## P.3 MATHEMATICS SELF STUDY LESSON NOTES SET 2

**Lesson 1**

**TOPIC: Operations on whole numbers**

**SUB- TOPIC: Multiplication by 2 and 3**

**Learning outcomes**

**By the end of this lesson you should be able to:**

- Multiply using repeated addition or grouping.
- Multiply in the correct place values.
- Identify the correct place values of numbers.

**Introduction:**

- Please recite table 3 two times.
- I hope you had the following values when reciting table 3. If at all you failed, recite it one more time.3,6,9,12,15,18,21,24,27,30,33,36

**Multiplication by 2 and 3**

- The result you get after multiplying numbers is called a **product.**
- When they ask you to find the product of numbers, it means you have been asked to multiply the given numbers.
- When multiplying two numbers, the first number represents the number of groups and the second number represents the items in each group.

**Examples**

1. Multiply 6 x 2.
   **Solution**

   6 x 2 =  6 groups of 2

        =2 +  2 + 2 + 2 + 2 + 2

        = 12

2. Work out: 4 x 3
   **Solution**
   4 x 3 = 4 groups of 3.

   = 3 + 3 + 3 + 3

   = 12

## Multiplying numbers vertically

- Multiplying numbers vertically makes it easy to multiply numbers with more than one digit.
- However, when you get an answer with two digits, remember to carry/regroup the digit under tens to the next place value as we did in addition.

## Examples

1. Work out 35 x 4.
   **Solution** **side work.**

```
          2         4 x  5 = 20
35  x 4 =     3   5   3  x 4 = 12 + 2
          X       4          = 14
          _____
              1  4  0
```

-In the first step, multiply 4 by 5 which is in the ones place value.

-It gives you an answer which is 20. Since 20 has two digits, write zero and carry 2 as shown in the example.

Multiply 4 by 3 which is under the tens place value. However, you must add the 2 that you carried to the result. ie, 12 +2 =14. Since you don't have any other digit to carry to, the 14 is then written as it is.

2. A teacher gave out 3 books to each of the 44 pupils in P.3 Red. How many books were given to the whole class?
   **Solution**                **Side work**

```
          1           | 4 x 3 = 12
44  x 3 =     4    4   |     4  x 3 = 12 + 1
          X    3      |          = 13
          _____
              1  3  2
```

**Exercise**

1. Multiply            2    7
                        x    4

2. A book has 48 pages. How many pages do 4 books have?

3. A stool has 3 legs. How many legs do 34 stools have?

4. A girl has 2 ears, how many ears do 15 girls have altogether?

5. Find the value of 3 threes

6. Multiply 33 x 4

7. Find the product of 12 and 9

8. A pupil walks 3Km every day how many km does the pupil walk in 56 days?

9. Complete the table below.

| X | 4 | 8 | 5 | 0 | 7 | 9 |
|---|---|---|---|---|---|---|
| 3 | _____ | _____ | _____ | _____ | _____ | _____ |

**LESSON 2**

**TOPIC:**     **Operations on whole numbers**

**SUB- TOPIC:**     **Multiplication by 4 and 5 to the place value of thousands.**

**Learning outcomes**

**By the end of this lesson, you should be able to:**

- Multiply using the correct place value.

- Identify the correct place value of numbers.

- Regroup/carry where necessary.

**INTRODUCTION;**

- Please recite table 4
- Hopefully your recitation gave you the values as 4**, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48.** If you failed at any step, recite it again two more times.

**Multiply by 4 and 5**

**Examples**

1. Multiply  4675  by 4.

```
 2   3   2
 4   6   7   5
 x           4
_____
18   7   0   0
```

**Side work**

$5 \times 4 = 20$
$7 \times 4 = 28+2$
$= 30$

$6 \times 4 = 24 + 3$
$= 27$

- Begin by multiplying 4 with the digit in the ones place value.ie, $4 \times 5 = 20$. Write the digit under ones which is 0 and carry 2 to the next place value.
- Multiply through other numbers until the last place value which is thousands.

