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**PRIMARY SIX MATHEMATICS LESSON NOTES SELF STUDY LESSONS SET ONE**

**Given 22.5.2020**

Dear Primary Six children, you are most welcome to Mathematics self- study lessons.

You will study one lesson daily. Use the following references for further reading:

Essential Primary Mathematics Book 6 and MK Mathematics Book 6.

## LESSON 1

**TOPIC : Number patterns and sequences**

**SUB TOPIC : Divisibility test for 2,3,4 and 5**

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

- Describe the divisibility test for 2, 3, 4 and 5.
- State the multiples of some numbers
- Test divisibility by 2, 3, 4 and 5.

### Divisibility test for 2

Any number ending with an even digit i.e. ends with 0, 2, 4, 6, 8 is divisible by 2.

### Divisibility test for 3

A number is exactly divisible by 3 if the sum of its digits is a multiple of 3.

**Examples**

144 = 1 + 4 + 4

= 9

**Since 9 is a multiple of 3, then 144 is exactly divisible by 3**.

### Divisibility test for 4

A number is divisible by 4 if its last two digits are either zero or multiples of 4.

**Example**

179 36

36 ÷ 4 = 9

**Since 36 is exactly divisible by 4 then 17936 is divisible by 4.**

## Divisibility test for 5

A number is divisible by 5 if it ends with 0 or 5 e.g. 365, 150, 255, etc.

### Activity

1. Choose by circling the numbers which are exactly divisible by 2.
   11, 13, 20, 26, 38, 47, 192, 4089, 998
2. Test for divisibility by 3 and hence find out the numbers which are exactly divisible by 3.
   a) 37
   b) 123
   c) 333
   d) 12345

3. Find and write only those numbers which are exactly divisible by 4
   a) 3
   b) 4
   c) 90
   d) 1441
   e) 18254

4. Write down the numbers divisible by 5 less than 60

5. List the missing multiples of 5.
   170, ___, 180, ____, 190, ____ 200, ____, 210, ____, 220

## LESSON 2

**TOPIC : Number patterns and sequences**

**SUB TOPIC : Divisibility test for 6, 7, 8, 9 and 10**

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

- Identify numbers
- Test for divisibility test for 6, 7, 8, 9 and 10

## Divisibility test for 6

A number is divisible by 6 if it is divisible by 2 and 3 i.e., it must be even and also the sum of its digits are multiples of 3.

**Divisibility test for 7**

Take the last digit off the number, double it (the last digit) and subtract the doubled number from the remaining number. If the result is divisible by 7 then the number is divisible by 7.

**Divisibility test for 8**

A number is divisible by 8 if its last 3 digits are divisible by 8

**Divisibility test for 9**

A number is divisible by 9 if the sum of its digits is divisible by 9

**Divisibility test for 10**

A number is divisible by 10 if it ends with 0.

**Activity**

1. For the numbers below, test divisibility by 6
   a) 2367 b)814 c) 2376 d)2782

2. Which of the numbers below are divisible by 9?
   a) 342 b) 660 c) 70,308 d)54,696

3. Circle the numbers which are divisible by 10
   a) 121 b) 260 c)1001 d) 1780 e) 2607

4. Test these numbers for divisibility by 8
   a) 76344 b) 98020

## LESSON 3

**TOPIC : Numeracy Number Patterns and Sequences**

**SUB TOPIC : Square, triangular and even numbers**

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

- Identify the numbers
- State examples of various members

Triangular numbers

These are numbers got after adding consecutive counting numbers e.g.

1 = 1,
1 +2 = 3,
1 + 2 + 3 = 6
1+2 + 3 + 4 = 10
1+2 + 3 + 4 +5 = 15
1+2 + 3 + 4+ 5 + 6 = 21
1+2 + 3 + 4 + 5 + 6 + 7= 28
1+2 + 3 + 4 + 5 + 6 + 7 + 8=36
1+2 + 3 + 4 + 5 + 6 + 7 + 8+ 9 = 45
1+2 + 3 + 4 + 5 + 6 + 7 + 8+ 9 + 10 = 55

The triangular numbers are {1,3, 6,10,15, 21,28,36,45,55 …}

Square numbers

A square number is a number got after multiplying a counting number by itself. e.g.
1 x 1 =1
2 x2 =4
3x3 = 9
4 x 4 = 16
5 x 5 = 25
6 x 6 = 36
NB; try it with other counting numbers up to 20

Even numbers

These are numbers which are exactly divisible by 2. e.g. 0, 2, 4, 6, 8, 10, ...
All numbers that end with 0,2,4,6 and 8 all even numbers.

