

# Grade 6 Textbook

## (CAPS Edition)

2022

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# Chapter A1

## Number systems

### A1.1 Natural numbers, whole numbers, even numbers and uneven numbers:

NATURAL NUMBERS	WHOLE NUMBERS
1 ; 2 ; 3 ; 4 ; 5 ; 6 ; 7 ; 8 ; _ _ _	0 ; 1 ; 2 ; 3 ; 4 ; 5 ; 6 ; 7 ; 8 ; 9 ; _ _ _
<b>Even numbers:</b> 2; 6; 8; 10; . . . Divisible by 2 without a remainder	
<b>Uneven numbers:</b> 1; 3; 5; 7; 9; 11; . . . If you divide by 2, there will be a remainder.	

#### Exercise 1:

#### (1) Write down the following number patterns:

(a) Natural numbers smaller than 10.	(b) Natural numbers between 21 and 28.
(c) Even numbers between 52 and 64.	(d) Uneven numbers from 35 to 45.
(e) Even numbers smaller than 146 but greater than 140.	(f) The natural numbers smaller than 21 but greater than 15.
(g) The first 5 whole numbers which will be uneven.	(h) The first 5 whole numbers which are natural numbers.
(i) The even numbers from 132 to 142.	(j) The whole numbers between 164 and 172 which are also divisible by 2
(k) Write the three uneven numbers preceding 60 006	(l) Write the first three uneven numbers following 5 999

#### (2) Complete the next 5 numbers in the following sequences.

- |                              |                               |
|------------------------------|-------------------------------|
| (a) 2 ; 4 ; 6 ; 8 ; 10       | (b) 110 ; 120 ; 130 ; 140 ;   |
| (c) 11 ; 21 ; 31 ; 41 ; 51 ; | (d) 18 ; 27 ; 36 ;            |
| (e) 1 ; 2 ; 3 ; 4 ;          | (f) 19 200 ; 9 600 ; 4 800 ;  |
| (g) 3 ; 9 ; 15 ;             | (h) 72 ; 63 ; 54 ; 45 ;       |
| (i) 1 ; 4 ; 9 ; 16 ;         | (j) 100 ; 99 ; 97 ; 94 ; 90 ; |
| (k) $a ; i ; b ; i ; c ;$    | (l) 906 ; 900 ; 894 ;         |
| (m) 36 ; 32 ; 38 ;           | (n) 51 ; 43 ; 36 ; 30 ;       |

**(3) Complete the following:**

(a) The four even numbers preceding 10 000
(c) The largest six-digit number

(b) The four even numbers following 7 984:
(d) The smallest four-digit number

**A.1.2 RULES OF DIVISIBILITY:**

<p><b><u>Divisible by '2'</u></b> All numbers ending on an even number as well as '0' are divisible by '2' <b>EXAMPLE: '3 458'</b> The number ends on an '8' and is therefore divisible by '2'.</p>	<p><b><u>Divisible by '5'</u></b> All numbers ending on a '0' or a '5' are divisible by '5' <b>EXAMPLE: '9 785'</b> The number ends on a '5' and is therefore divisible by '5'.</p>	<p><b><u>Divisible by '10'</u></b> All numbers ending on a '0' are divisible by '10'. <b>EXAMPLE: '2 040'</b> The number ends on a '0' and is therefore divisible by '10'.</p>
<p><b><u>Divisible by '3'</u></b> If the sum of all the digits of the number is divisible by '3' then the number will be divisible by '3' <b>EXAMPLE: '351'</b> The sum of the digits in the number '351', <math>3 + 5 + 1 = 9</math>, which is divisible by 3, the entire number is divisible by '3'</p>	<p><b><u>Divisible by '4'</u></b> If the last 2 digits of a number are divisible by '4' then the entire number will be divisible by '4'. Also look out for numbers with a double zero at the end. <b>EXAMPLE: '336'</b> The '36' in the number '336' is divisible by '4' and the entire number will therefore be divisible by '4'.</p>	<p><b><u>Divisible by '6'</u></b> If a number is divisible by '2' and '3' then the number will be divisible by '6'. <b>EXAMPLE: '258'</b> The number '258' is divisible by '2' and '3' and is therefore divisible by '6'.</p>

**Exercise 2:****(1) Which numbers are divisible by the following?**

DIVISIBLE BY '2'	DIVISIBLE BY '3'	DIVISIBLE BY '4'	DIVISIBLE BY '5'	DIVISIBLE BY '6'	DIVISIBLE BY '10'
------------------	------------------	------------------	------------------	------------------	-------------------

- |            |           |            |
|------------|-----------|------------|
| (a) 64     | (b) 373   | (c) 260    |
| (d) 875    | (e) 9 000 | (f) 22 677 |
| (g) 30 000 | (h) 5 899 | (i) 12 972 |
| (j) 54 788 |           |            |

**(2) Give a reason why each of the following numbers is divisible by the number in brackets.**

- |                            |                             |
|----------------------------|-----------------------------|
| (a) 3 465 (Divisible by 5) | (b) 6 890 (Divisible by 10) |
| (c) 6 348 (Divisible by 2) | (d) 23 648 (Divisible by 4) |
| (e) 156 (Divisible by 6)   |                             |

(3) Give all the possible numbers suitable for the  $\square$  to be divisible by '2'.  
56 78  $x$

(4) Give all the possible numbers suitable for the  $\square$  to be divisible by '3'.  
13 48  $x$

(5) Give all the possible numbers suitable for the  $\square$  to be divisible by '4'.  
67 76  $x$

### A1.3 Factors:

**Factors:** The **factors** of a number are any numbers that divide into it without a remainder **or** a factor times a factor equals a product.