2. Find the product of 2 9 4  x  4  = 16 + 2

```
 2   9   2   0
 x           4
_____
10   6   8   0
```

$2 \times 4 = 8$

$2 \times 4 = 8$

$9 \times 4 = 36$

$2 \times 4  = 8 + 2$

$= 10$

-Use the guidelines in example 1 to guide you through this example.

**Activity**

1. Find the product of 4675 and 4
2.  What is 1000 x 4 =
3. 4 classes contribute money to buy a ball.  If each class contributes 7876. How much money was contributed?
4. Find the value of 4 threes
5. A car has three wheels how many wheels do 20 cars?
6. Each child in the class was given 4 books how many books were given to 385 pupils?

7. Our school uses 245 kgs of maize flour in a day. How many kgs of maize flour does the school use in 4 days?

8. A family uses 28 litres of milk daily, how many litres will the family use in 5 days?

9. Work out

3   5   6   2                                    1   2   6       5

X           4X                    5

_____                              _____

**LESSON 3**

**TOPIC: Operation on whole numbers**

**SUB TOPIC: Multiply by 5 and 6 using groups**

**Learning outcomes**

**By the end of this lesson, you should be able to:**

- Multiply using groups.

- Find the product.

**Introduction:**

- Multiplication is repeated addition. This means that the product can be obtained by repeatedly adding the items in the formed groups.

- Let's look at table 6 using repeated addition.

1x 6 = 1 six = 6

2 x 6 = 2 sixes = 6 + 6 = 12

3 x 6 = 3 sixes = 6 + 6 + 6 = 18

4 x 6 = 4 sixes = 6 + 6 + 6 + 6 = 24

5 x 6 = 5 sixes = 6 + 6 + 6 + 6   + 6 = 30

6 x 6 = 6 sixes = 6 + 6 + 6 +6 + 6 + 6 = 36

 7 x 6 = 7 sixes = 6 + 6 + 6 + 6   + 6 + 6 + 6 = 42

8 x 6 = 8 sixes = 6 + 6 + 6 +6 + 6 + 6 + 6 + 6 = 48

9 x 6 = 9 sixes = 6 + 6 + 6 +6 + 6 + 6 + 6 + 6 + 6 = 54

10 x 6 = 10 sixes = 6 + 6 + 6 +6 + 6 + 6 + 6 + 6 + 6 + 6 = 60

11 x 6= 11 sixes = 6 + 6 + 6 +6  + 6 + 6  + 6  + 6  + 6  + 6  + 6 = 66

12 x 6 = 12 sixes = 6 + 6 + 6 +6  + 6 + 6  + 6  + 6  + 6  + 6  + 6 = 72

**Example**

1.  Work out 8 X 6 using repeated addition.
    **solution**

    8 X 6 means 8 groups of 6

    8 X 6 = 6+6+ 6+ 6 + 6+6+6 + 6

=48

2.  Multiply  the following

    **2    3    3**
      9    4    5    6
      x              6
    ─────────────────
5  6  7      3       6

## **Activity**

1. Find the product of 4676 and 6

```
 4  6  7   6
 x         6
_____
_____
```

2. work out 4 X 6 using repeated addition.

3. work out 3 X 6 using repeated addition.

4. There are 23 pupils in a class. Each pupil is given 6 pupils. How many pencils will they get altogether?

**Lesson 4**

**TOPIC    :    Operations on whole numbers**
**SUB- TOPIC**:    **Multiplication by 7 and 8 using groups**
**Learning outcomes**
**By the end of the lesson the learner will be able to:**

- Identify place values of number.

- Multiply using group of 7 and 8

- Use repeated addition to multiply

**Introduction:**

- In the previous lesson, we learnt how to multiply using repeated addition using groups of 6.

- Let us learn another grouping of 7 and 8.

**Multiples by 7 and 8 using groups and repeated addition**

- Remember, the first number represents the number of groups and the second number represents the items in each group.

