SCHEME OF WORK FOR FIRST TERM MATHEMATICS JSS 3

WEEK	TOPIC
1	Revision of JSS 2 work
2	The Binary number system
3	Binary number system continued
4	Algebraic Processes
5	Word problems
6	Change of subject of formulae
7	Revision of first half terms work and periodic test
8	Statistics
9	Statistics Continued
10	Simple equations involving fraction and simultaneous equations
11	Revision of 2nd half term's lesson and periodic test
12-13	First term examination

REFERENCE MATERIALS

ESSENTIAL MATHEMATICS for junior secondary school, book 3 by A. J. S Oluwasanmi

EFFECTIVE MATHEMATICS for junior secondary school book 3 by M.K.Akinsola, M.C.Ejike and A.Tella

WEEK 1

REVISION OF JS S 2 WORK

BINARY NUMBERS

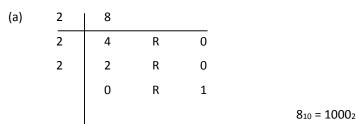Numbers in base two are called binary numbers at is made up two digit is 0 and 1

Converting base 10 numbers to base two number

We do this by dividing the base ten number repeatedly by 2, writing down the remainder until we get to zero and reading the remainder upwards.
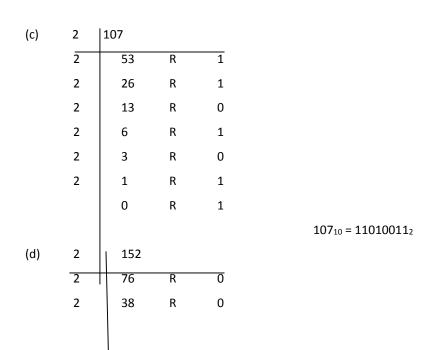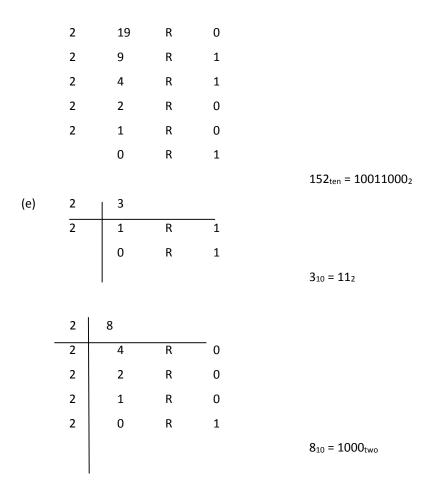
Example: (a) Write 8_{10} to a number in base two

b)   Express 85 in a binary number

c)   Convert 107_{10} to a number in the base two

d)   Convert 152_{ten} to a number in base two

e)   Convert $3/8_{ten}$ to a binary fraction (bicimal)

f)   Express 15.125_{10} in binary notation

SOLUTION

(a)

2	8		
2	4	R	0
2	2	R	0
	0	R	1

$8_{10} = 1000_2$

(b)

2	85		
2	42	R	1
2	21	R	0
2	10	R	1
2	5	R	0
2	2	R	1
	1	R	0
	0	R	1

$85_{10} = 1010101_{two}$

(c)

2	107		
2	53	R	1
2	26	R	1
2	13	R	0
2	6	R	1
2	3	R	0
2	1	R	1
	0	R	1

$107_{10} = 11010011_2$

(d)

2	152		
2	76	R	0
2	38	R	0

2	19	R	0
2	9	R	1
2	4	R	1
2	2	R	0
2	1	R	0
	0	R	1

$152_{ten} = 10011000_2$

(e)

2	3		
2	1	R	1
	0	R	1

$3_{10} = 11_2$

2	8		
2	4	R	0
2	2	R	0
2	1	R	0
2	0	R	1

$8_{10} = 1000_{two}$

First express 3 and 8 in binary, $\frac{3}{8}_{10} = 11_2/1000_2 = 0.011_2$

(f) $15.125 = 15\frac{125}{1000} = 15\frac{1}{8} = \frac{121}{8}_{10}$

2	121		
2	60	R	1—
2	30	R	0
2	15	R	0
2	7	R	1
2	3	R	1
	1	R	1
	0	R	1

$121_{10} = 1111001_2$

2	8	R
2	4	0
2	2	0
2	1	0
2	0	1

$8_{10} = 1000_2$

$(\frac{121}{8})10 = (1111001/1000)_2 = 1111.001_2$

Exercise: Convert the following binary numbers.

(a) 72   (b) $\frac{3}{4}$ (c) 0.875   (d) 32

Converting Base Two Numbers to Base 10 Numbers

We express the given binary numbers as a sum of multiples of powers of two 2^0, 2^1, 2^2, 2^3 etc.

Example: Convert (i) 101_{two} (ii) 10.1001_2 (iii) 111_2

SOLUTION

i. $101_2 = 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0$

$= 4 + 0 + 1$

$= 5_{10}...$