**EXAMPLE**

12

1 x 12

2 x 6

3 x 4

F<sub>12</sub>: {1 ; 2 ; 3 ; 4 ; 6 ; 12}

#### Exercise 3:

(1) Write the factors of the following numbers by using your times tables.

(a)  $F_{20}$ :

(b)  $F_{24}$ :

(c)  $F_{36}$ :

(d)  $F_{56}$ :

(e)  $F_{72}$ :

(f)  $F_{100}$ :

(g)  $F_{20}$ :

(h)  $F_{90}$ :

(i)  $F_{42}$ :

(2) Write the factors of the following numbers.

(a)  $F_{21}$ :

(b)  $F_{30}$ :

(c)  $F_{60}$ :

(d)  $F_{72}$ :

(e)  $F_{64}$ :

(f)  $F_{80}$ :

(g)  $F_{200}$ :

(h)  $F_{1000}$ :

(i)  $F_{120}$ :

(j)  $F_{144}$ :

(3) Write down the missing factors.

\*(a)  $F_{156}$

1	2	3	4	6	12	(i)	(ii)	(iii)	(iv)	(v)	156
---	---	---	---	---	----	-----	------	-------	------	-----	-----

\*(b)  $F_{96}$

1	(i)	(ii)	(iii)	(iv)	8	12	(v)	24	(vi)	(vii)	96
---	-----	------	-------	------	---	----	-----	----	------	-------	----

\*(c)  $F_{112}$

1	(i)	(ii)	(iii)	8	(iv)	16	(v)	(vi)	112
---	-----	------	-------	---	------	----	-----	------	-----

\*(d)  $F_{108}$

1	(i)	(ii)	(iii)	6	9	(iv)	18	(v)	(vi)	54	108
---	-----	------	-------	---	---	------	----	-----	------	----	-----

\*(e)  $F_{216}$

1	(i)	(ii)	(iii)	(iv)	8	9	(v)	(vi)	(vii)	27	(viii)	54	(ix)	(x)	216
---	-----	------	-------	------	---	---	-----	------	-------	----	--------	----	------	-----	-----

(4) Calculate the factors of the following:

Use the rules of divisibility to assist you!!

(a)  $F_{600}$ :

(b)  $F_{1500}$ :

**A1.4 Common factors:**

$F_{30}$ : 1 ; 2 ; 3 ; 5 ; 6 ; 10 ; 15 ; 30       $F_{24}$ : 1 ; 2 ; 3 ; 4 ; 6 ; 8 ; 12 ; 24

$F_{30}$

$F_{24}$

**Common Factors (CF):**  
CF: 1 ; 2 ; 3 ; 6

**EXAMPLE**

**Exercise 4:**

(1) Write down the factors and determine the common factor.

Draw 2 circles as shown in the example and fill in the factors in each circle.

Encircle the HCF (GCF).

(a)  $F_{15}$  and  $F_{35}$

(b)  $F_{32}$  and  $F_{40}$

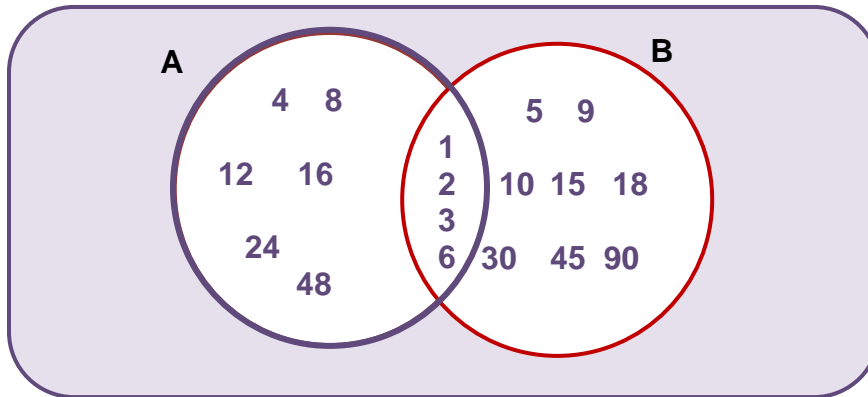
(c)  $F_{70}$  and  $F_{84}$

(d)  $F_{48}$  and  $F_{54}$

(e)  $F_{48}$  and  $F_{54}$

(2) Encircle the HCF(GCF).