1x 7 = 1 group of seven = 7

2 x 7 = 2 groups of seven= 7 + 7 = 4

3 x 7 = 3 groups of seven = 7 + 7 + 7 = 21

4 x 7 = 4 groups of seven = 7 + 7 + 7 + 7 = 28

5 x 7 = 5 groups of seven = 7 + 7 + 7 + 7  + 7 = 35

6 x 7 = 6 groups of seven = 7 + 7 + 7 +7 + 7 + 7 = 42

7 x 7 = 7 groups of seven = 7 + 7 + 7 + 7  + 7 + 7 + 7 = 49

8 x 7 = 8 groups of  seven = 7 + 7 + 7 +7 + 7 + 7 + 7 + 7 = 54

9 x 7 = 9 groups of seven = 7 + 7 + 7 +7 + 7 + 7 + 7 + 7 + 7 = 63

10 x 7 =10 groups of seven = 7 + 7 + 7 +7 + 7 + 7 + 7 + 7 + 7 + 7 = 70

11 x 7=11 groups of seven = 7 + 7 + 7 +7  + 7 + 7  + 7  + 7  + 7  + 7  + 7 = 77

12 x 7 = 12 groups of seven = 7 + 7 + 7 +7 + 7 + 7  + 7  + 7  + 7  + 7  + 7 + 7 = 84

**Multiply by 8**

1x 8 = 1group of eight = 8

2 x 8 = 2 groups of eight = 8 + 8 = 16

3 x 8 = 3 groups of eight = 8 + 8 + 8 = 24

4 x 8 = 4 eight = 8 + 8 + 8+ 8 = 32

5 x 8 = 5 groups of eight = 8 + 8 + 8 + 8   + 8 = 40

6 x 8 = 6 groups of eight = 8 + 8 + 8 +8 + 8 + 8 = 48

7 x 8 = 7 groups of eight = 8 + 8 + 8 + 8 + 8 + 8 + 8 = 56

8 x 8 = 8 groups of eight = 8 + 8 + 8 +8 + 8 + 8 + 8 + 8= 64

9 x 8= 9 groups of eight = 8 + 8 + 8 +8 + 8 + 8 + 8 + 8 + 8 = 72

10 x 8 = 10 groups of eight = 8 + 8 + 8 +8 + 8+ 8 + 8 + 8 + 8 + 8 = 80

11 x 8 = 11 groups of eight = 8 + 8 + 8 +8  + 8 + 8  + 8  + 8  + 8  + 8  + 8 = 88

12 x 8  = 12 groups of eight = 8 + 8 + 8 + 8 + 8 + 8  + 8  + 8  + 8  + 8  + 8 = 96

## Activity

1. Find the product of 4316 and 7

```
4   3   1   6
x           7
_____

_____
```

2. Multiply 2509 x 8

3. Find the product of 1210 and 8

4. Eight buses were used to take children for a trip. If each bus carried 35 pupils, how many pupils went for the trip altogether?

5. How many days are there in 74 weeks?

6. Multiply 2 x 8 using repeated addition


## LESSON 5

**TOPIC** : **Operations on whole numbers**

**SUB- TOPIC**: **Multiplication by 9 and 10 using groups**

**Learning outcomes**

**By the end of this lesson, you should be able to:**

- Identify place values of number.

- Multiply a 4-digit number by 9.

- Interpret and solves word application.

**Introduction:**

- Please recite table 9
- Hopefully your recitation gave you the values as 9**, 18, 27, 36, 45, 54, 63, 72 81, 90,99, 108.** If you failed at any step, recite it again two more times.

**Multiples by 9 and 10**

**Examples**

1. Multiply 42 by 9.

```
 1                          Side work
 4   2                     2 x 9= 18
 x    9                    4 x 9 = 36+1
 ─────────
 3 7  8                              = 3 7
 ─────────
```

-Remember, multiplication starts from the ones place value.

-When you get a two-digit answer, eg      2 x 9 = 18, write the digit under ones (8) and carry the one under tens (1).

