Grade 6 – Book A
(CAPS Edition)
Workbook
Revised for 2023

CONTENTS:

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This book was compiled and processed by E. Language in 2012 in collaboration with E.J. du Toit.

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 ;** _ _ _
Even numbers: 2 ; 4 ; 6 ; 8 ; 10 ; . . . Divisible by 2 without a remainder	
Uneven numbers: 1 ; 3 ; 5; 7 ; 9 ; 11 ; . . . If you divide by 2, there will be a remainder.	

Exercise 1:   Date: _____

(1) (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 ; _____

ADDITION (Speed Test)

Exercise A1A: Date: _____

Write the answers.

(a) 38 + 7 = _____	(a) 87 + 9 = _____	(a) 46 + 14 = _____
(b) 34 + 7 = _____	(b) 89 + 9 = _____	(b) 38 + 12 = _____
(c) 36 + 7 = _____	(c) 85 + 9 = _____	(c) 76 + 14 = _____
(d) 37 + 7 = _____	(d) 88 + 9 = _____	(d) 74 + 16 = _____
(e) 31 + 7 = _____	(e) 84 + 9 = _____	(e) 98 + 12 = _____
(f) 39 + 7 = _____	(f) 80 + 9 = _____	(f) 45 + 15 = _____
(g) 35 + 7 = _____	(g) 86 + 9 = _____	(g) 91 + 19 = _____
(h) 33 + 7 = _____	(h) 83 + 9 = _____	(h) 68 + 12 = _____
(i) 32 + 7 = _____	(i) 82 + 9 = _____	(i) 14 + 16 = _____
(j) 34 + 7 = _____	(j) 81 + 9 = _____	(j) 67 + 13 = _____
Total:	**Total:**	**Total:**

Total out of 30

(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) 28 ; 32 ; 38 ; _____

(n) 51 ; 43 ; 36 ; 30 ; _____

(3) Complete the following:

(a) The four even numbers preceeding 10 000_____

(b) The four even numbers following 7 984: _____

(c) The largest six-digit number: _____

(d) The smallest four-digit number :_____

A.1.2 RULES OF DIVISIBILITY:

Divisible by '2'	Divisible by '5'	Divisible by '10'
All numbers ending on an even number are divisible by '2' **EXAMPLE: '3 458'** The number ends on an '8' and is therefore divisible by '2'.	All numbers ending on a '0' or a '5' are divisible by '5' **EXAMPLE: '9 785'** The number ends on a '5' and is therefore divisible by '5'.	All numbers ending on a '0' are divisible by '10'. **EXAMPLE: '2 040'** The number ends on a '0' and is therefore divisible by '10'.
Divisible by '3' If the sum of all the digits of the number is divisible by '3' then the number will be divisible by '3 '**EXAMPLE: '351'** The sum of the digits in the number '351', 3 + 5 + 1 = 9, which is divisible by 3, the entire number is divisible by '3'	**Divisible by '4'** 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. **EXAMPLE: '336'** The '36' in the number '336' is divisible by '4' and the entire number will therefore be divisible by '4'..	**Divisible by '6'** If a number is divisible by '2' and '3' then the number will be divisible by '6'. **EXAMPLE: '258'** The number '258' is divisible by '2' and '3' and is therefore divisible by '6'.

ADDITION

Date: _____

<div style="border: 1px solid; padding: 5px;">**A method to improve your mental maths.**</div>

(1) Add the tens and then the ones.

Write your answer in the space.

Write the final answer.

<div style="border: 1px solid; padding: 5px;">**HINT:**
Start by adding the larger numbers first.
(Addition is commutative)</div>

Example:

		Answer of tens	Answer of ones	Final answer.
(a)	16 + 12 + 14 + 36 + 29 + 45 =			
(b)	11 + 21 + 12 + 11 + 32 + 23 =			
(c)	12 + 21 + 32 + 44 + 12 + 11=			
(d)	12 + 22 + 32 + 42 + 62 + 12 =			
(e)	14 + 14+ 12 + 15 + 32 + 24 =			

(2) Do the same. Start with the hundreds.

