

**GREENHILL PRIMARY SCHOOL BUWAATE**

**P.5 MATHEMATICS WORK**

NAME: \_\_\_\_\_ STREAM: \_\_\_\_\_

**WEEK 2 DAY 1**

**COMBINED OPERATION OF NUMBERS**

**WORKING OUT USING "BODMAS"**

**B**- Brackets

**O**- O

**D**- Division

**M**- Multiplication

**A** - Addition

**S**- Subtraction

**EXAMPLES**

1. Workout: $2 - 8 + 9$ B O D M <b>A</b> S – Addition first then subtraction. So look for what is added, put in bracket and then subtract 9 is added while 8 is subtracted. Remaining with 2, add 9 then subtract 8 $\begin{array}{r} 2 - 8 + 9 \\ (2 + 9) - 8 \\ 11 - 8 \\ \underline{3} \end{array}$	2. Solve: $5 + (3 \times 10)$ <b>B</b> O D M <b>A</b> S – Brackets first then addition. So look for what is in the bracket then work it out. Leaving the first number unchanged, work out what is given in brackets. $\begin{array}{r} 5 + (3 \times 10) \\ 5 + 30 \\ \underline{35} \end{array}$
3. Workout: $5 \times 12 \div 4$ B O <b>D</b> M A S – Division first then multiplication. So look for what is divided and work it out. Leaving the first number unchanged, put what is divided in brackets first then work it out $\begin{array}{r} 5 \times (12 \div 4) \\ 5 \times 3 \\ \underline{15} \end{array}$	4. Workout $\frac{1}{2}$ of $10 + 15 \div 5$ B <b>O</b> <b>D</b> M <b>A</b> S – Of first, then Division and lastly Addition. First workout $\frac{1}{2}$ of 10, then divide 15 by 5 and lastly add the two results $\begin{array}{r} (\frac{1}{2} \text{ of } 10) + 15 \div 5 \\ (\frac{1}{2} \times 10) + (15 \div 5) \\ 5 + (15 \div 5) \\ 5 + 3 \\ \underline{= 8} \end{array}$

**NOTE: These operations do not change positions  $\times, \div$ , of and  $()$ . You work out the numbers with those signs from the same place you find them.**

**Its only + and – that can change positions.**

**ACTIVITY**

1.	$28 - (4 \times 5)$	2.	$8 + 4 \times 5$
3.	$6 \div 6 + 2 - 3$	4.	$(9 \times 9) + 3$
5.	$8 \div (4 \times 2)$	6.	$10 - 15 + 12$
7.	$8 \div 4 \times 2$	8.	$\frac{3}{10}$ of 40 + $\frac{2}{5}$ of 25

**WEEK 2 DAY 2**

: NAMES OF BASES

<b>Base</b>	<b>Name of base</b>	<b>Digits used</b>
Base Two	Binary	0, 1
Base Three	Ternary	0, 1, 2
Base Four	Quaternary	0, 1, 2, 3
Base Five	Quinary	0, 1, 2, 3, 4
Base Six	Senary	0, 1, 2, 3, 4, 5
Base Seven	Septenary	0, 1, 2, 3, 4, 5, 6
Base Eight	Octal	0, 1, 2, 3, 4, 5, 6, 7
Base nine	Nonary	0, 1, 2, 3, 4, 5, 6, 7, 8
Base Ten	Decimal (denary)	0, 1, 2, 3, 4, 5, 6, 7, 8, 9

## WRITING NON DECIMAL BASES IN WORDS.

### NOTE:

- All numbers you have been writing since nursery are in base ten or decimal bases. Forty eight can be written as forty eight base ten ( $48_{\text{ten}}$ ) or simply 48. Meaning you put small ten below 48 or simply write 48.
- In other bases, a base must be written because they are not standard bases. For example  $34_{\text{five}}$ , this is read as "three, four base five" and not thirty four base five because it is not a standard base

### EXAMPLES

1.	Write the following in words	
	a) $13_{\text{five}}$ One, three, base five	e) $1003_{\text{five}}$ One, zero, zero, three, base five
	b) $42_{\text{six}}$ Four, two, base six	f) $42_{\text{seven}}$ Four, two, base seven
	c) $234_{\text{five}}$ Two, three, four, base five	g) $234_{\text{eight}}$ Two, three, four, base eight
	d) $714_{\text{nine}}$ Seven, one, four, base nine	h) $1010_{\text{two}}$ One, zero, one, zero, base two

### Write the following in words

1.	$11_{\text{five}}$	2.	$386_{\text{nine}}$
3.	$333_{\text{five}}$	4.	$1023_{\text{four}}$
5.	$1001_{\text{two}}$	6.	$123_{\text{five}}$
7.	$241_{\text{five}}$	8.	$20103_{\text{six}}$

