BREEDING ARENA College

THE BREEDER'S GUIDE

MATHEMATICS

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YEAR 7

Term Sow 2024/2025

SCHEME OF WORK

MATHEMATICS

Science & Technology **January 8th – April 14th**

WEEK	TOPIC	SUB-TOPICS
1	Approximation	a. Rounding up numbers to significant figures, decimal places and nearest whole number b. Approximating numbers to the nearest tens, hundred, thousand, tenth, hundredth, etc.
2	Approximation	a. Approximating values of Addition, Subtraction, Multiplication and Division
3	Number Base (I)	a. Conversion of base 2 numbers to base 10 b. Conversion of other bases to base 10
4	Number Base (II)	a. Conversion of base 10 numbers to base 2 b. Conversion of base 10 numbers to other bases
5	Number Base (III)	a. Addition and subtraction of number base
6	Number Base (IV)	a. Multiplication and division of number base
7	Midterm test and break	
8	Algebraic Expression (I)	a. Definition b. Expansion c. Factorization
9	Algebraic Expression (II)	a. Monomial expression b. Binomial expression c. Removing brackets
10	Algebraic Expression (III)	a. Algebraic fractions b. Arithmetic operations in algebraic expressions.
11	Revision	
12	Examination	
13	Examination	
WEEK	TOPIC	SUB-TOPICS

1. APPROXIMATION

<u>Objective:</u> By the end of this class, each student should be able to round up given numbers to specified degrees.

<u>Duration:</u> 190 mins

<u>Week:</u> 1

<u>Entry Behaviour (*How you plan to start your Class*):</u>

<u>Rounding off</u>
To round off a number means to write a number near the original number that is a number not exactly the original number. It may be a bit more or less than the original. Whole numbers can be approximated to the nearest ten, hundred, thousand, million, etc.
Let's consider the table below

NUMBER	Rounded off
186	***190*** to the nearest ***ten***
1586	***1600*** to the nearest ***hundred***
1481	***1480*** to the nearest ***ten***
687.4	***687*** to the nearest ***unit***
4225	***4000*** to the nearest ***thousand***
69685.42	***69690*** to the nearest ***ten***
2.634	***2.630*** to the nearest ***thousandth***
0.214	***0.214*** to the nearest ***thousandth***

From the above table, we can see that when numbers are rounded off, they do not give the exact result expected. In approximation, we only consider the next figure we are approximating. If it is up to 5 and above, we take it as one (1) and add the (1) to the figure we are approximating to. If it is less than 5, we make it zero (0) and add zero to the figure.

<u>NOTE</u>: Correcting numbers to the nearest *ten (10)* means leaving your answer with only *one zero* at the back of your answer (the unit position), while to the nearest *hundred (100)* and *thousand (1000)* means leaving *two zeros* and *three zeros* at the back respectively

Example 1

Give 14 505 to the nearest:

a. thousand, b. hundred, c. ten.

a. 14 505 = 505 15 000 to the nearest thousand

(The digit with the value of thousand is '4', therefore 5 is rounded up and added to 5 to make 15,000)

b. 14 505 = 14 500 to the nearest hundred

c. 14 505 5 14 510 to the nearest ten (the last digit of 14 505 is 5; round up)

Example 2

Approximate 79.75 to the nearest:

a. hundred, **b**. ten, **c**. whole number, **d**. tenth.

a. 79.75 = 79.75 100 to the nearest hundred

b. 79.75 = 80 to the nearest ten

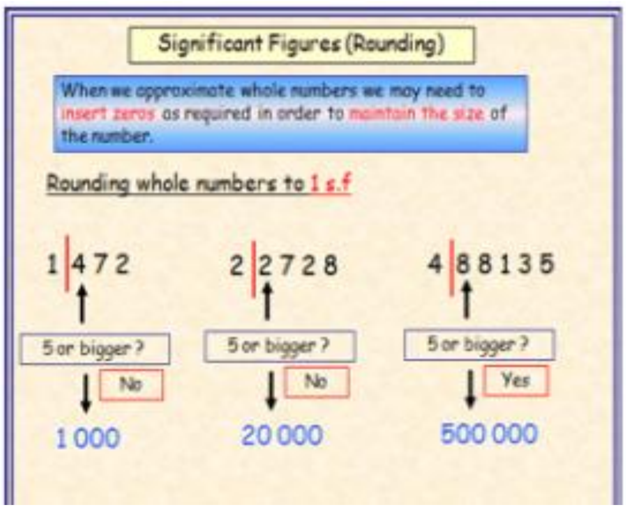
c. 79.75 = 80 to the nearest whole number (the fraction 0.75 is closer to 1 than 0; thus 79 is rounded up to the nearest whole number, 80)