Example:

		Answer of hundreds	Answer of tens	Answer of ones	Final answer
(a)	123 + 241 + 135 + 420 =				
(b)	315 + 211 + 612 + 120 =				
(c)	215 + 122 + 232 + 421 =				
(d)	612 + 224 + 108 + 421 =				
(e)	718 + 123 + 412 + 518 =				

Exercise 2:   Date: _____

(1) Make a ✓ in the correct block(s).

	DIVISIBLE BY '2'	DIVISIBLE BY '3'	DIVISIBLE BY '4'	DIVISIBLE BY '5'	DIVISIBLE BY '6'	DIVISIBLE BY '10'
64						
373						
260						
875						
9 000						
22 677						
30 000						
5 899						
12 972						
54 788						

(2) Give a reason why the following numbers are 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 ☐ to be divisible by 2'

56 78 x $x =$ ☐ $x =$ ☐ $x =$ ☐ $x =$ ☐ $x =$ ☐

(4) Give all the possible numbers suitable for the ☐ to be divisible by 3'

13 48 x $x =$ ☐ $x =$ ☐ $x =$ ☐

(5) Give all the possible numbers suitable for the ☐ to divisible by '4'.

67 76 x $x =$ ☐ $x =$ ☐ $x =$ ☐

ADDITION (Speed Test)

Exercise A1B: Date: _____

Write down the answers.

(a) 25 + 4 = _____	(a) 125 + 6 = _____	(a) 146 + 4 = _____
(b) 64 + 4 = _____	(b) 181 + 6 = _____	(b) 388 + 2 = _____
(c) 76 + 3 = _____	(c) 382 + 6 = _____	(c) 576 + 4 = _____
(d) 28 + 8 = _____	(d) 482 + 6 = _____	(d) 371 + 9 = _____
(e) 69 + 6 = _____	(e) 781 + 6 = _____	(e) 798 + 2 =_____
(f) 63 + 3 = _____	(f) 980 + 6 = _____	(f) 745 + 15 = _____
(g) 28 + 4= _____	(g) 886 + 6 = _____	(g) 521 + 19 = _____
(h) 57 + 5 = _____	(h) 282 + 6 = _____	(h) 148 + 12 = _____
(i) 63 + 6 = _____	(i) 613 + 6 = _____	(i) 113 + 17= _____
(j) 94 + 6 = _____	(j) 983 + 6 = _____	(j) 567 + 13 = _____

Total: **Total:**   **Total:**

Total out of 30

A1.3 <u>Factors</u>:

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

F12: $\{1;2;3;\ 4;6;12\}$

<u>Exercise 3</u>:   Date: _____

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

(a)   20   (b)   24   (c)   36

_____   _____   _____

_____   _____   _____

_____   _____   _____

_____   _____   _____

_____   _____   _____

F_{20} F_{24} F_{36}

(d)   56   (e)   72   (f)   100

_____   _____   _____

_____   _____   _____

_____   _____   _____

_____   _____   _____

_____   _____   _____

F_{56} F_{72} F_{100}

(g) $\boxed{70}$ (h) $\boxed{90}$ (i) $\boxed{42}$

_____   _____   _____

_____   _____   _____

_____   _____   _____

_____   _____   _____

_____   _____   _____

_____   _____   _____

F_{70}	F_{90}	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}: _____

SUBTRACTION (Speed Test)

Exercise A1C: **Date:** _____

Write down the answers

(a) 39 - 7 = _____   (a) 32 - 6 = _____   (a) 19 - 8 = _____

(b) 69 - 2 = _____   (b) 53 – 6 = _____   (b) 32 - 8 = _____

(c) 59 - 5 = _____   (c) 43 - 6 = _____   (c) 45 - 8 = _____

(d) 39 - 1 = _____   (d) 63 – 6 = _____   (d) 36 - 8 = _____

(e) 99 - 6 = _____   (e) 73 – 6 = _____   (e) 27 - 8 = _____

(f) 79 - 8 = _____   (f) 33 - 6 = _____   (f) 64 - 8 = _____

(g) 59 - 4 = _____   (g) 71 - 6 = _____   (g) 71 - 8 = _____

(h) 49 - 9 = _____   (h) 42 - 6 = _____   (h) 83 - 8 = _____

(i) 29 - 0 = _____   (i) 77 - 6 = _____   (i) 75 - 8 = _____

(j) 69 - 3 = _____   (j) 91 – 6 = _____   (j) 90 - 8 = _____

   Total: [   ]   **Total:** [   ]   **Total:** [   ]

