

**JSS1 Mathematics Lesson Note (First Term) [year]**

**GENERAL MATHEMATICS**

**Jss1 SCHEMES OF WORK FOR 1ST TERM**

**WEEK 1 WHOLE NUMBER (COUNTING AND WRITING IN MILLIONS,& TRILLIONS)**

**WEEK 2 WHOLE NUMBER (CONTD.,)**

**WEEK 3 FRACTIONS (TYPES OF FRACTIONS)**

**WEEK 4 FRACTIONS (EQUIVALENTFRACTIONS AND PROBLEMS SOLVING)**

**WEEK 5 FRACTIONS (CONVERTION FROM PERCENTAGE TO DECIMAL VICE-VERSA)**

**WEEK 6 FRACTIONS (ADDITION, SUBTRACTION)**

**WEEK 7 REVIEW OF THE FIRST HALF TERM WORK AND PERIODIC TEST**

**WEEK 8 FRACTIONS (MULTIPLICATION AND DIVISION)**

**WEEK 9 L.C.M AND H.C.F (LOWEST AND HIGHEST COMMON FACTOR)**

**WE EK 10 ESTIMATION**

**WEEK 11 REVISION OF THE FIRST TERM AND EXAMINATION**

**WEEK 12 EXAMINATION**

**WEEK 1 TOPIC: WHOLE NUMBERS (COUNTING IN MILLION, BILLIONS AND TRILLIONS)**

**CONTENTS:**

The figures 0,1,2,3,4,5,6,7,8,9 are called digits or unit. Numbers 10, 11, 12, 13, 14, 99 are called Tens, numbers 100,101,... 999 are called hundred. One thousand is written as 1 with 3 zeros.

**LARGE NUMBERS**

**NAME            VALUE**

**One thousand            1000**

**Ten thousand            10000**

**One hundred thousand    100000**

**One million                            1000000**

Ten million            10000000

One hundred million            100000000

One billion    1000000000

Ten billion            10000000000

One hundred billion            100000000000

One trillion    1000000000000

In our everyday life, we often come across large numbers such as 75800074890.

75 800    074 890

Billion million thousand    hundred            ten unit

***Example 1:*** write this in figures: twenty five trillion, three hundred and five billion, six hundred and sixty nine million, one hundred thousand and forty one.

***Example 2:*** ninety billion, three hundred and nine million, ninety one thousand seven hundred and six three.

**Solution**

- 25 000 000 000 000

305 000 000 000

669 000 000

1 000

\_\_\_\_\_ 41

**25 305 669 001 041**

- 19 000 000 000

309 000 000

91 000

\_\_\_\_\_ 763

**19 309 091 763**

## Order large numbers

***Example 1:*** arrange these numbers in order of size stating with the smallest: 28980579, 18967547, 2897871, 36497871, 36479568, 18898069, 36478967

***Note that :***( This arrangement is also called ascending order. The reverse is known as descending order).

***NB: Always group large numbers in threes.***

### Solution

18 898 069, 18 967 547, 28 978 951, 28 980 579, 36 478 967, 36 479 568, 36 497 871

### DO THESE

1. Write the following in words (a) 567256789, (b) 18000901234
2. Write in figures (a) three hundred and twenty – nine billion, five hundred and sixty two million, eight hundred and one thousand, four hundred and thirty three

(b) fifteen trillion, six hundred and seventy one billion, three hundred and ninety one million, eighty eight thousand, five hundred and fifty five.

3. Arrange the following numbers in ascending order 1009085941, 1288890563, 102458001, 999999999, 10009002, 105879894167

### Assignment

Page 23 exercise 3.1 No 2 page 25 exercise 3.3 No (a, b c)

### WEEK 3 & 4 FRACTIONS (TYPES OF FRACTIONS)

CONTENT:

A Fraction is a portion or part of a whole. Imagine a whole as a complete object. For example, the pie below is a whole which can be cut into sectors (or slices) representing different fractions as follows:

Whole (1)    half ( $\frac{1}{2}$ )    three- quarters ( $\frac{3}{4}$ )

**Types of fraction**

- **Common fractions or vulgar:**  $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{3}{4}$ ,  $\frac{3}{8}$  and  $\frac{5}{8}$  are called fraction. One number over another. Numerator is the term given to the number on the top part of a fraction. Denominator is the term given to the number at the bottom part of a fraction.
- **Decimal fractions:** are simply called decimals example 0.897, 7.864 etc.
- **Proper fraction:** the numerator is less than the denominator. e.g.  $\frac{2}{5}$ ,  $\frac{1}{4}$ , etc
- **An improper fraction** the numerator is greater than the denominator e.g  $\frac{8}{3}$ ,  $\frac{12}{5}$  etc.