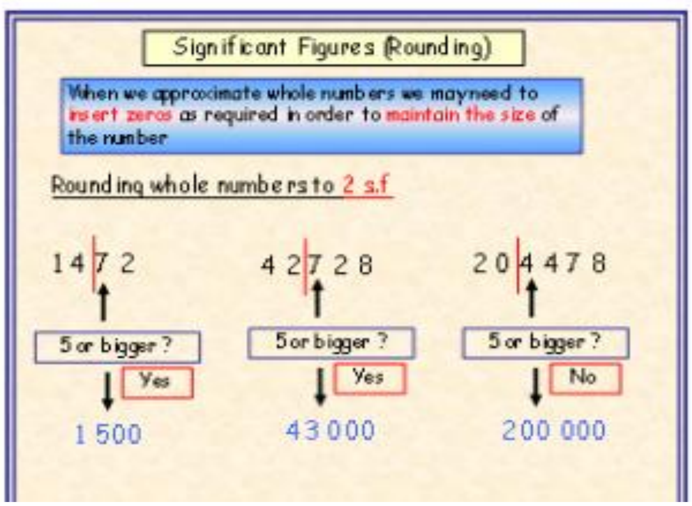
79.75 = 79.8 to the nearest tenth (the last digit of 79,75 is 5; round up)

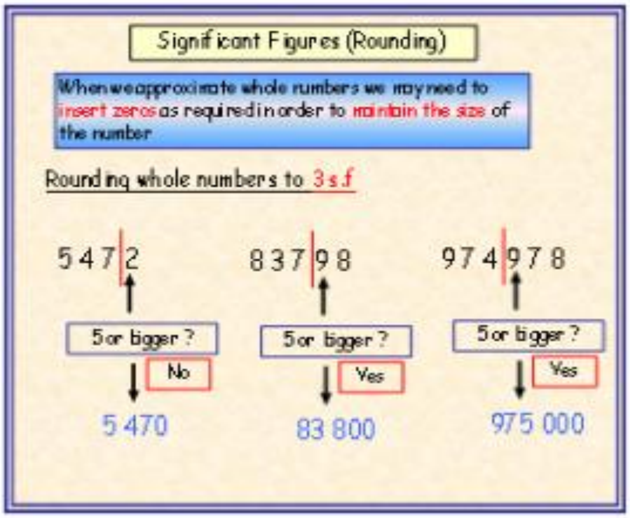
Significant Figures

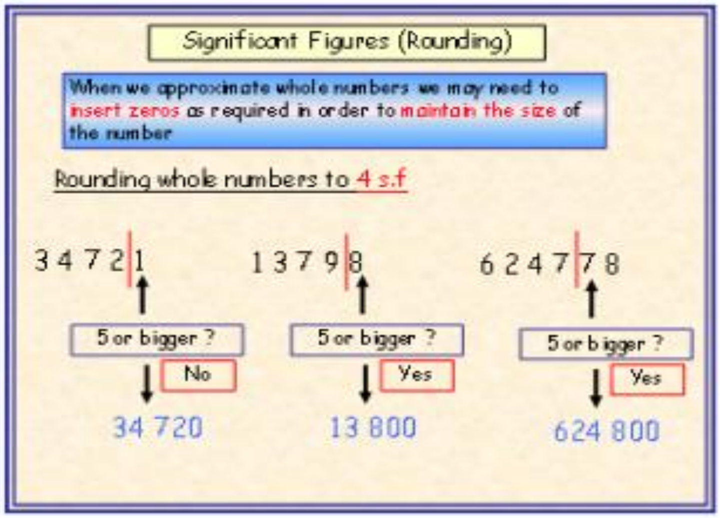
Numbers could be rounded up to a given significant figures. Significant figures are obtained by counting the number of digits in a given number.

When rounding up or down a number to given significant figures we count the digits of the number from left hand side to the required significant figures, then we consider the next digit to do the rounding up or down. If the digit is less than 5, we round down the number to zero and if it is equal to or greater than 5, we round it to one (1)









Example:
Round off:

(a) 456 (b) 0.03278 to:

- 2 significant figures
- 3 significant figures

Solution:

a. (i) 456.36 = 460 (2 s.f)
   (ii) 456.36 = 456 (3 s.f)
b. (i) 0.03278 = 0.033 (2 s.f)
   (ii) 0.03278 = 0.0328 (3 s.f)

Decimal places

The number of digit(s) after the decimal point in any given number is called its **Decimal places.**