Odd numbers

These are numbers which are not exactly divisible by 2 e.g.1, 3, 5, 7, 9,11,13,15, …

Whole numbers

Whole numbers are all counting numbers with zero e.g. 0,1,2,3,4,5,6, ...

Counting / Natural numbers

These are all positive numbers on a number line e.g. 1, 2, 3, 4, 5,6, 7, …

**Activity**

1. List all the triangular numbers less than 30 (show your working)
2. List the triangular numbers less than 40 which are divisible by 3.
3. What is the sum of all numbers from 1 to 10?
4. Find the value of the unknown
   a) lxl = a
   b) 2 x 2 = k

c) 4 x k=16

d) 13 x b = 169

5. List elements in a set of counting numbers from 15 to 24
6. Write the counting numbers between 10 and 30 which are divisible by 3.
7. List elements in a set of even numbers below 20.
8. What is the first even number?
9. List members in a set of odd numbers divisible by 3 less than 30
10. List the prime numbers between 10 and 30
11. What is the difference between the prime numbers between 30 and 40?

## LESSON 4

**TOPIC : Patterns and sequences**

**SUB TOPIC : Finding consecutive counting numbers**

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

- Give the meaning of consecutive
- Identify counting numbers
- Find consecutive counting numbers

### Introduction

All counting numbers are got by adding 1, 2, 3, 4 consecutively to the first number

### Examples

The sum of three consecutive counting numbers is 36. What are these numbers?

Let the 1st counting number be k

1st = (k)

2nd = (k+1)

3rd = (k +2)

(k) + (k+1) +(k+2) = 36

k + k + 1 + k +2 = 36

k + k + k + 1 + 2 = 36

3k + 3 = 36

| 1st | 2nd | 3rd |
|---|---|---|
| k | k+1 | k+2 |
| 11 | 11=1 | 11=2 |
| 11 | 12 | 13 |

Therefore the numbers are 11, 12 and 13

$3k + 3 - 3 = 36 - 3$

$\frac{3k}{3} = \frac{33}{3}$

$k = 11$

**Activity**

1. The sum of 3 consecutive counting numbers is 21. What are the numbers?
2. Find the three consecutive counting numbers whose mean is 39
3. List the four consecutive counting numbers whose total is 86
4. Find 3 consecutive counting numbers whose sum is 51
5. List 3 consecutive counting members whose total is 72
6. The sum of three consecutive counting numbers is 93. What are the numbers?

**LESSON 5**

**TOPIC : Patterns and sequences**

**SUB TOPIC : Finding consecutive even numbers**

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

- Give the meaning of consecutive
- Find the consecutive even numbers

**Introduction**

All even numbers are got by adding 2, 4, 6, 8, 10 consecutively to the first number (which has to be even)

**Examples**

The sum of three consecutive even numbers is 24. Find the numbers.

**Step 1**

Let the first even number be y.

**Step 2**

Add 2 to the first number (y) to get the second number and add 4 to the first number(y) to get the third number

$1^{st}$ = (y)
$2^{nd}$ = (y+2)
$3^{rd}$ = (y +4)

**Step 3**

Form an equation by adding the $1^{st}$ No.+ $2^{nd}$ No.+ $3^{rd}$ No. = 24

| | $1^{st}$ | $2^{nd}$ | $3^{rd}$ |
|---|---|---|---|
| 6 | y | y+2 | y+4 |

(y) + (y+2) +(y+4) = 24

y + y + 2 + y +4 = 24

y + y + y + 2 + 4 = 24

3y + 6 = 24

3y + 6 – 6 = 24 – 6

$\frac{3y}{3} = \frac{18}{3}$

y = 6

**Activity**

1. Find the consecutive even numbers whose sum is 42.
2. The sum of 4 consecutive even numbers 172. Find the fourth number if the 3 numbers are 40, 42 and 44.
3. Find a set of 3 consecutive even numbers whose sum is 216.
4. The sum of 4 consecutive even numbers is 52. List all the numbers.
5. The sum of three consecutive even number is 36. Find the third number if two of them are 12 and 14.