(3) Study the set of factors below and answer the following questions:



(a) The factors of which number is represented by A?

(b) The factors of which number is represented by B?

(c) What are the common factors of A and B?

(d) What is the highest common factor (HCF) or (GCF) of A and B?

(e) Which of the common factors are even numbers?

(4) Write down the factors of the following as well as the common factors.

Encircle the HCF/GCF.

(a) $F_{36}$	(b) $F_{60}$	(c) Common Factor	(d) HCF
--------------	--------------	-------------------	---------

(5) Write down the factors of the following as well as the common factors.

Encircle the HCF/GCF.

(a) $F_{56}$	(b) $F_{40}$	(c) Common Factor	(d) HCF
--------------	--------------	-------------------	---------

(6) Write down the HCF of the following:

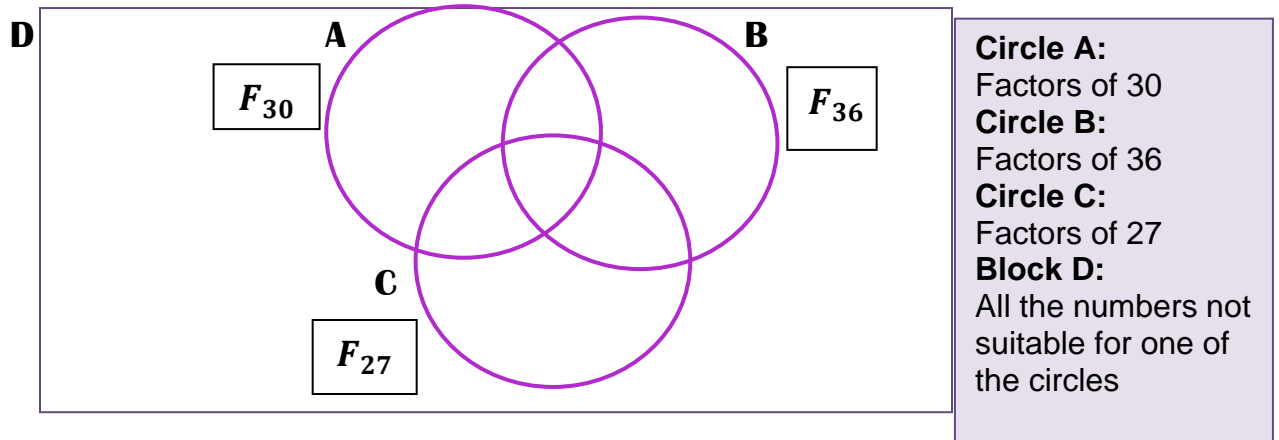
(a) 56 and 64
(c) 144 and 60
(e) 36 and 40

(b) 36 and 48
(d) 45 and 90
(f) 45 and 63

**(7) A challenge!**

Draw 3 circles as shown below. Use the numbers in die block.  
Fill in the factors as requested and answer the questions.

1 ; 2 ; 3 ; 4 ; 5 ; 6 ; 7 ; 9 ; 10 ; 11 ; 12 ; 13 ; 15 ; 17 ; 18 ; 19 ; 27 ; 30 ; 31 ; 36



- Which of the numbers are common factors of 30, 36 and 27?
- Which numbers are common factors of 30 and 36?
- Which numbers are common factors of 36 and 27.
- Write down the numbers in block D, that is not part of A, B or C.
- Arrange the numbers in block D in **descending order**.
- Arrange the common factors of 30 and 36 in **ascending order**.
- What is the **GCF(HCF)** of 30 and 36?
- What is the **GCF(HCF)** 30 and 27?
- What is the **GCF(HCF)** 27 and 36?

**A1.5 Multiples:**

A **multiple of a number** is a number that are adding repeatedly to a number as well as to the answer. E.g. **Multiples of 6**  $M_6$  : 6 ; 12 ; 18 ; 24 ; 30 ; 36 ; ...

**Exercise 5:**

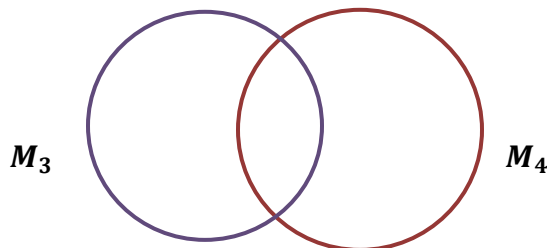
- (1) (a) Write down the first **eight** multiples of 4.  
 (b) Write down the first **10 multiples** of 6.:  
 (c) What is the **smallest multiple** of 7?  
 (d) Write down the **multiples** of 7 between 14 and 70.  
 (e) Write down the **multiples** of:

(i)  $M_8$ : 8 ; 16 ; 24 ; . . .

(ii)  $M_9$ : 9 ; 18 ; . . .