Example:
Correct the following to i) 1 decimal place ii) 2 decimal places iii) 3 decimal places

a) 0.10775 b) 0.08017 c) 2.1359

Solution

a) 0.10775

0.10775 = 0.1 to 1d.p
0.10775 = 0.11 to 2d.p
0.10775 = 0.108 to 3d.p

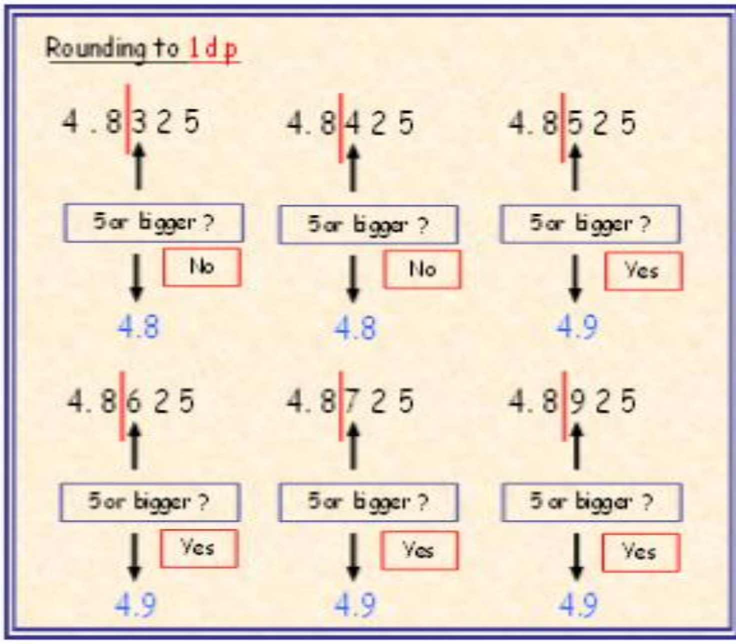
b) 08017

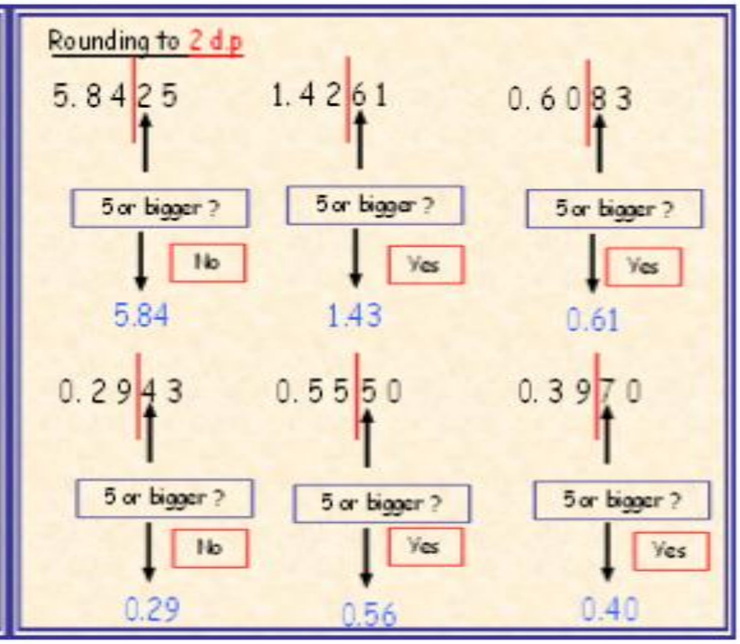
0.08017 = 0.1 to 1dp
0.08017 = 0.08 to 2dp
0.08017 = 0.080 to 3dp

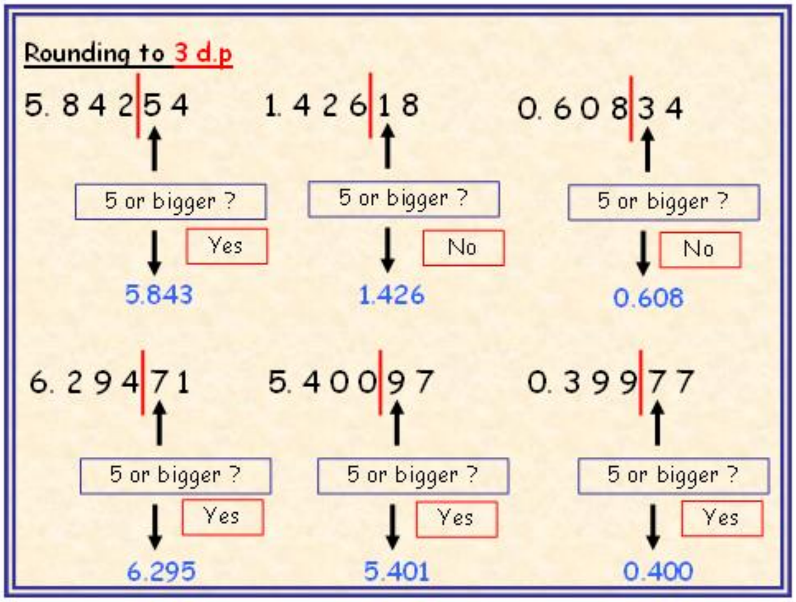
c) 2.1359

2.1359 = 2.1 to 1dp
2.1359 = 2.14 to 2dp

2.1359 = 2.136 to 3dp







REFERENCE	Keywords	Assignment/Evaluation
New General Mathematics for Junior secondary schools - Book 1	• Round off • Estimation • Approximation • Significant figure • Decimal place	1. Round off the following to the nearest: i. Thousand, ii. Hundred, iii. Ten. a. 9 895 b. 26 888 c. 16 066 d. 30 097 2. Approximate the following to the nearest whole number. a. 78.75 b. 6.9