**CHANGING AN IMPROPER FRACTION TO A MIXED NUMBER**

**EXAMPLE 1:** Change  $\frac{15}{4}$  to a mixed number.

**Solution**

$= = + = =$

**Example 2:** change to improper fraction.

**Solution:**

$= = = =$

**EQUIVALENT FRACTIONS**

Fraction that have the same value are said to be equivalent. Example are  $\frac{1}{2}$ ,  $\frac{2}{4}$ ,  $\frac{3}{6}$ ,  $\frac{4}{8}$ ,  $\frac{5}{10}$ ,  $\frac{6}{12}$  etc.

**Example 1:** convert  $\frac{2}{9}$  into an equivalent fraction with the denominator 54

**Solution:**

$2/9 = \quad /54$  (divide the second denominator by the first denominator to obtain the multiplier)

$$54/9 = 6$$

Therefore use the 6 to multiply  $2/9 = 12/54$

$$2/9 = 12/54$$

Finding the missing part of these fractions:  $\quad /10 = 12/\quad = 20/50 = \quad / 80$

**Solution**

Step 1 Use  $20/50$  as your reference fraction because both its numerator and denominator are given.  $20/50 = 2/5$

$10/5$  (use the 5 of denominator to get your numerator of  $\quad /10) = 2$

Therefore use 2 to multiple both  $2/5 = 4/10$

Step 2 use the 2 to divide the numerator of  $12/\quad$  to get 6 and use the 6 to multiply  $2/5 = 12/30$

Step 3: use 5 to divide the denominator of 80 to get 16

Therefore use 16 to multiply  $2 / 5 = 32 /80$

So  $4/10 = 12/30 = 20/50 = 32/80$ .

**DO THESE**

1. Express each of the following fractions as a mixed numbers: (a)  $9/5$  (b)  $15/2$
2. Express each of the following fractions as improper fraction: (a)  $11/2$

(b)  $43/8$

3. Copy and complete each of the following:  $3/5 = \quad /15$  (b)  $4/7 = 12/y = y/35 = y/49 = 44/y$  where  $y =$

**ASSIGNMENT: EXERCISE 5.1 NO. 1, 2 & 3; EXERCISE 5.2 NO 4a-j PAGE 36 & 38**

**WEEK 5 FRACTIONS (CONVERTION FROM PERCENTAGE TO DECIMAL AND DECIMAL TO FRACTION)**

**CONTENT:** To convert a fraction into a decimal, first rewrite the numerator as a decimal, then divide it by the denominator.

Example 1 (a) change into a terminating decimal number (b) to decimal fraction

Solution:

3. Numerator 3 can be written I decimal number as 3.0 or 3.00 Or 3.000

= 0.75 I,e 4 divide 3, then add zero, 4 goes in 30 is ,it remain 2, add 0 to make it 20 and 4 in 20 gives 5

Therefore = 0.75

1. 8 divies 5,it becomes 0,then add zero to make it 50,it gives 6, it remains 2, add zero it becomes 20, 8 divides 20 is 2, it remains 4, add zero to gives 40, 8 in 40 is 5

Therefore = 0.625.

### CONVERTING DECIMALS TO FRACTIONS

To change a decimal into a fraction, count the digits after the decimal, then divide by the appropriate power of 10,i.e 10,100,1000.