-Repeat the calculations throughout all the place values

2. Multiples by 10 using groups and repeated addition

   1x 9 = 1group of nine = 9

   2 x 9 = 2 groups of nine = 9 + 9 = 18

   3 x 9 = 3 groups of nine = 9 +9 + 9 = 27

   4 x 9 = 4 groups of nine = 9 + 9 + 9 + 9  = 36

   5 x 9 = 5 groups of nine = 9 + 9 + 9 + 9   + 9 = 45

   6 x 9 = 6 groups of nine = 9 + 9 + 9 +9 + 9 + 9 = 54

   7 x 9 = 7 groups of nine = 9 + 9 + 9 + 9   + 9 + 9  +  9 =63

   8 x 9 = 8 groups of nine = 9 + 9 + 9 +9 + 9 + 9  +  9  +  9 = 72

   9 x 9 = 9 groups of nine = 9+ 9 + 9 +9 + 9 + 9 +  9  +  9  +  9 = 81

   10 x 9 = 10 groups of  nine = 9 + 9 + 9 +9  + 9 + 9  +  9  +  9  +  9  +  9 = 90

   11 x 9= 11 groups of nine = 9 + 9 + 9 +9 + 9 +9  +  9  +  9  +  9  +  9  +  9 = 99

12 x 9 = 12 groups of seven = 9 + 9 + 9 +9 + 9 + 9 + 9 + 9 + 9 + 9 + 9 = 108

Multiples by 10 using groups and repeated addition

1x 10 = 1group of ten = 20

2 x 10 = 2 groups of ten = 10 + 10 = 20

3 x 10 = 3 groups of ten = 10 +10 + 10 = 30

4 x 10 = 4 groups of ten = 10 + 10 + 10 + 10 = 40

5 x 10 = 5 groups of ten = 10 + 10 + 10 + 10 + 10 = 50

6 x 10 = 6 groups of ten = 10+ 10 + 10 +10 + 10 + 10 = 60

7 x 10 = 7 groups of ten = 10+ 10 + 10 + 10 + 10 + 10 + 10 =70

8 x 10 = 8 groups of ten = 10 + 10 + 10 +10 + 10 + 10 + 10 + 10 = 80

9 x 10 = 9 groups of ten = 10+ 10 + 10 +10 + 10 + 10 + 10 + 10 + 10 = 90

10 x 10 = 10 groups of ten = 10 + 10 + 10 +10 + 10 + 10 + 10 + 10 + 10 + 10 = 100

11 x 10

12 x 10 = 12 ten = 10 + 10 + 10 +10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 = 120

**Activity**

1.  Multiply

```
    3   6
x       9
    ───────

    ───────
```

$11 \times 10 = $ _____

```
    3   6   5
x           9
    ─────────

    ─────────
```

2.  How many pages do 9 exercise books have if one book has 36 pages?

3.  How many days are there in 74 weeks

4.  Multiply

```
    2   4   5
x   1       0
    ─────────

    ─────────
```

5.  Multiply using 3 X9 using repeated addition

**LESSON 6**

**Topic** : **Operations on whole numbers**

**SUB- TOPIC**: **Multiplication using a web**

**Learning outcomes**

**By the end of the lesson, you should be able to:**

- Identify the group on a web.

- Multiply to get the answer.

- Interpret and complete the web.

**Introduction:**

- Recite table 5
- Hopefully your recitation gave you the values as **5,10, 15, 20, 25,30, 35, 40, 45,50, 55, 60**
-  If you failed at any step, recite it again two more times.

**Multiplication on a web**

- On a multiplication web, the **outer part** represents **the product**.
- Remember, **the product** is the answer got after **multiplying**.
- The **inner part** represents **the multiplication table** that is being focused on. This is also the grouping done during the multiplication.
- The middle part represents **the items** that are to be put in the groups as given in the middle part.

4

**16**          ☐

**4 x 6 = 24**

**4 x 4 = 16**

**4  x☐ = 20**
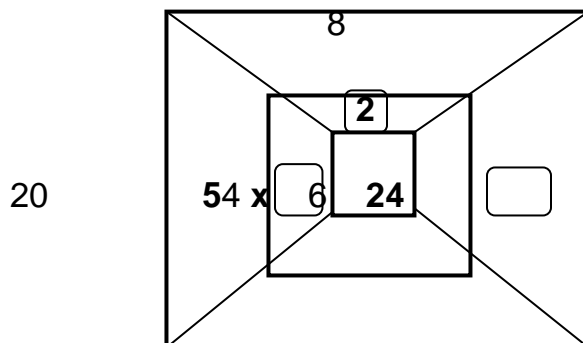
- To get the **outer value** multiply the **inner number** with the **middle number. E.g. 4 x 6 = 24**