- (f) (i) Write down the first **ten** multiples of 3 and 4.  
 (ii) Encircle the common **multiples of 3 and 4**.

- (2) (a) Draw 2 circles as shown below. Write down the multiples of 3 and 4 in the correct circles.



- (b) Encircle the **LCM – Lowest common multiple of 3 and 4**.

- (3) Write down the first 10 multiples of the following and determine the common multiples. Encircle the LCM.

(a)  $M_6$  and  $M_8$ :

(b)  $M_7$  and  $M_2$ :

(c)  $M_4$  and  $M_3$ :

(d)  $M_7$  and  $M_8$ :

(e)  $M_6$  and  $M_5$

- (f) Write down the LCM of the following numbers.

(i) 3 ; 4; and 5

(ii) 2 ; 3 and 6

(iii) 5 ; 6 ; and 3

(iv) 7 ; 8 and 4

(v) 6 ; 8 ; and 3

(vi) 3 ; 5 and 9

- (3) What number is a multiple and a factor of 8?

You can use the constant function on your calculator to calculate the multiples.

Did you know?



## A1.6 Prime numbers:

A **prime** number can only be divided by 1 and itself. (Numbers with only 2 factors)

E.g. 2; 3; 5; 7; 11; 13; 17; 19 etc.

'1' is not a prime number, because it only has 1 factor which is 1.

Numbers with more than 2 factors are called **composite** numbers.

Factors which are prime numbers are called **prime factors**.

The factors of 6 are:  $F_6$ : 1; 2; 3; 6 but the **Prime factors of 6** are 2 and 3.

### Excercise 6:

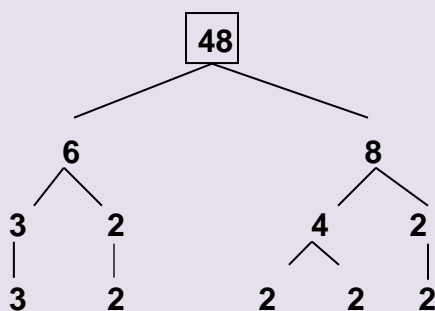
#### (1) Answer the following questions:

- Write down the first six prime numbers.
- Which prime numbers is an even number?
- Write down the prime numbers between 17 and 29.
- Write down the factors of 12 which are also prime numbers.
- Why is 1 not a prime number?

#### (2) Write down the factors of the following and encircle the prime numbers.

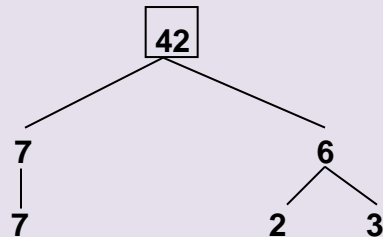
- |                |                |                |                |
|----------------|----------------|----------------|----------------|
| (a) $F_{21}$ : | (b) $F_{15}$ : | (c) $F_{28}$ : | (d) $F_{22}$ : |
| (e) $F_{30}$ : | (f) $F_{32}$ : | (g) $F_{42}$ : | (h) $F_{56}$ : |

Prime numbers can be determined by using factor trees.



$$\therefore 3 \times 2 \times 2 \times 2 \times 2 = 48$$

Prime factors: 2 and 3



$$\therefore 2 \times 3 \times 7 = 42$$

Prime factors: 2 and 3 and 7

**Exercise 7:**

Draw factor trees to determine the prime factors.

(1) 9

(4) 12

(7) 32

(2) 12

(5) 24

(8) 50

(3) 16

(6) 20

**A1.7 Properties of “1” and “0”:****Exercise 8:**

(1) Write down the sum as well as the answer.

(a)  $4 + 0 =$

(d)  $7 - 0 =$

(g)  $6 \times 1 =$

(j)  $4 \div 1 =$

(m)  $2 \times 0 =$

(b)  $6 + 0 =$

(e)  $2 - 0 =$

(h)  $1 \times 1 =$

(k)  $5 \div 1 =$

(n)  $4 \times 0 =$

(c)  $8 + 0 =$

(f)  $20 - 0 =$

(i)  $9 \times 1 =$

(l)  $3 \div 1 =$

(o)  $6 \times 0 =$

(2) Answer the following questions:

- (a) What is the outcome if you add 0 to a number?
- (b) What is the outcome if you subtract 0 from a number?
- (c) What is the outcome if you multiply a number by 1?
- (d) What is the outcome if you divide a number by 1?
- (e) What is the outcome if you multiply a number by 0?