WEEK 2 DAY 3  
GROUPING IN BASE FIVE  
CONSIDER THESE STEPS

1. In base  $7_{\text{ten}}$  means 7 ones  
7 can be grouped in base five as shown below

Step 1: count seven sticks or counters



Step 2: make groups of fives and ones



Step 3: count the groups of fives and ones. You will get

**1** group of fives **2** ones

Meaning  $7_{\text{ten}} = 12_{\text{five}}$

2. Group the following sticks in fives and write down their number in base five.  
a) 13

13 can be grouped in bases five as shown below

Step 1: count 13 sticks or counters



Step 2: make groups of fives and ones



Step 3: count the groups of fives and ones. You will get

**2** group of fives **3** ones

Meaning  $13 = 23_{\text{five}}$

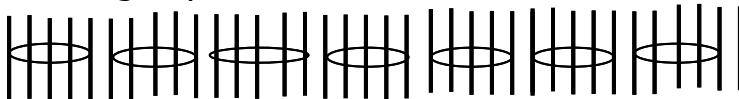
b) 36

36 can be grouped in bases five as shown below

**Step 1:** count 36 sticks or counters



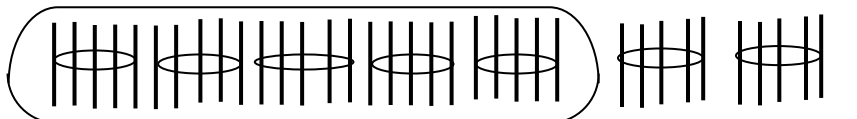
**Step 2:** make groups of fives and ones



**Step 3:** count the groups of fives and ones. You will get

**6** groups of fives **1**one. Since the numbers or digits expected in base five are 0,1,2,3 and 4, we can write 61 base six, instead we shall regroup the 6 groups of fives to make five fives

Step 4: make groups of fivefives, fives and ones



Step 3: count the groups of fives and ones. You will get

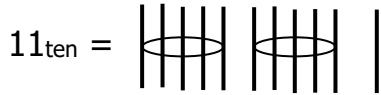
**1** group of fivefives, **2** groups of fives **1**one.

Meaning  $36 = 121_{\text{five}}$

### EXAMPLES

Group the following base ten numbers in groups fives and write your answer in base five

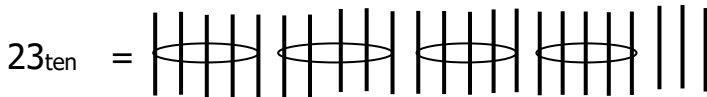
1.  $11_{\text{ten}}$



$11_{\text{ten}} = 2$  groups of fives and **1** one

$11_{\text{ten}} = 21_{\text{five}}$

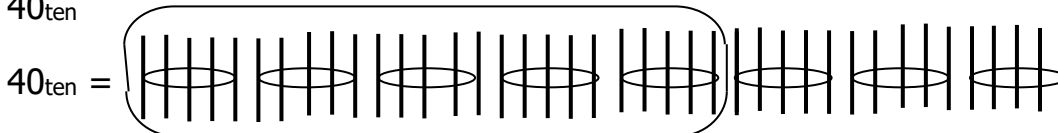
2.  $23_{\text{ten}}$



$23_{\text{ten}} = 4$  groups of fives and **3** ones

$23_{\text{ten}} = 43_{\text{five}}$

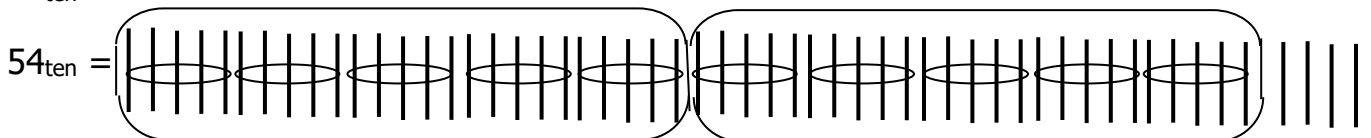
3.  $40_{\text{ten}}$



$40_{\text{ten}} = 1$  group of five fives, **3** groups of fives and **0** ones

$40_{\text{ten}} = 130_{\text{five}}$

4.  $54_{\text{ten}}$



$54_{\text{ten}} = 2$  groups of five fives, **0** group of fives, **4** ones

$54_{\text{ten}} = 204_{\text{five}}$

### Exercise

1.  $11_{\text{ten}}$

2.  $17_{\text{ten}}$

3. 20 ten

4. 26 ten

5. 33 ten

6. 19 ten

7. 21 ten

8. 29 ten

**DAY FOUR**

PLACE VALUES AND VALUES OF NON DECIMAL BASES

EXAMPLES;

1. Find the place value of each digit in  $2034_{\text{five}}$

Five five fives	Five fives	Fives	Ones
2	0	3	4

Diagram showing place value labels and arrows pointing to digits:

- Five five fives points to 2
- Five fives points to 0
- Fives points to 3
- Ones points to 4

2. Find the place value of 4 in  $243_{\text{five}}$

Five fives	Fives	Ones
2	4	3

Diagram showing an arrow pointing from the digit 4 to the label "Fives".