☐ **= 20 ÷ 4**

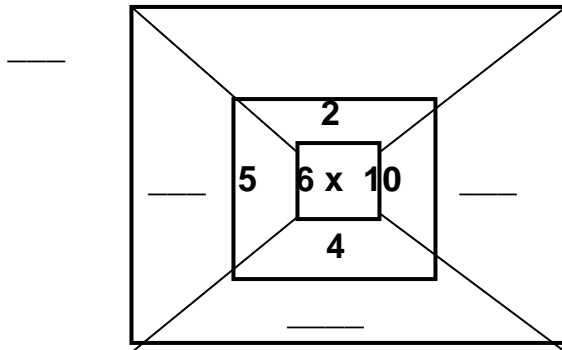- To get the **middle number**, divide the **outer value** with the **innernumber.** E.g. **8 ÷ 4 = 2**

☐ **=  5**

**4 x** ☐ **= 8**

☐ **= 8 ÷ 4**

☐ **= 2**

## Activity

Find the missing number in the diagram belong

**LESSON 7**

**TOPIC        :        Operation on whole numbers**

**SUB- TOPIC:        Division by 2 or 3**

**Learning outcomes**

**By the end of this lesson, you should be able to:**

- Identify the place value of numbers.

- Divide numbers correctly.

- Divide using long division.

**Introduction:**

-   Recite table 2 and table 3.

-   Tables help to make division easy.

-   Before you start the division, it is always important to list the multiples of the divisor.

-   In an expression such as 12 ÷ 4 = 3: 12 is called **the dividend**, 4 is called **the divisor** and 3 is called **the quotient**.

-   The dividend is the number that is to be shared.

-   The divisor is the number that is sharing

**Dividing by 2 or 3 using long division**

**Example**

1.  Divide 26 ÷ 2

```
      1   3
   ┌─────────
  2│   2   6
1 x 2 - 2
   ─────────
       0   6
       ───
```

÷   x   -

2 ÷ 2 = 1

6 ÷ 2 = 3

−  From the question given, 26 is the dividend and 2 is the divisor. The divisor (2) is put out side the long division symbol and the dividend (26) is written outside.

−  When using long division, we divide digit by digit. i.e. for the first step, divide 2 by 2= 1. The result is written above 2. Multiply the result (1) by the divisor as shown in the example.

−  Subtract the product you got from the first digit you divided. Drag down the next digit divide it by the

3 x 2 =    6

0

2.  Work out 93 ÷ 3

```
        3  0
   3 )   9   3      ÷,   X,  -
 3 x 3  - 9
                    9 ÷ 9 = 3
        ────
        0   3       3 ÷ 3 = 0
 1  x 3 = -   3
         ────
          0
```

## Example 3
8 pupils divided 56 oranges equally among themselves.  How many oranges did he get?

```
       0  7
   8 )   5   6      ÷,    X,  -
 0 x 8  - 0
        ────        5 ÷ 8 = 0
        5   6
 7  x 8 = -5   6    56 ÷ 8 =
         ────
          0   0
```

- You need to note that any small dividend divided by a big divisor.
- Therefore, 5 ÷ 8 = 0 remainder 5. Write zero above 5 and multiply it by the divisor. Subtract the result from 5. Drag down 6 such that you get 56.
- Using table 8, find out the number you multiply by 8 to give you 56 and this will be 7. There fore 56÷8=7.
- Multiply the result by 8 to give you 56 which you must subtract from 56 to give you zero.

## Exercise
1.  Divide 840 ÷ 2
2.  Divide 231 by 3
3.  Share 524 oranges equally a each child get?
4.  Share 80 oranges equally among 4 children.  How many oranges does each child get?
5.  Divide 18 ÷ 3

**LESSON 8**
**TOPIC: Operations on the whole number**
**SUB- TOPIC**: Division of numbers   using repeated subtraction

**Learning outcomes**

**By the end of this lesson, you should be able to**

 - Divide numbers using repeated subtraction.
 - Interprets and solves word application.