Example : convert each of the following decimal numbers into a fraction in lowest term:

- 0.067 (b) 0.64

Solution

(a) 0.067 = (3 digits after the decimal point i.e divide by 1000)

(b) 0.64 = (as above information) divide through by 4 =

### CONVERTING PERCENTAGE TO FRACTIONS

PERCENTAGE IS A SPECIAL TYPE OF FRACTION WITH 100 AS DENOMINATOR. THUS, TO CHANGE A PERCENTAGE TO A FRACTION, DIVIE BY 100.(%)

Example 1: express each of the following as a fraction in its simplest form:

- 30% (b) 45% (c) 161/2 %

Solution

- 30% = 30/100 i.e the zeros cancel each other. the answer is 3/10
- 45% = 45/100 i.e 5 divide both it gives 9 / 20.
- 16 ½ = 39/200 i.e you change the mixed number to improper fraction and then multiply it by %.

## WEEK 6

### OPERATIONS ON FRACTIONS

#### ADDITION AND SUBTRACTION

Example 1: Find the value of the following (a) (b) (c)

Solution:

(a): = (since the denominator are the same we just add the numerator together)

(b): ) = ) (since the denominator are the same we just subtract the numerator from each other)

*Try question C yourself*

Example 2: simplify the following (a) (b) )

Solution:

(a)

$(198 + 15 + 34)/24 =$  (find the L C m of the fraction then add the whole together, the L C M is 24)

$= (247/24) =$  (convert the improper fraction to mixed numbers)

(b)

Solution:

(rearrange by separating the whole numbers from fractions)

= (same denominator)

## WEEK 8

### MULTIPLICATION AND DIVISION OF FRACTION

Example 1: Simplify the following (a)  $4/5 * 2/3$  (b) what is the product of  $35/17$ ,  $2 5/6$  and  $4/8$

- $3/5 \div 4/9$  (d)  $24/5 * 56/8 \div 51/9$

Solution:

- $4/5 * 2/3 = 8/15$  ( multiple the numerator and denominator together)
- (b) what is the product of  $35/17$ ,  $2 5/6$  and  $4/8 = 56/17 * 17/6 * 4/8$

= 17 divides 17, 6 divides 56 also 4 divides 8

=  $14/3 = 42/3$

- $24/5 * 56/8 \div 51/9 = 14/5 * 46/8 * 9/46$  (change to improper and also change the division sign to multiplication and also change the fraction up and down)

=  $14/5 * 46/8 * 9/46$  (46 divides 46 etc)

=  $63/20 = 33/20$

## ASSIGNMENT

EXERCISE 5.9; NO 23, 24, 25, 33, 35, 36, 37 AND 40 PAGE 45

EXERCISE 5.12; NO 1, 2, 6, 7, 13 AND 14 PAGE 49

*WEEK 9 L.C.M AND H.C.F (LOWEST AND HIGHEST COMMON FACTOR)*

## COMMON MULTIPLES AND FACTOR

A prime number is a number that can only divide itself. it has two factor which is 1 and itself. Examples of prime numbers are: 2, 3, 5, 7, 11, 13, 17, 19 etc.

Multiples: A multiple of a number is obtained by multiplying it by any whole number. Example the multiple of 4 are 4, 8, 12, 16, 20, 24 etc.

Factors: The factor of a number is the whole number that divides the number exactly.

Example 1: (a) find all the factors of 18

(b) State which of these factors are even

(c) state which of these factors are prime numbers

(d) Write the first three multiple of 18

### Solution

- Factors of 18 are 1, 2, 3, 6, 9, and 18
- The even numbers are 2, 6, and 18
- The prime numbers are 2 and 3

**Example 2: Find the factor pairs of 56**

**Solution:**

$$1 \times 56$$

$$2 \times 28$$

$$4 \times 14$$

$$7 \times 8$$

Therefore the factors of 56 are; 1, 2, 4, 7, 8, 14, 28, and 56.

**Product of a Prime Factor**

A prime factor is a factor that is also a prime number. You can find the product of prime factors of a number using a prime factor tree method or using the method of dividing repeatedly by the prime numbers.

