

**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 $2 - 8 + 9$ $(2 + 9) - 8$ $11 - 8$ $\underline{3}$	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. $5 + (3 \times 10)$ $5 + 30$ $\underline{35}$
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<p>3. Workout: <math>5 \times 12 \div 4</math>  <b>B O <u>D</u> M A S</b> – 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  <math display="block">5 \times (12 \div 4)</math> <math display="block">5 \times 3</math> <math display="block">\underline{15}</math></p>	<p>4. Workout <math>\frac{1}{2}</math> of <math>10 + 15 \div 5</math>  <b>B <u>O</u> <u>D</u> M <u>A</u> S</b> – Of first, then Division and lastly Addition. First workout <math>\frac{1}{2}</math> of 10, then divide 15 by 5 and lastly add the two results <math>(\frac{1}{2} \text{ of } 10) + 15 \div 5</math>  <math display="block">\begin{array}{r} 1 \quad 5 \\ (\frac{1}{2} \times 10) + (15 \div 5) \\ 5 + (15 \div 5) \\ 5 + 3 \\ \underline{= 8} \end{array}</math></p>
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**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 + Of 25
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**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**


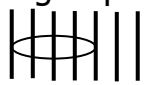


1.	<p>Write the following in words</p> <p>a) <math>13_{\text{five}}</math> One, three, base five</p> <p>b) <math>42_{\text{six}}</math> Four, two, base six</p> <p>c) <math>234_{\text{five}}</math> Two, three, four, base five</p> <p>d) <math>714_{\text{nine}}</math> Seven, one, four, base nine</p>	<p>e)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

1.	<p><math>11_{\text{five}}</math></p>	2.	<p><math>386_{\text{nine}}</math></p>
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3.	33 <sub>five</sub>	4.	1023 <sub>four</sub>
5.	1001 <sub>two</sub>	6.	123 <sub>five</sub>
7.	241 <sub>five</sub>	8.	20103 <sub>six</sub>

WEEK 2 DAY 3  
GROUPING IN BASE FIVE  
CONSIDER THESE STEPS

1.	<p>In base 7<sub>ten</sub> means 7 ones 7 can be grouped in base five as shown below</p> <p>Step 1: count seven sticks or counters</p>  <p>Step 2: make groups of fives and ones</p>  <p>Step 3: count the groups of fives and ones. You will get <b>1</b> group of fives <b>2</b> ones Meaning 7<sub>ten</sub> = 12<sub>five</sub></p>
2.	<p>Group the following sticks in fives and write down their number in base five. a) 13</p> <p>13 can be grouped in bases five as shown below</p> <p>Step 1: count 13 sticks or counters</p>  <p>Step 2: make groups of fives and ones</p>  <p>Step 3: count the groups of fives and ones. You will get <b>2</b> group of fives <b>3</b> ones Meaning 13 = 23<sub>five</sub></p>

b) 36

36 can be grouped in bases five as shown below

**Step 1:** count 13 sticks or counters



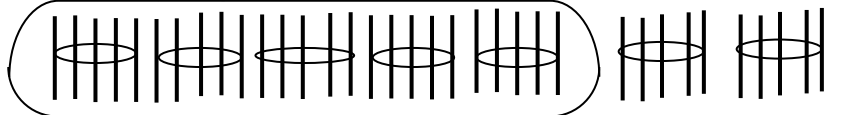
**Step 2:** make groups of fives and ones



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

**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.

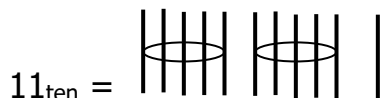
Meaning  $36 = 121_{\text{five}}$

### EXAMPLES

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

1.