		c. 29.6 3. Round off the following to the nearest tenth. a. 0.71 b. 0.45 c. 0.09 d. 0.98 4. Approximate the following to the nearest hundredth. a. 0.164 b. 0.706 c. 0.295 5. Round off the following to the nearest: i. whole number, ii. tenth a. 1.38 b. 9.65 c. 4.09 d. 0.372 6. Round off the following to i. 2 sig. fig. ii. 3 sig. fig. iii. 1 dp iv. 2 dp a. 9.895 b. 26.888 c. 16.066 d. 30.097

2. APPROXIMATION (II)

Objective: By the end of this class, each student should be able to apply approximation in arithmetic processes

Duration: 190mins

Week: 2

Entry Behaviour (*How you plan to start your Class*):

Definition

Approximation is the process of using rounded numbers, to estimate the outcome of calculations. As with the estimation of quantities, the ability to find approximate result is very useful.
The following examples show how to approximate the answers to addition, subtraction, multiplication and division problems.

Addition
Round off each number to one significant figure, and then approximate the answers.

a. 47 + 31
b. 291 + 603

Solution

a. $47 + 31 \approx 50 + 30 = 80$
b. $291 + 603 \approx 300 + 600 = 900$

Subtraction
Due to efficiency savings, the cost of a new road was reduced from #8.8 billion per km to #7.9 billion per km. round these values to the nearest billion. Hence, find the appropriate saving per km.

Solution
Savings = # (8.8 – 7.9) billion
= # (9 – 8) billion
= #1 billion

Multiplication

a. Find the approximated value of 4.2 x 1.875
b. Round off the following numbers to the nearest whole number and then approximate the answers.
   - 72.099 x 1.54
   - 0.856 x 3.56

Solution

a. $4.2 \times 1.875 \approx 4 \times 2 = 8$
b. i. $72.099 \times 1.54 \approx 72 \times 2 = 144$
   ii. $0.856 \times 3.56 \approx 1 \times 4 = 4$

Division

1. A bottle of soda holds 330 ml. the factory fills the bottles from a container that holds 20 000 litres. Approximately how many bottles can be filled from one container?

Solution

20 000 litres = 20 000 x 1 000ml = 20 000 000ml

Number of bottles = $\frac{20\ 000\ 000}{330}$ ≈ 60 000 bottles

2. Round off the following numbers to one significant figure, then approximate each answer
   a. 0.81 ÷ 0.22
   b. 0.49 ÷ 0.12

Solution

a. 0.81 ÷ 0.22 ≈ 0.8 ÷ 0.2 = 4
b. 0.49 ÷ 0.12 ≈ 0.5 ÷ 0.1 = 5

REFERENCE	KEYWORDS	EVALUATION/ASSESSMENT
New General Mathematics for Junior secondary schools - Book 1	• Approximation • Estimation • Round off • Significant figure	1. Round off each number to the nearest whole number. Then find the approximate answer - 6.2 + 3.7 - 12.3 + 8.7 - 3.4 x 5.8 - 14.07 ÷ 6.7 - 3.47 + 12.75 - 16.7 x 1.09 - 7.55 – 3.45 - 9.774 ÷ 3.64 2. A bucket holds 10.5 litres of water. A cup holds about 320ml. estimate the number of cups of water that the bucket holds. 3. The population of five towns are 15 600, 17 300, 62 800, 74 000 and 34 400 each to the nearest hundred. Find the total population of the five towns to the nearest thousand.

3. NUMBER BASE (I)

Objective: By the end of this class, all the students should be able to convert numbers in base two (2) and other bases to base ten (10).

Duration: 190mins

Week: 3

Entry Behaviour (*How you plan to start your Class*):

NUMBER BASE CONVERSIONS

People count in twos, fives, twenties etc. Also, the days of the week can be counted 7, and a day is counted in 24 hours. Generally, people count in tens. The digits 0,1,2,3,4,5,6,7,8,9 are used to represent numbers.
The place value of the digits is shown in the number example: 395:- 3 Hundred, 9 Tens and 5 Units. i.e. $3X10^2 + 9X10^1 + 5X10^0$.
Since the above number is based on the powers of tens, it is called the base ten number system i.e. 300 + 90 + 5
Also 4075 = 4 Thousand 0 Hundred 7 Tens 5 Units i.e. $4 \times 10^3 + 0 X 10^2 + 7 X 10^1 + 5 X 10^0$
Other Number systems are sometimes used. For instance, the base 8 system is based on the power of 8.