**Example 2: Express the following numbers, 56 and 108, as products of prime factors in index form.**

**Solution:**

**Method 1: dividing repeatedly by using prime numbers**

$$2 \ 56 \ 2 \ 108$$

$$2 \ 28 \ 2 \ 54$$

$$2 \ 14 \ 3 \ 27$$

$$7 \ 7 \ 3 \ 9$$

$$1 \text{ Index form} = 2^3 \times 7 \ 3 \ 3$$

$$1 \text{ index form} = 2^2 \times 3^2$$

**Method 2: Factor tree**

$$56 \ 108$$

$$2 \ 28 \ 2 \ 54$$

$$2 \ 14 \ 2 \ 27$$

$$2 \ 7 \ 3 \ 9$$

$$3 \ 3$$

**Note that the numbers must be a prime numbers**

**EXAMPLE 1: Find the L C M of 18 and 24**

**Solution:**

**METHOD 1 METHOD 2**

$$2 \ 18 \ 24 \ 18 = 2 \times 3 \times 3$$

$$2 \ 9 \ 12 \ 24 = 2 \times 2 \times 2 \times 3$$

$$2 \ 9 \ 6 \ L \ C \ M = 2 \times 2 \times 2 \times 3 \times 3$$

$$3 \ 9 \ 3 = 72$$

$$3 \ 3 \ 1$$

$$1 \ 1$$

$$L \ C \ M = 2 \times 2 \times 2 \times 3 \times 3 = 72$$

**Example 2: Find the L C M of 72 and 90**

**Solution:**

**METHOD 1 METHOD 2**

$$2 \ 72 \ 90 \ 72 = 2 \times 2 \times 2 \times 3 \times 3$$

$$2 \ 36 \ 45 \ 90 = 2 \times 3 \times 3 \times 5$$

$$2 \ 18 \ 45 \ L \ C \ M = 2 \times 2 \times 2 \times 3 \times 3 \times 5$$

$$3 \ 9 \ 45 = 360$$

$$3 \ 3 \ 15$$

$$5 \ 1 \ 5$$

$$1 \ 1$$

$$2 \times 2 \times 2 \times 3 \times 3 \times 5 = 360$$

**Example 3: Find the H C F of 72 and 96**

**Solution: find the prime product of the number and pick the common ones**

$$72 = 2 * 2 * 2 * 3 * 3$$

$$96 = 2 * 2 * 2 * 2 * 2 * 3$$

$$H C F = 2 * 2 * 2 * 3 = 24$$

**DO THESE:**

**EXERCISE 4.2; NO 8, 10, 11, 12 AND 18. PAGE 29**

**EX 4.5; NO 2 (K L M). PAGE 32**

### **WEEK 10 ESTIMATION**

Estimation may be explained as a rough or sensible guess for a value or calculation. Although, the estimated value is not correct, it gives us an idea of what the correct answer should be.

The common units of length are kilometer (km), meters (m), centimeters (cm), millimeters (mm). Mass = (Tonne, kilogram (kg) gramme (g)). Capacity = (litre (l), centiliter (cl), millilitre (ml))

It is important to be able to choose the most appropriate metric units of measurement to use.

Example: To measure distance less than a metre, smaller units such as millimetre (mm), and centimeter are used to measure large distance, metre and kilometer (km) are used.

State the metric units of the length you would use to measure the following:

- (a). Length of your class room = metre (m)
- (b). Length of your fingers nail = millimetre (mm)
- (c). your height = centimeter (cm)
- (d) Distance between Lagos and kaduna = kilometre (km)
- (e). the height of a building = metre (m)

**SIGNIFICANT: TO ROUND OFF A NUMBER CHANGE 0,1,2,3,4 TO 0 WHILE 5,6,7,8,9 TO 1 AND ADD IT TO THE NEXT NUMBER**

Example 1: round off 492.763 to (a) 3 s.f (b) 3 s.f (c) 2 d.p (d) 4 d.p

Solution:

- (a). 492.763 = 49 (since the third number is 2 it has change to zero)

(b).  $492.763 = 493$  (the 2 as change to 3 because 7 as change to 1 and been added to 2 to become 3)

(c).  $492.763 = 492.76$  (in decimal point we count after the point).

(d).  $492.763 = 492.7630$  (since the number is not up to 4d.p we add zero to it.)

***DO THESE***

***PAGE 86 EXERCISE 8.3 NO 1(G TO I) , NO 2 (G TO I)***