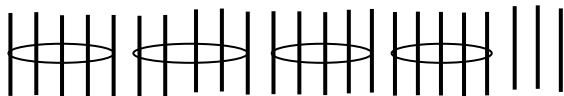
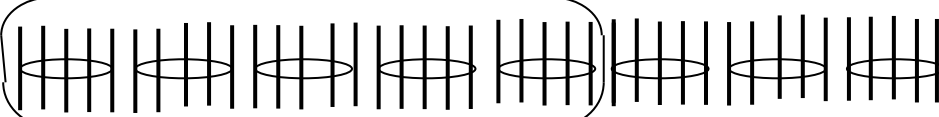
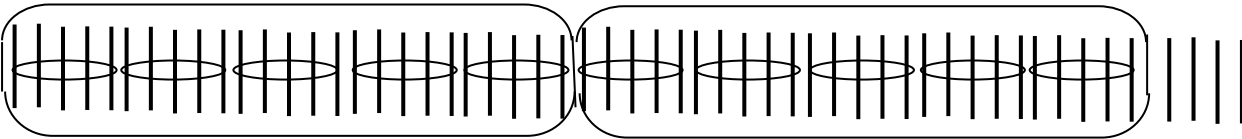
$11_{\text{ten}}$



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

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

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

2.	<p><math>23_{\text{ten}}</math></p>  <p><math>23_{\text{ten}} =</math></p> <p><math>23_{\text{ten}} = \mathbf{4}</math> groups of fives and <math>\mathbf{3}</math> ones</p> <p><math>23_{\text{ten}} = 43_{\text{five}}</math></p>
3.	<p><math>40_{\text{ten}}</math></p>  <p><math>40_{\text{ten}} =</math></p> <p><math>40_{\text{ten}} = \mathbf{1}</math> group of five fives, <math>\mathbf{3}</math> groups of fives and <math>\mathbf{0}</math> ones</p> <p><math>40_{\text{ten}} = 130_{\text{five}}</math></p>
4.	<p><math>54_{\text{ten}}</math></p>  <p><math>54_{\text{ten}} =</math></p> <p><math>54_{\text{ten}} = \mathbf{2}</math> groups of five fives, <math>\mathbf{0}</math> group of fives, <math>\mathbf{4}</math> ones</p> <p><math>54_{\text{ten}} = 204_{\text{five}}</math></p>
<p><b>Exercise</b></p>	
1.	<p><math>11_{\text{ten}}</math></p>
2.	<p><math>17_{\text{ten}}</math></p>

3.	20 ten
4.	26 ten
5.	33 ten
6.	19 ten

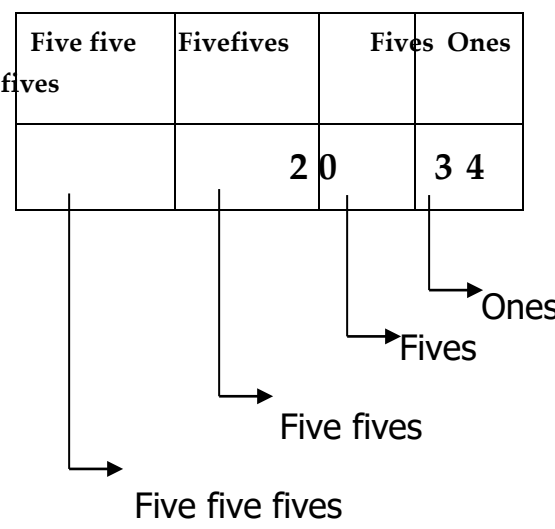
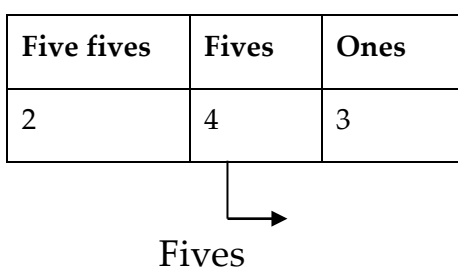




7.	21 <sub>ten</sub>
8.	29 <sub>ten</sub>

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**DAY FOUR**

PLACE VALUES AND VALUES OF NON DECIMAL BASES  
EXAMPLES;

<p>1. Find the place value of each digit in 2034<sub>five</sub></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">Five five fives</td> <td style="text-align: center;">Fivefives</td> <td style="text-align: center;">Fives</td> <td style="text-align: center;">Ones</td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">2 0</td> <td style="text-align: center;">3 4</td> <td style="text-align: center;"> </td> </tr> </table> 	Five five fives	Fivefives	Fives	Ones		2 0	3 4		<p>2. Find the place value of 4 in 243<sub>five</sub></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">Five fives</td> <td style="text-align: center;">Fives</td> <td style="text-align: center;">Ones</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">4</td> <td style="text-align: center;">3</td> </tr> </table> 	Five fives	Fives	Ones	2	4	3
Five five fives	Fivefives	Fives	Ones												
	2 0	3 4													
Five fives	Fives	Ones													
2	4	3													