   **Introduction:**
 - Recite table 3.
 - Your results should be **3,6,9,12,15,18,21,24 27, 30.** In case you fail at any step, recite it again

**Division of whole numbers using repeated subtraction.**

 - Repeated subtraction means that you should subtract the divisor from the dividend until the last result is zero.
 - To get the answer, count the number of subtractions done up to when you got zero as your result.

## **Example**

 1.  Divide: $9 \div 3$, Using repeated subtraction

Solution

$9 \div 3 = 6$ ……..1st

  $6-3 = 3$………..2nd

  $3 \div 3 = 0$………..3rd

$9 \div 3 = 3$ because we subtract 3 times.

## **Activity**

**Divide the numbers using repeated subtraction**

   1.  $12 \div 4$
   2.  $4 \div 2$
   3.  $8 \div 2$
   4.  $6 \div 3$
   5.  $6 \div 2$

**LESSON 9**
**TOPIC: Operation on whole numbers**
**SUB-TOPIC:  Division with a remainder**

**Learning outcomes**

**By the end of the lesson, you should be able to**

- Divide number with a remainder.
- Work out all the steps of long division.

**Long division with a remainder**

- Some numbers are not exactly divisible by the given divisor whereby a remainder will be noted after division.
- However, the steps we learnt in lesson 7 and 8 remain the same to be followed. Remember, we divide digit by digit.

Examples

1.  Divide;  847 ÷ 3

**2  8   2 rem 1**

  3 | 8  4  7   **Side work**

2 x 3  - 6          8 ÷ 3 = 2rem2

2  4                24 ÷ 3 = 8

8  x 3 = -2  4      7 ÷ 3 = 2
0  0 7

2 x 3  =  -   6
            1

- The first step is to divide 8 by 3. In table 3, we don't have multiple 8 and in this case, we look for the nearest multiple which is 6. Get the number that you multiply 3 to give you 6 and that is 2.

- Write 2 above 8 and multiply it by 3 to give you 6. Subtract 6 from 8. This time round, you will get 2 which is the remainder. Drag down 4 to make the figure below 24.

2.  Share 128 sweets among 7 children.

**0  1  8  rem 2**

  7 | 1  2  8        ÷,   x,  -

0 x 7= -0          1 ÷ 7 = 0

   ⁰⁄ 12            12 ÷ 7 = 1

             58 ÷ 7 =

- Follow through the steps given in example one to guide you in example 2.

-

- Remember, we divide digit by digit. And also, any small dividend divided by a bigger divisor gives zero as a quotient.

1 x 7 = - 7
            5 8
8 x 7 = - 5 6
                2

**Activity**
1. Divide 503 ÷ 3
2. Share 289 oranges equally among 4 children.  How many oranges does each child get?
3. Divide 178 ÷ 5
4. Share 238 mangoes equally among 5 children.  How many mangoes does each child get?
5. Work out 25 ÷ 5 using repeated subtraction.

**LESSON 10**

**TOPIC: Operation of the whole number**

**SUB- TOPIC: Relationship between division and multiplication**

**Learning outcomes**

**By the end of the lesson, you should be able to**

- Identify the relationship between multiplication and division.
- Divide or multiply to get the missing numbers.

**Introduction:**

- Recite table 4 two times
- Your results must be **4,8, 12,16,20,24,28,32,36,40,44,48**

**Filling in the missing numbers**

Remember,

- In an expression such as 12 ÷ 4 = 3: 12 is called **the dividend**, 4 is called **the divisor** and 3 is called **the quotient**.
- The dividend is the number that is to be shared.
- The divisor is the number that is sharing

☐ ÷ 5 = 8
Solution

- To get the dividend, multiply the divisor by the product. ie,

☐ ÷ 5 = ☐
= 8 x 5 ☐
☐ = 40

☐ = 8 x 5 = 40

5 x 8 = 40

☐ ÷ 8 = 5
☐ = 8 x 5

☐ = 40

Activity
1. Study the figures below and use it them to find the missing numbers

a) ☐ ÷ 4 = 5

5 x 4 = 20

☐ ÷ 5 = 20

b)

$\square \div 10 = 7$

7 x 10 = 70

$\square\ 7 = 10$

6. Share 560 oranges equally among 5 children how many oranges did each child get?