E.g.: Expand 647_8, 26523_7, 101101_2,
(a) $647_8 = 6 \times 8^2 + 4 \times 8^1 + 7 X 8^0$
$= 6 \times 64 + 4 \times 8 + 7 \times 1 =$
(b) $26523_7 = 2 \times 7^4 + 6 \times 7^3 + 5 \times 7^2 + 2 \times 7^1 + 3 \times 7^0$
(c) $101101_2 = 1 \times 2^5 + 0 \times 2^4 + 1 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0$

Number System		
System	**Base**	**Digits**
Binary	2	0 1
Octal	8	0 1 2 3 4 5 6 7
Decimal	10	0 1 2 3 4 5 6 7 8 9
Hexadecimal	16	0 1 2 3 4 5 6 7 8 9 A B C D E F

CONVERSION TO DENARY SCALE (BASE TEN)

When converting from other bases to base ten the number must be raised to the base and added.

Examples: Convert the following to base 10

(a) 17_8

(b) 11011_2

Solutions:

(a) $17_8 = 1 \times 8^1 + 7 \times 8^0 = 1 \times 8 + 7 \times 1 = 8 + 7 = 15$

(b) $11011_2 = 1 \times 2^4 + 1 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 1 \times 2^0 = 1 \times 16 + 1 \times 8 + 0 \times 4 + 1 \times 2 + 1 \times 1$

$= 16 + 8 + 0 + 2 + 1 = 27$

REFERENCE	KEYWORDS	EVALUATION/ASSESSMENT
New General Mathematics for Junior secondary schools - Book 1	• Binary • Number system • Number base • Denary	1. Convert The Following To Base Ten: (a) 10100_2 (b) 2120_3 2. Convert the following binary numbers to base 10: (a) 11001_2 (b) 1101_2 (c) 1110_2 (d) 111000_2

4. NUMBER BASE (II)

Objective: By the end of this class, all the students should be able to convert numbers in base ten (10) to base two (2) and other bases

Duration: 190 mins

Week: 4

Entry Behaviour (*How you plan to start your Class*):

CONVERSION FROM BASE TEN TO OTHER BASES

To change a number from base ten to another base follow the steps listed below

1. Divide the base ten number by the new base number.
2. Continue dividing until zero is reached
3. Write down the remainder each time
4. Start at the last remainder and read upwards to get the answer.

Examples:

1. Convert 129_{ten} to base 2
2. Convert the following base ten number into binary numbers;
   a. 26
   b. 47
   c. 71
3. Convert 68_{ten} to base 6

Solutions:

1. 129_{ten} to base 2

2	129
2	64 r 1
2	32 r 0
2	16 r 0
2	8 r 0
2	4 r 0
2	2 r 0
2	1 r 0
	0 r 1

$129_{ten} = 10000001_2$

2. a. 26_{ten} to base 2

2	**26**
2	13 r 0
2	6 r 1
2	3 r 0
2	1 r 1
	0 r 1

$= 11010_{two}$

b. 47_{ten} to binary

2	**47**
2	23 r 1
2	11 r 1
2	5 r 1
2	2 r 1
2	1 r 0
	0 r 1

$= 101111_{two}$

c. 71_{ten} to binary

2	**71**
2	35 r 1
2	17 r 1
2	8 r 1
2	4 r 0
2	2 r 0
2	1 r 0
	0 r 1

$= 1000111_{two}$

3. 68_{ten} to base 6

6	**68**
6	11 r 2
6	1 r 5
	0 r 1

$= 152_6$

REFERENCE	KEYWORDS	EVALUATION/ASSESSMENT
New General Mathematics for Junior secondary schools - Book 1	• Number base • Binary • Denary	1. Convert 100_{ten} to base 2 2. Convert the following base ten numbers to binary - 52 - 65 - 39 3. Convert 569_{ten} to base 8. 4. Convert the following numbers to base 7 a. 405_{ten} b. 876_{ten}

5. NUMBER BASE (III)

Objective: By the end of this class, all the students should be able to add and subtract number in base two (2) and other bases.

Duration: 190 mins

Week: 5

Entry Behaviour (*How you plan to start your Class*):

ADDITION IN BASE TWO

We can add binary numbers in the same way as we operate with ordinary base 10 numbers.
The identities to remember are:-
0 + 0 = 0,
0 + 1 = 1,
1 + 0 = 1,
1 + 1 = 10,
1 + 1 + 1 = 11,
1 + 1 + 1 + 1 = 100

Examples

Simplify the following

1. 1110 + 1001
2. 1111 + 1101 + 101

Solutions:

1. $$\begin{array}{r} 1110_2 \\ +1001_2 \\ \hline 10111_2 \\ \hline \end{array}$$

2. $$\begin{array}{r} 1111_2 \\ 1101_2 \\ +\ 101_2 \\ \hline 100001_2 \\ \hline \end{array}$$