Total out of 30

(3) Write down the missing factors:

*(a) F_{156}

1	2	3	4	6	12						156

*(b) F_{96}

1					8	12		24			96

*(c) F_{112}

1				8		16			112

*(d) F_{108}

1				6	9		18			54	108

*(e) F_{216}

1					8	9				27		54			216

(4) Consider the following:

MORE ADVANCED FACTORS:

Find the factors of:

Use the rules of divisibility to do the sums!!

600

1 500

_____   _____

_____   _____

_____   _____

_____   _____

_____   _____

_____   _____

_____   _____

F_{600}

$F_{1\,500}$

A1.4 <u>Common factors:</u>

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

F_{30}

5
10   1   8
              2
15   30   3   24   12
              6

F_{24}

Common factors (CF):

CF: 1 ; 2 ; 3 ; 6
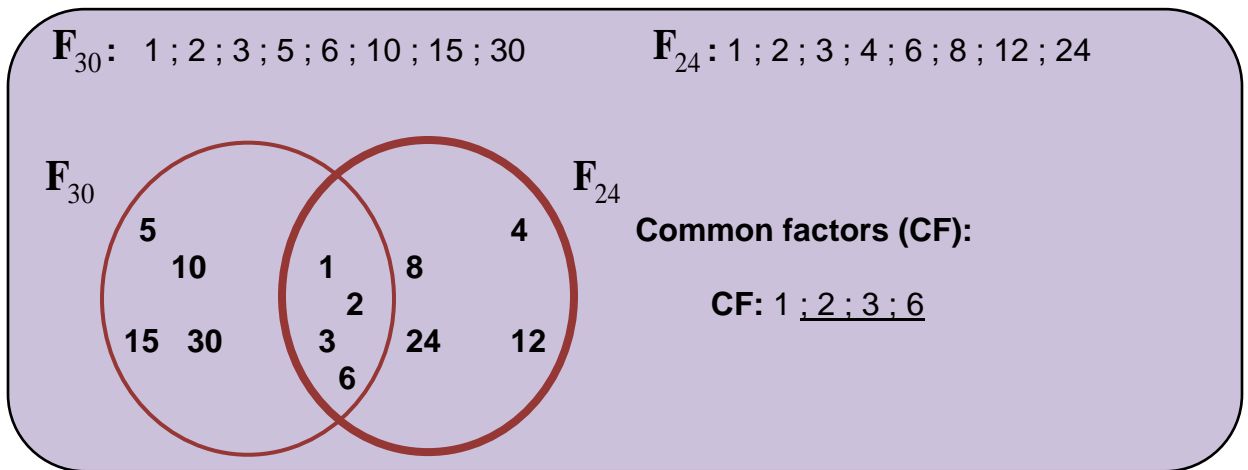
<u>Exercise 4:</u>   Date: _____

(1) Write down the factors and complete the circle diagrams.

(a) F_{15} : _____

F_{35} : _____

CF: _____

$F_{15:}$ $F_{35:}$

(b) F_{32} : _____

F_{40} : _____

CF: _____

$F_{32:}$ $F_{40:}$

(c) $F_{70:}$ _____

$F_{84:}$: _____

CF: _____

F_{70} $F_{84:}$

(d) $F_{48:}$ _____

$F_{54:}$: _____

CF: _____

F_{48} $F_{54:}$

(2) Encircle the HCF.(GCF)

SUBTRACTION (Speed Test)

Exercise A1D: **Date:** _____

Write down the answers.