**WHEN WILL THE VALUE OF A NUMBER REMAIN THE SAME?**

Any number + 0    Any number - 0    Any number  $\times$  1    Any number  $\div$  1

**IDENTITY ELEMENTS:**

The identity element of multiplication and division is 1

The identity element of addition and subtraction is 0

(3) Determine the answers of the following:

(a)  $6 + 0 =$

(b)  $5 - 0 =$

(c)  $7 \times 0 =$

(d)  $6 \div 1 =$

(e)  $7 \times 1 =$

(f)  $9 + 0 =$

(g)  $3 \times 1 =$

(h)  $1 \times 1 =$

(i)  $6 \div 1 =$

(j)  $6 - 6 + 8 =$

(k)  $4 + 8 - 8 =$

(l)  $a + 4 - 4 =$

(m)  $2 - 2 + k =$

(n)  $5 + 4 - 4 =$

(o)  $10 + 5 - 1 - 3 =$

(4) Check the following by using inverse operations:

$3 + 4 = 7$	<i>therefore,</i>	$7 - 4 = 3$
$12 - 7 = 5$	<i>therefore,</i>	$5 + 7 = 12$
$3 \times 4 = 12$	<i>therefore,</i>	$12 \div 4 = 3$
$0 \div 6 = 0$	<i>therefore,</i>	$0 \times 6 = 0$
<b>BUT</b>		
$3 \div 0 = \square$	and	$0 \times \square = 3$ ( <i>This can not work</i> )
<b>Therefore, dividing by '0' is undefined.</b>		

(a)  $6 \times 0 \times 24 =$

(b)  $0 \div 6 =$

(c)  $4 \div 0 =$

(d)  $a + 0 = 0 + a =$

(e)  $4 + 0 + 5 =$

(f)  $12 \div 0 =$

(g)  $3 \times 2 \times 0 =$

(h)  $m \times 0 =$

(i)  $a \div 0 =$

(j)  $6 \times 5 + 0 =$

(k)  $a + 0 =$

(l)  $k - 0 =$

(m)  $0 \div 7 =$

(n)  $0 \times 3 =$

(o)  $12 + 0 =$

## A1.8 REVISION EXERCISE

(1) Answer the following questions:

(a) Write down the first five natural numbers.

(b) Write down the first six whole numbers.

(c) Write down the first five prime numbers.

(d) Which number is an even number as well as a prime number?

(e) Write down the even numbers between 30 and 40 which are also multiples of 3.

(f) Write the multiples of 5 between 20 and 40 which are also even numbers. **(6)**

(2) (a) Use factor trees to determine the prime factors of the following:

(i) 18 (ii) 64 (2)

(b) What does HCF/GCF stand for? (1)

(c) Determine the factors of the following numbers and write the HCF(GCF). (2)

(i)  $F_{30}$  (ii)  $F_{48}$

(d) Determine the factors of the following numbers and write down the HCF(GCF). (2)

(i)  $F_{60}$  (ii)  $F_{45}$

(e) What does LCF stands for? (1)

(f) Determine the multiples and then the LCM of the following numbers:  
(Write the first ten multiples.) (3)

(i)  $M_7$  and  $M_4$  (ii)  $M_9$  and  $M_{12}$

(iii)  $M_3$ ,  $M_6$  and  $M_4$

(3) Determine the following:

(a) LCM of 12 and 15 (b) HCF of 63 and 84: (2)

(4) Do the sums.

(a)  $12 \times 0 \times 2 =$

(b)  $0 \div 10 =$

(c)  $3 \div 0 =$

(d)  $b + 0 = 0 + b =$

(e)  $3 + 0 + 5 =$

(f)  $1 \times 0 =$

(g)  $7 \div 0 =$

(h)  $t \times 0 =$

(i)  $a \div 0 =$

(j)  $2 \times 5 + 0 =$

(k)  $k + 0 =$

(l)  $p - 0 =$

(m)  $0 \div m =$

(n)  $0 \times 3 =$

(o)  $4 + 0 =$

(p)  $4 + 6 \div 0 =$

(q)  $3 \times 4 \times 0 =$

(r)  $a \times 0 =$

(18)

(5) Peter wants to buy sweets that he can share equally with his friends if they come to visit him. He is not sure whether 3, 4 or 5 friends will come to visit him. However, he wants to be sure to have enough sweets to divide evenly amongst his friends without any sweets remaining. Calculate the lowest number of sweets that Sarel should purchase. Show all calculations. (3)

(Total: 40)

## Chapter A2

### Place Values

#### A2.1 Place values and number values:

The table shows the first ten places left of the comma.

PLACE VALUE TABLE									
Billion	HM	TM	M	HTh	TTh	DTh	H	T	O
									1
								1	0
							1	0	0
						1	0	0	0
					1	0	0	0	0
			1	0	0	0	0	0	0
		1	0	0	0	0	0	0	0
	1	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0

#### Exercise 1:

(1) Complete the following: (Write down the number value.)

(a) 20 T =

(c) 38 TTh =

(e) 12 H + 5 T =

(g) 3 TTh + 5 H =

(i) 17 Th =

(k) 126 H =

(m) 3 H + 34 Th =

(b) 12 Th =

(d) 480 Th =

(f) 3 T + 12 H + 4 O =

(h) 312 T =

(j) 42 Million =

(l) 7 H + 3 T + 13 E =

(n) 12 T + 32 H =

(2) Write the following in expanded notation

**E.g. 345 789 = 300 000 + 40 000 + 5 000 + 700 + 80 + 9**

(a) 7 921

(c) 100 892

(e) 909 009

(b) 7 021

(d) 100 001

(f) 2 000 111

(3) Copy the table in your book.