SUBTRACTION IN BASE TWO

The identities to remember on subtraction are;
0 – 0 = 0,
1 – 0 = 1,
10 – 1 = 1,
11 – 1 = 10,
100 – 1 = 11

Examples

Simplify the following:

(a) 1110 – 1001

(b) 10011 – 110

Solutions:

$$\begin{array}{r} 1110 \\ -\ 1001 \\ \hline 101 \\ \hline \end{array}$$

$$\begin{array}{r} 10011 \\ -\quad 110 \\ \hline 1101 \\ \hline \end{array}$$

REFERENCE	KEYWORDS	EVALUATION/ASSESSMENT
New General Mathematics for Junior secondary schools - Book 1	• Number base • Binary • Denary • Subtraction • Addition	1. Simplify the following - 101 + 101 + 111 - 10101 + 111 - 11011 – 1101 - 11110 – 1101 - 101 + 110 + 1001

6. NUMBER BASE (IV)

Objective: By the end of this class, all the students should be able to multiply numbers in base two (2) and other bases.

Duration: 190mins

Week: 6

Entry Behaviour (*How you plan to start your Class*):

Multiplication in Base 2
We can multiply binary numbers in the same way as we operate with ordinary base 10 numbers.
The identities to remember are:-
0 x 0 = 0,
0 x 1 = 0,
1 x 0 = 0,
1 x 1 = 1.

Examples

1. Calculate the following

a.
$$\begin{array}{r} 101_2 \\ \underline{\text{X}\quad 11_2} \\ 101 \\ \underline{101\quad_2} \\ \underline{1111_2} \end{array}$$

b.
$$\begin{array}{r} 1110 \\ \underline{\text{x}\quad 101_2} \\ 1110 \\ 0000 \\ \underline{1110\quad_2} \\ \underline{100110_2} \end{array}$$

REFERENCE	KEYWORDS	EVALUATION/ASSESSMENT
New General Mathematics for Junior secondary schools - Book 1	• Number base • Binary • Denary • Multiplication	1. Simplify the following in base 2 - 1110 x 110 - 11101 x 111 - 1011 x 110 2. Give an example each for the use case of the following system of counting. a. 12 b. 7 c. 60 d. 24

7. MID TERM TEST AND BREAK

Objective: By the end of this class, all the students should be able to participate in the test

Duration: 45mins

Week: 7

Entry Behaviour (*How you plan to start your Class*):

8. ALGEBRAIC EXPRESSION (I)

Objective: By the end of this class, all the students should be able to explain the meaning and concept of algebraic expression.

Duration: 190mins

Week: 8

Entry Behaviour (*How you plan to start your Class*):

Open sentences

$14 + \square = 17$. What number do you need to insert in the box to make this true? $14 + \square = 17$ will be true if 3 foes in the box: $14 + 3 = 17$ is true.
We say $14 + \square = 17$ is an **open sentences.** Any value can go in the box, but usually only one value will make an open sentence true.

Speed work

1. In each sentence, find the number that makes it true;
   a. $3 + 2 = \square$
   b. $18 \div 3 = \square$
   c. $5 * \square = 25$
   d. $7 + \square = 11$
   e. $8 - \square = 2$
2. In each sentences there are two or three boxes. Put any two number in every box to make the sentence true.
   a. $\square + \square = 4$
   b. $10 - \square = \square$
   c. $\square + \square + \square = 21$
   d. $12 = \square * \square$
   e. $\square \div \square = 1$

Letters for numbers

In mathematics, we use letters of the alphabet to stand for number instead of boxes. We write $14 + x$ instead of $14 + \square$. We can use any letter. For example, $14 + a$ would be just good as $14 + x$. we normally use small letters and not capital letters.

When using letters like this, the letter stands for any number in general. Thus the value of $14 + x$ depends on the value of x.
When we use letters for numbers in this way, the mathematics becomes **generalized arithmetic** or **algebra**. The word 'algebra' comes to us from an important book written around AD830 by Mohammed Musa al Khowarizmi, a noted mathematician from Baghdad. The title of the book was Al-jabr wa'l Muquabalah.
The statement $14 + x = 17$ is an example of an **algebraic sentence.**

Definition

Algebraic expressions are the ideas of expressing numbers using letters or alphabets without specifying their actual values. The basics of algebra taught us how to express an unknown value using letters such as x, y, z, etc. These letters are called here as variables. An algebraic expression can be a combination of both variables and constants. Any value that is placed before and multiplied by a variable is a coefficient.

What is an Algebraic Expression?

An algebraic expression in mathematics is an expression, which is made up of variables and constants, along with algebraic operations (addition, subtraction, etc.). Expressions are made up of terms.

