice problems from the book. Key words in algebra will be defined and students will be asked to identify constant, |

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| Key words in algebra | variables and coefficients in algebraic expressions. |
| Equal Algebraic Expressions | To make students understand the concept of algebraic expression, some pictures will be shown from the book. Then students will be asked to simplify some expressions and find whether they are equal or not. |
| Collecting like terms | The concept of like and unlike terms will be explained to student and then problems based on the same will be discussed. Activity: Race to the top: Students complete the algebraic pyramids by adding pairs of expressions together. |
| Algebraic Product | Rules for algebraic product will be discussed. Activity: The snake is the ladder Students carry out the operations one step at a time until they arrive at the simplified solution |
| Evaluating algebraic expressions | Substituting the values in the algebraic expression and finding the values of the algebraic expressions. The concept of Simple equation will be introduced with the help of an opening problem. |

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| Simple Equation | <p>The concept of Balancing equation will be explained through a video https://www.youtube.com/watch?v=l3XzepN03KQ -Math antics</p> <p>The concept of solving simple equations and equations with a repeated variable will be explained and word problems based on the concept will be discussed.</p> <p>Formative assessment</p> <p>Criteria B - Investigating patterns</p> <ul style="list-style-type: none"> i. apply mathematical problem-solving techniques to recognize patterns ii. Describe patterns as relationships or general rules consistent with correct findings <p>FA 1: Activity: Predict the pattern and draw the next two diagrams and answer the given questions based on it.</p> <p>Criteria C: Communicating</p> <ul style="list-style-type: none"> i. use appropriate mathematical language (notation, symbols and terminology) in both oral and written statements ii. use different forms of mathematical representation to present information iii. communicate coherent mathematical lines of reasoning <p>FA-2: Activity: Worksheet on Equations</p> |
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| | <p>End of Unit Assessment (Summative task)</p> <p>. Activity: Mystic roses</p> <p>Students will create beautiful patterns in circles by joining different number of points and generalise them.</p> |
| | <p>Differentiation</p> <ul style="list-style-type: none"> • Differential worksheet will be given. • Use of pair work and peer activities allow students to work with each other and develop each other's understanding. |

Resources

- MYP by Concept 2 –Hodder Education
- Hasse Mathematics-Mathematics for the international students MYP 2
- www.tes.com
- www.maths-aids.com

Reflection: Considering the planning, process and impact of the inquiry

| Prior to teaching the unit | During teaching | After teaching the unit |
|--|---|-------------------------|
| Students already know some basic terminology about algebra and they know rules for combining like terms, algebraic | Students are very well aware of all the operations on Algebraic Expressions but they still need to work on Simple | |

product will be an interesting for students.

Equations.