Write down the number value and the place value of the underlined digits.

	NUMBER	PLACE VALUE	NUMBER VALUE
(a)	<u>2</u> 34 678	2 HTh	200 000
(b)	47 <u>92</u> 1	92 T	920
(c)	<u>3</u> 567		
(d)	<u>4</u> 15 682		
(e)	35 <u>4</u> 879		
(f)	4 097 61 <u>4</u>		
(g)	<u>24</u> 870		
(h)	<u>3</u> 400 765		
(i)	<u>345</u> 982		

(4) Simplify the following:

(a)  $(4 \times 10\,000) + (3 \times 1\,000) + (2 \times 100) + (3 \times 10) + (6 \times 1)$

(b)  $(7 \times 100\,000) + (4 \times 1\,000) + (5 \times 10) + (7 \times 10\,000) + (5 \times 1)$

(c)  $(3 \times 1\,000) + (4 \times 1)$

\* (d)  $(6 \times 1) + (4 \times 100) + (3 \times 1\,000) + (12 \times 10) + (24 \times 100) + (36 \times 1)$

\* (e)  $(12 \times 100) + (4 \times 10) + (124 \times 10)$

\* (f)  $(23 \times 10) + (70 \times 100) + (113 \times 1)$

\* (g)  $(33 \times 10) + (9 \times 10\,000) + (15 \times 1) + (40 \times 100)$

(5) Write down the sums and complete with the correct answers

(a)  $4\,578 + \underline{\hspace{2cm}} \text{ tens} = 4\,598$

(c)  $5\,565 + \underline{\hspace{2cm}} \text{ tens} = 5\,605$

(e)  $134\,678 + 1\,000 = \underline{\hspace{2cm}}$

(g)  $4\,570 + 3 \text{ hundreds} - 6 \text{ tens} = \underline{\hspace{2cm}}$

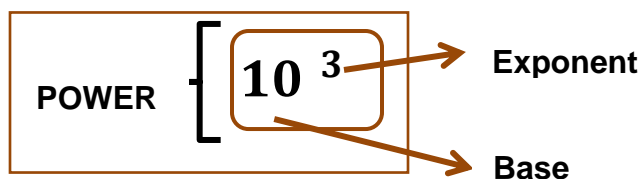
(b)  $389 - \underline{\hspace{2cm}} \text{ tens} = 9$

(d)  $\underline{\hspace{2cm}} + 300 = 89\,500$

(f)  $7\,895 - 3 \text{ hundreds} = \underline{\hspace{2cm}}$

(h)  $3\,456 + (4 \times 100) = \underline{\hspace{2cm}}$

**A2.2 Exponential notation:**



Take note:  
Any number to the power of 0 equals 1.  
Therefore:  $10^0 = 1$

M	HTh	TTh	Th	H	T	O
$10 \times 10 \times 10 \times 10 \times 10 \times 10$	$10 \times 10 \times 10 \times 10 \times 10$	$10 \times 10 \times 10 \times 10$	$10 \times 10 \times 10$	$10 \times 10$	10	1
$10^6$	$10^5$	$10^4$	$10^3$	$10^2$	$10^1$	$10^0$

**Exercise 2:****(1) (a) Write the following numbers in exponential notation:** E.g.  $3\ 000 = 3 \times 10^3$ 

(i) 12 Thousand

(iii) 7 Million

(v) 23 000

(vii) 120 000

(ix) 70 565

(xi) 45 872

(ii) 12 Hundred

(iv) 34 Tens

(vi) 500

(viii) 700 000

(x) 657 200

**(b) Which number is represented?**(i)  $(4 \times 10^3) + (6 \times 10^2) + 9 \times 10^1$ (iii)  $(9 \times 10^0) + (15 \times 10^2) + (3 \times 10^3)$ (ii)  $(6 \times 10^2) + (12 \times 10^3) + (3 \times 10^1)$ **(c) Write down the value of the 'eight' in each number.**

(i) 6 784 790

(ii) 895 467 111

**(2) Fill in <, > or =:**(a) 900   $9 \times 10^4$ (c)  $62 \times 10^2$   6 200(e) 66 666  666 666(g)  $40 \times 10^2$    $4 \times 10^4$ (i) 24 000   $24 \times 10^2$ (k)  $25 \times 10^0$   25(m)  $12 \times 10^6$   12 M(o)  $14 \times 10^3$   1 400(b) 34 567  43 567(d) 92 865  98 265(f) 60 201  60 102(h)  $6 \times 10^1$    $60 \times 1$ (j)  $16 \times 10^4$   16 000(l) 21 300   $213 \times 10^2$ (n)  $21 \times 10^3$   21 Th(p) 12 TTh   $12 \times 10^3$