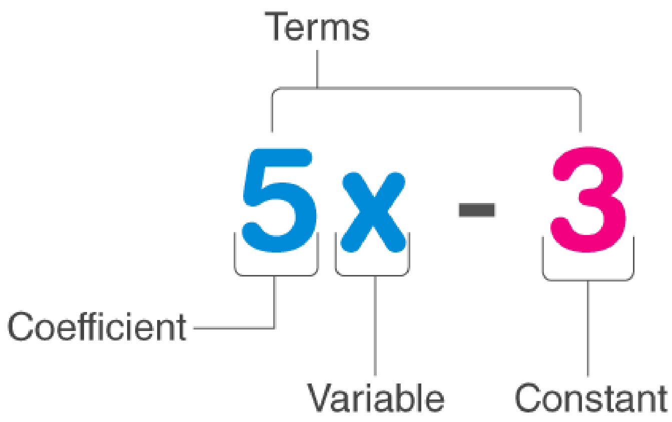
Examples
$3x + 4y – 7$, $4x – 10$, etc.
These expressions are represented with the help of unknown variables, constants and coefficients. The combination of these three (as terms) is said to be an expression. It is to be noted that, unlike the algebraic equation, an algebraic expression has no sides or equal to sign. Some of its examples include

- $3x + 2y – 5$
- $x – 20$
- $2x^2 − 3xy + 5$

Variables, Coefficient & Constant in Algebraic Expressions

In Algebra we work with Variable, Symbols or Letters whose value is unknown to us.

ALGEBRAIC EXPRESSIONS



In the above expression (i.e. 5x – 3),

- x is a **variable**, whose value is unknown to us which can take any value.
- 5 is known as the c**oefficient** of x, as it is a constant value used with the variable term and is well defined.
- 3 is the c**onstant** value term that has a definite value.

The whole expression is known to be the Binomial term, as it has two unlikely terms.

__Note:__ Coefficients are not always whole numbers. Coefficients can also be fractions. In arithmetic, $\frac{1}{3} * 12$ or $\frac{12}{3}$ are short ways of writing $\frac{1}{3}$ of 12 or $12 \div 3$

__Grouping positive and Negative terms__

Expression such as 3x, x, 8x, 12x are all **terms in *x*.** We can add terms in x together.

For example 3x + 2x means 3 x's and 2 x's. This gives us 5 x's altogether. Thus 3x + 2x = 5x
5x uses less space, or is simpler than 3x + 2x. Thus two terms in x have been simplified to one term in x.
We can also subtract terms.

For example, 7y – 4y means take 4 y's away from 7 y's, this leaves 3 y's. Thus 7y – 4y = 3y.
Again, two terms have been simplified to one term.

We can simplify expressions that contains many terms. For example, the expression

$$3a - 8a + 5a + 9a - 2a$$

Means; Add 3a, 5a and 9a together. Take 8a and 2a away. This gives 17a take 10a away. The result is 7a. we can write this as follows;

$$3a - 8a + 5a + 9a - 2a$$
$$= 3a + 5a + 9a - 8a - 2a$$
$$= 17a - 10a$$
$$= 7a$$

Grouping like and unlike terms

In the real world, the sum of 7 tables and 5 tables is 12 tables. Similarly, in algebra;

$$7t + 5t = 12t$$

But, in a case where we have 7 tables and 5 chairs, all we can say is that there is a mixture of tables and chairs. Similarly, in algebra it is impossible to simplify $7t + 5c$.

$7t$ and $5t$ are **like terms**. Their sum is $12t$.

$7t$ and $5c$ are **unlike terms**. Their sum $7t + 5c$.

Notice that:

5 tables + 7 chairs + 6 tables + 8 chairs = 11 tables + 15 chairs

In the same way we can group the same things together in the real world, we can similarly group things in algebra:

$$5t + 7c + 6t + 8c$$
$$= 5t + 6t + 7c + 8c$$
$$= 11t + 15c$$

REFERENCE	KEYWORDS	EVALUATION/ASSESSMENT
New General Mathematics for Junior secondary schools - Book 1	• Algebra • Expression • Equation • Coefficient • Variable • Constant • Term	1. Simplify the following - $2a + 3a$ - $5m - 2m$ - $9v + 2v + 3v - 8v$ - $5y + 13y + 2y$ - $12d - 5d - 3d + 4d$ 2. Simplify the following. - $19n + 19 + n - 10$ - $12p + 3 - 2p - 2$ - $2p + 7t + 5p + 3t$ - $18a - 3b - 6a + 10b$ - $2x - 8 - 3 + 5x$

9. ALGEBRAIC EXPRESSION (II)

Objective: By the end of this class, all the students should be able to explain the terms "Monomial expression" and "Binomial expression".