3. Find the value of 2 in  $201_{\text{five}}$

Five fives	Fives	Ones
2	4	3

Diagram showing an arrow pointing from the digit 2 to the calculation:  $\text{Five fives} = 2 \times 5 \times 5 = 50$

4. Find the value of 4 in  $124_{\text{five}}$

Five fives	Fives	Ones
1	2	4

Diagram showing an arrow pointing from the digit 4 to the calculation:  $\text{Ones} = 4 \times 1 = 4$

**Exercise**

1. Write the place value of each digit in the numbers below.  
a)  $234_{\text{five}}$

2. Write the place value of each digit in the numbers below.  
a)  $314_{\text{five}}$

b)  $13_{\text{five}}$

b)  $42_{\text{five}}$

3. Find the place value of 1 in  $124_{\text{five}}$

4. Find the value of 2 in  $124_{\text{five}}$

5. Find the value of 3 in  $123_{\text{five}}$

6. Write the place value of 3 in  $3124_{\text{five}}$

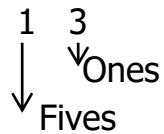
### DAY FIVE

## EXPANDING NUMBERS IN BASES

### EXAMPLES;

1. Expand  $13_{\text{five}}$

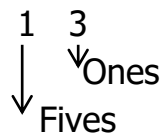
a) Using place values



$$= (1\text{five}) + (3\text{ones})$$

$$\text{Place values} = \mathbf{(1 \times 5) + (3 \times 1)}$$

b) Using values



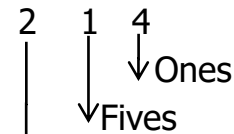
$$= (1\text{five}) + (3\text{ones})$$

$$= (1 \times 5) + (3 \times 1)$$

$$\text{Values} = \mathbf{5 + 3}$$

2. Expand  $214_{\text{five}}$

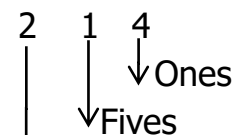
a) Using place values



$$(2\text{five fives}) + (1\text{five}) + (3 \text{ ones})$$

$$\text{Place values} = \mathbf{(2 \times 5 \times 5) + (1 \times 5) + (3 \times 1)}$$

b) Using values



$$(2\text{five fives}) + (1\text{fives}) + (3\text{ones})$$

$$(2 \times 5 \times 5) + (1 \times 5) + (3 \times 1)$$

$$\text{Values} = \mathbf{50 + 5 + 3}$$



## Exercise

Expand the following using place values.

1.  $11_{\text{five}}$

2.  $23_{\text{five}}$

3.  $121_{\text{five}}$

4.  $43_{\text{five}}$

Expand the following using values

5.  $323_{\text{five}}$

6.  $111_{\text{five}}$

7.  $232_{\text{five}}$

8.  $34_{\text{five}}$

### CONVERTING NON DECIMAL BASES TO BASE TEN

#### STEPS FOR METHOD 1:

- ❖ Make groups of fives
- ❖ Count all the sticks in the whole groups and add them

#### STEPS FOR METHOD 2:

- Identify the place values
- Expand using the place values of each digit
- Find the value of each digit
- Add the values, the number or result got is a base ten number or result

# EXAMPLES

1. Change  $14_{\text{five}}$  to base ten  
method 1:  
 $14_{\text{five}} = 1 \text{ group of fives, } 4 \text{ ones}$



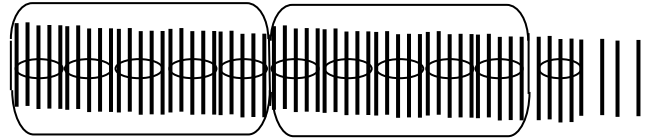
$$14_{\text{five}} = 5 + 4$$

$$14_{\text{five}} = 9_{\text{ten}}$$

method 2:

$$\begin{aligned} 14_{\text{five}} &= (1 \text{ fives}) + (4 \text{ ones}) \\ &= (1 \times 5) + (4 \times 1) \\ &= 5 + 4 \\ &= 9_{\text{ten}} \text{ or } 9 \end{aligned}$$

2. Change  $213_{\text{five}}$  to base ten.  
method 1:  
 $213_{\text{five}} = 2 \text{ groups of five fives, } 1 \text{ group of fives and } 3 \text{ ones}$



$$213_{\text{five}} = 25 + 25 + 5 + 3$$

$$213_{\text{five}} = 58_{\text{ten}} \text{ or } 58$$

method 2:

$$\begin{aligned} 213_{\text{five}} &= (2 \text{ five fives}) + (1 \text{ five}) + (3 \times \text{ones}) \\ &= (2 \times 5 \times 5) + (1 \times 5) + (3 \times 1) \\ &= (2 \times 25) + (1 \times 5) + (3 \times 1) \\ &= 50 + 5 + 3 \\ &= 58_{\text{ten}} \text{ or } 58 \end{aligned}$$

## Exercise

Change the following to base ten.

1.  $13_{\text{five}}$

2.  $22_{\text{five}}$

3.  $112_{\text{five}}$

4.  $310_{\text{five}}$