- |     |                   |                      |                    |     |                   |                      |                  |
|-----|-------------------|----------------------|--------------------|-----|-------------------|----------------------|------------------|
| (q) | 112 T             | <input type="text"/> | $112 \times 10$    | (r) | $200 \times 10^2$ | <input type="text"/> | $20 \times 10^3$ |
| (s) | $100 \times 10^1$ | <input type="text"/> | $10^2 \times 10^1$ | (t) | $2 \times 10^4$   | <input type="text"/> | 2 TTh            |
| (u) | 16 M              | <input type="text"/> | $16 \times 10^6$   | (v) | 10 Th             | <input type="text"/> | 100 H            |

(3) Complete the following:

**Example:** 9 244 is 4 tens or  $4 \times 10^1$  greater than 9 204

- (a) 3 748 is (4 x ) greater than 3 708.  
 (b) 4 690 is (3 x ) less than 7 690.  
 (c) 22 610 is (5 x ) greater than 22 110  
 (d) 26 260 is (2 x ) less than 46 260  
 (e) 166 099 is \_\_\_\_\_ less than 166 100  
 (f) 261 000 is \_\_\_\_\_ greater than 260 999  
 (g) 192 001 is \_\_\_\_\_ less than 992 001  
 (h) 120 901 is \_\_\_\_\_ greater than 120 601

(4) Write in exponential notation.

- |               |             |
|---------------|-------------|
| (a) 3 000     | (b) 400     |
| (c) 20        | (d) 12 000  |
| (e) 60 000    | (f) 900 000 |
| (g) 5 000 000 | (h) 9       |
| (i) 120       | (j) 11 000  |

### A2.3 Larger numbers:

**We use the Systéme International or SI-system in South Africa:**

The SI-number system is a logical sequence of multiples of thousands:

- Thousand x Thousand = Million (Six zero's)
- Thousand x Million = Billion (Nine zero's)
- Million x million = Trillion (Twelve zero's)



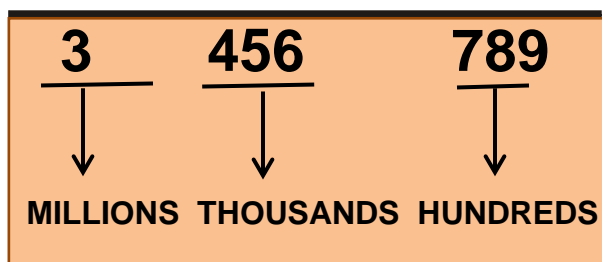
<b>MILLION:</b>	thousand x thousand	1 000 x 1 000	$10^6$
<b>BILLION:</b>	Thousand x million	1 000 x 1 000 x 1 000	$10^9$
<b>TRILLION:</b>	million x million	1 000 x 1 000 x 1 000 x 1 000	$10^{12}$

**Exercise 3:****Answer the questions**

- |                                    |  |
|------------------------------------|--|
| (1) How many hundred in a 1 000?   | (2) How many thousands are in 10 000?  |
| (3) How many hundred in 2 300?     | (4) How many thousands in one million? |
| (5) How many tens in one thousand? | (6) One million = 1 000 x _____        |
| (7) How many ones in one thousand? |  |

(8) A gentleman borrows  $1\frac{1}{2}$  million rand from the bank. Write the amount in numbers. (Write the number)

(9) He pays the money back within a 5 years period. What will his monthly installment be?

**A2.4 Reading of numbers:****Exercise 4:****(1) Write the words in numbers:**

- Two hundred thirty-eight thousand, two hundred twenty-four:
- Six million three hundred and thirty-eight thousand:
- Seven thousand eight hundred and four:
- Three hundred thousand and thirty-four:
- Seven million six hundred and sixteen thousand and four hundred and eleven

**(2) Write the following numbers in descending order:**

- (a) 23 576 ; 123 800 ; 86 900 ; 3 798  
 (b) 3 789 ; 5 003 ; 12 498 ; 99 354  
 (c) 500 ; five thousand ;  $5 \times 10^0$  ;  $5 \times 10^6$  ;  $5 \times 10$   
 (d) 30 000 ;  $3 \times 10^2$  ; 30 H ;  $3 \times 10^5$   
 (e) Seventy thousand ;  $7 \times 10^5$  ;  $70 \times 10$  ;  $7 \times 10$

**(3) Write the following numbers in ascending order**

- (a) 34 765 ; 1 300 ; 450 ; 34 ; 34 000  
 (b)  $45 \times 10^4$  ; 45 000 ; 45 H ;  $45 \times 10^1$