Duration: 190mins

Week: 9

Entry Behaviour (*How you plan to start your Class*):

Multiplying and dividing algebraic terms

Note:
5a is the short form of *5 * a*, the same way *ab* is the short for *a * b*.
Just as *3 * 5 = 5 * 3 = 15*, so *a * b = b * a = ab*
Just as 5^2 is the short for 5 * 5, so a^2 is the short for a * a, and x^3 is the short for x * x * x.

$$4x + 4x + 4x = 12x$$
$$3 * 4x = 12x$$

And

$$3x + 3x + 3x + 3x = 12x$$
$$4 * 3x = 12x$$

Thus: $3 * 4x = 4 * 3x = 12x$

The terms 3, 4 and x can be multiplies in any order
$3 * 4x = 4 * 3x = 3x * 4 = 4x * 3 = 4 * x * 3 = x * 3 * 4 = 12x$
For proper representation, the coefficient (number) should be written before the variable (letter).

Examples

Simplify	*working*	*result*
2x * 3	= 2*x*3 = 2*3*x = 6*x	= 6x
5 * 2y	= 5 * 2 * y = 10 * y	= 10y
7a * 3b	= 7*a*3*b = 7*3*a*b = 21*ab	= 21ab
6x * 4x	= 6*x*4*x = 6*4*x*x = 24 * x^2	= $24x^2$
5 * 6ab	= 5 * 6 * ab = 30 * ab	= 30ab
8ab * 7a	= 8*a*b*7*a = 8*7*a*a*b = 56*a^2*b	= $56a^2b$
y * 11xy	= y*11*x*y = 11*x*y*y = 11*xy^2	= $11xy^2$

Division

In algebra, letters stand for numbers, just as fractions can be reduced to their lowest term by equal division of the numerator and denominator, so a letter can be divided by the same letter. For example x ÷ x = 1, just the same way 3 ÷ 3 = 1

Examples

Simplify	*working*	*result*

14a ÷ 7	= 7 * 2a ÷ 7	= 2a
1/3 of 36x	= 36 * y ÷ 3	= 12x
1/5 of y	does not simplify 5	= y/5
6xy/2y	= 6*x*y/2*y	= 3x
$24x^2y$ ÷ 3xy	= 24*x*x*y/3*x*y	= 8x

Order of Operation
To solve questions that involves multiple signs, a simple abbreviation is to be kept in mind. Use the word **'BIDMAS'** to remember the correct order. **B**rackets, **I**ndices, **D**ivision or **M**ultiplication, and **A**ddition or **S**ubtraction.
Usually, operations involving multiplication and division are enclosed in brackets are done before addition and subtraction.

Examples

1. Find the value of 16 * 2 – 3 + 14 ÷ 7
   16 * 2 – 3 + 14 ÷ 7
   = (16 * 2) – 3 + (14 ÷ 7)
   = 32 - 3 + 2
   = 34 – 3
   = 31
2. Simplify 7 * 3a – (3a + 5a) * 2
   7 * 3a – (3a + 5a) * 2
   = 7 * 3a – 8a * 2
   = (7 * 3a) – (8a * 2)
   = 21a – 16a
   = 5a

Removing Brackets
Always try to simplify the terms inside brackets inside first. If they will not simplify, remove the brackets first.
When there is a positive sign before a bracket, the signs of the terms inside the bracket remains the same when it is removed.
When there is a negative sign before a bracket, the signs of the terms inside the brackets are changed when the brackets is removed.
Examples;

1. Simplify 7g + (3g + 4h)
   = 7g + 3g + 4h
   = 10g + 4h
2. Simplify (6x – 5y) + (3y + 4x)
   = 6x – 5y + 3y + 4x
   = 6x + 4x + 3y – 5y
   = 10x – 2y
3. Simplify 5a – (2a – 8)
   = 5a – 2a – 8
   = 3a – 8

4. Simplify $(7x - y) - (5x - 2y)$
   $= 7x - y - 5x + 2y$
   $= 7x - 5x - y + 2y$
   $= 2x + y$

REFERENCE	KEYWORDS	EVALUATION/ASSESSMENT
New General Mathematics for Junior secondary schools - Book 1	• Algebra • Expression • Equation • Coefficient • Variable • Constant • Term • BIDMAS • Brackets • Order of operations	1. Simplify the following - $2a * 3a$ - $10m \div 2m$ - $9v * 2v + 3v - 8v$ - $4 * 8x + 7x * 3$ - $7a * 2 + 5 * 8a - 6a * 9$ 2. Simplify the following. - $(19n + 19) - (n - 10)$ - $(12p + 3) - (2p - 2)$ - $(2p - 7t) + (5p + 3t)$ - $(x - 3y) + (x - 3y)$ - $(3x - 4y) + (5x - 8y)$

10. REVISION

<u>Objective:</u> By the end of this class, all the students should be able to recall all they have learnt during the term

<u>Duration:</u> 190 mins

<u>Week:</u> 11

<u>Entry Behaviour (*How you plan to start your Class*):</u>

11. EXAMINATION