<p>3. Find the value of 2 in <math>201_{\text{five}}</math></p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 5px;">Five fives</th> <th style="padding: 5px;">Fives</th> <th style="padding: 5px;">Ones</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; padding: 5px;">2</td> <td style="text-align: center; padding: 5px;">4</td> <td style="text-align: center; padding: 5px;">3</td> </tr> </tbody> </table> <p style="margin-left: 100px;">  <math>\text{Five fives} = 2 \times 5 \times 5 = 50</math> </p>	Five fives	Fives	Ones	2	4	3	<p>4. Find the value of 4 in <math>124_{\text{five}}</math></p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 5px;">Five fives</th> <th style="padding: 5px;">Fives</th> <th style="padding: 5px;">Ones</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; padding: 5px;">1</td> <td style="text-align: center; padding: 5px;">2</td> <td style="text-align: center; padding: 5px;">4</td> </tr> </tbody> </table> <p style="margin-left: 100px;">  <math>\text{Ones} = 4 \times 1 = 4</math> </p>	Five fives	Fives	Ones	1	2	4
Five fives	Fives	Ones											
2	4	3											
Five fives	Fives	Ones											
1	2	4											

**Exercise**

<p>1. Write the place value of each digit in the numbers below. a) <math>234_{\text{five}}</math></p>	<p>2. Write the place value of each digit in the numbers below. a) <math>314_{\text{five}}</math></p>
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<p>b) <math>13_{\text{five}}</math></p>	<p>b) <math>42_{\text{five}}</math></p>
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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;**

<p>1. Expand <math>13_{\text{five}}</math></p> <p>a) Using place values</p> $\begin{array}{cc} 1 & 3 \\ \downarrow & \downarrow \\ \text{Fives} & \text{Ones} \end{array}$ <p>= (1five) + (3ones)</p> <p><b>Place values = (1 x 5) + (3 x 1)</b></p> <p>b) Using values</p> $\begin{array}{cc} 1 & 3 \\ \downarrow & \downarrow \\ \text{Fives} & \text{Ones} \end{array}$ <p>= (1five) + (3ones)</p> <p>= (1 x 5) + (3 x 1)</p> <p><b>Values = 5 + 3</b></p>	<p>2. Expand <math>214_{\text{five}}</math></p> <p>a) Using place values</p> $\begin{array}{ccc} 2 & 1 & 4 \\ \downarrow & \downarrow & \downarrow \\ \text{Five fives} & \text{Fives} & \text{Ones} \end{array}$ <p>(2five fives) + (1five) + (3 ones)</p> <p><b>Place values = (2 x 5 x 5) + (1 x 5) + (3 x 1)</b></p> <p>b) Using values</p> $\begin{array}{ccc} 2 & 1 & 4 \\ \downarrow & \downarrow & \downarrow \\ \text{Five fives} & \text{Fives} & \text{Ones} \end{array}$ <p>(2five fives) + (1fives) + (3ones)</p> <p>(2 x 5 x 5) + (1 x 5) + (3 x 1)</p> <p><b>Values = 50 + 5 + 3</b></p>
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**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:

$14_{\text{five}} = 1$  group of fives , 4 ones

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

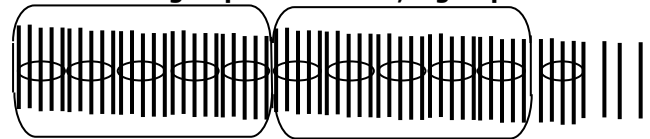
$14_{\text{five}} = 9$  ten method 2:

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

2. Change  $213_{\text{five}}$  to base ten.

method 1:

$213_{\text{five}} = 2$  groups of five fives, 1 group of fives and 3 ones



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

$213_{\text{five}} = 58_{\text{ten}}$  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 <sub>five</sub>	2.	22 <sub>five</sub>
3.	112 <sub>five</sub>	4.	310 <sub>five</sub>