**Exercise 5:****(1) Fill in < ; > ; of = :**

- |     |                  |                      |                        |     |           |                      |                      |
|-----|------------------|----------------------|------------------------|-----|-----------|----------------------|----------------------|
| (a) | 34 678           | <input type="text"/> | 43 678                 | (b) | 3 000     | <input type="text"/> | $30 \times 10^2$     |
| (c) | 2 798            | <input type="text"/> | 2 978                  | (d) | 6 000 000 | <input type="text"/> | $6 \times 10^8$      |
| (e) | $5 \times 10^2$  | <input type="text"/> | $50 \times 10$         | (f) | 1million  | <input type="text"/> | $10 \times 1\ 000$   |
| (g) | 25 000           | <input type="text"/> | $25 \times 10$         | (h) | 1million  | <input type="text"/> | $1000 \times 1\ 000$ |
| (i) | 12 400           | <input type="text"/> | $12 \times 10^4 + 400$ | (j) | 3 456     | <input type="text"/> | 4 356                |
| (k) | $400 \times 100$ | <input type="text"/> | 4 000 000              | (l) | 10 000    | <input type="text"/> | $100 \times 100$     |

**(2) Use the numbers 0 ; 1 ; 2 ; 3 ; 4 ; 5 and answer the following questions::**

- (a) Write the largest possible number by making use of all six numbers above.  
 (b) Write the smallest possible number by making use of all six numbers above.  
 (c) Write the largest possible number ending on a '3' (Use all the given numbers.).  
 (d) Write the smallest possible number consisting of the three uneven numbers.  
 (e) Write the largest possible number consisting of four of the given numbers and ends on an even number. **(Use each number only once.)**

**(3) Do the following:**

- |                         |                     |
|-------------------------|---------------------|
| (a) $199 + 1$           | (b) $19\,999 + 1$   |
| (c) $10\,000 - 1$       | (d) $5\,689 + 1$    |
| (e) $2\,399 + 1$        | (f) $40\,000 - 1$   |
| (g) $99\,999 + 1$       | (h) $20\,999 + 1$   |
| (i) $149\,999 + 1$      | (j) $99\,990 + 10$  |
| (k) $2\,999\,990 + 10$  | (l) $3\,999 + 100$  |
| (m) $459\,999 + 1\,000$ | (n) $67\,899 + 100$ |
| (o) $56\,799 + 1\,100$  | (p) $100\,000 - 10$ |

**(4) Write down the sums and fill in the correct answers.**

- |                                 |                                |
|---------------------------------|--------------------------------|
| (a) 1 hundred = _____ tens      | (b) 1 thousand = _____ tens    |
| (c) 1 thousand = _____ hundred  | (d) 1 million = _____ hundred  |
| (e) 10 thousand = _____ hundred | (f) 1 million = _____ thousand |
| (g) 1 million = _____ thousand  | (h) 1 thousand = _____ ones    |

**(5) Simplify the following:**

- |                   |                          |
|-------------------|--------------------------|
| (a) $10^6$        | (b) $10^4$               |
| (c) $10^2 + 10^4$ | (d) $10^3 + 10^3$        |
| (e) $10^2 + 10^3$ | (f) $10^1 + 10^2 + 10^3$ |
| (g) $10^9$        | (h) $10^0$               |
| (i) $10^2$        | (j) $10^5$               |

**A2.5 5 Rounding numbers:****EXAMPLE:**

Round the number to the nearest 1 000:

<b>M</b>	<b>HTh</b>	<b>TTh</b>	<b>Th</b>	<b>H</b>	<b>T</b>	<b>O</b>
	4	3	8	9	2	6

**THEREFORE:** 438 926  $\approx$  439 000

**Excercise 6:****(1) Round the numbers to the nearest digit as indicated in brackets.**

(a)  $4\,567 (10) \approx$

(b)  $67\,893 (10) \approx$

(c)  $5\,789 (100) \approx$

(d)  $9\,654 (100) \approx$

(e)  $3\,234 (1\,000) \approx$

(f)  $45\,678 (1\,000) \approx$

**(2) Complete the table. Round the numbers as indicated.**

(a) 21 678 (10)	21 678 (100)	21 678 (1 000)	21 678 (10 000)
(b) 12 573 (10)	12 573 (100)	12 573 (1 000)	12 573 (10 000)
(c) 50 455 (10)	50 455 (100)	50 455 (1 000)	50 455 (10 000)
(d) 49 999 (10)	49 999 (100)	49 999 (1 000)	49 999 (10 000)
(e) 435 782 (10)	435 782 (100)	435 782 (1 000)	435 782 (10 000)
(f) 673 845 (10)	673 845 (100)	673 845 (1 000)	673 845 (10 000)

**(3) Estimate the answer by rounding the numbers:****EXAMPLE:**

$$67 + 12 + 87 \approx 70 + 10 + 90 \\ \approx \underline{170}$$

(a)  $59 + 72 + 16 \approx$

(b)  $149 + 251 \approx$

(c)  $88 + 32 + 121 \approx$

(d)  $199 - 41 \approx$

(e)  $48 + 53 - 12 \approx$

(f)  $1\,243 + 1\,999 \approx$

(g)  $67 + 23 - 11 \approx$

(h)  $547 + 433 \approx$

(i)  $5\,678 - 442 \approx$

(j)  $7\,459 - 899$