(a) 29 - 19 = _____   (a) 33 - 5 = _____   (a) 45 - 25 = _____

(b) 29 - 10 = _____   (b) 33 – 4 = _____   (b) 45 - 14 = _____

(c) 29 - 5 = _____   (c) 33 - 12 = _____   (c) 45 - 40 = _____

(d) 29 - 11 = _____   (d) 33 – 3 = _____   (d) 45 - 20 = _____

(e) 29 - 6 = _____   (e) 33 - 9 = _____   (e) 45 - 8 = _____

(f) 29 - 8 = _____   (f) 33 – 1 = _____   (f) 45 - 2 = _____

(g) 29 - 4 = _____   (g) 33 - 0 = _____   (g) 45 - 6 = _____

(h) 29 - 9 = _____   (h) 33 – 6 = _____   (h) 45 - 3 = _____

(i) 29 - 0 = _____   (i) 33 - 8 = _____   (i) 45 - 0 = _____

(j) 29 - 3 = _____   (j) 33 – 7 = _____   (j) 45 - 15 = _____

Total: [   ]   **Total:** [   ]   **Total:** [   ]

Total out of 30

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

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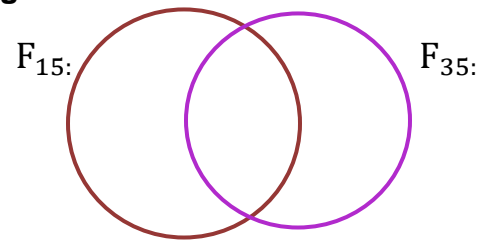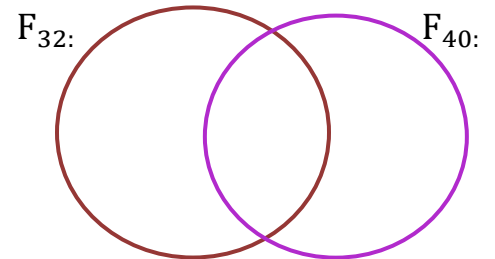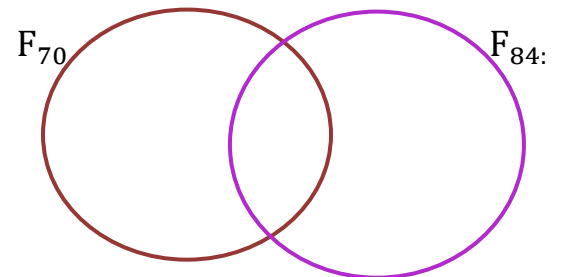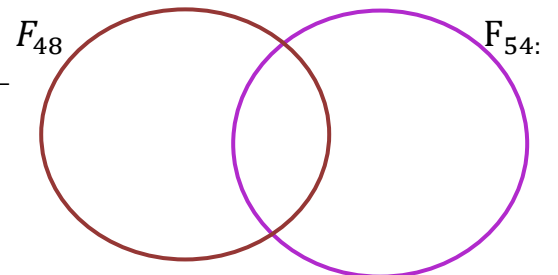
(3) Study the set of factors below and answer the following questions:

A   B

4   8   5   9

1
12   16   2   10 15 18
3
24   6   30   45 90
48
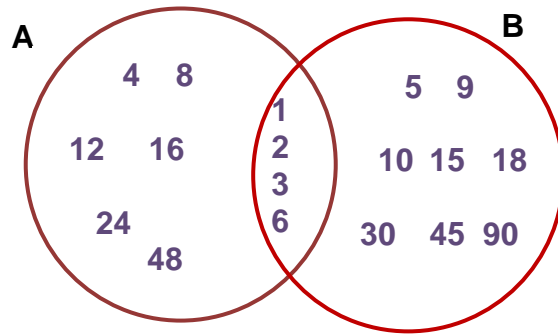
(a)   The factors of which number is represented by A? _____

(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) Complete the following:

F_{36}: _____

F_{60}: _____

Common factors: _____

GCF: _____

(5) Complete the following:

F_{56}: _____

F_{49}: _____

Common factors: _____

GCF: _____

(6) Write the HCF(GCF) of the following numbers:

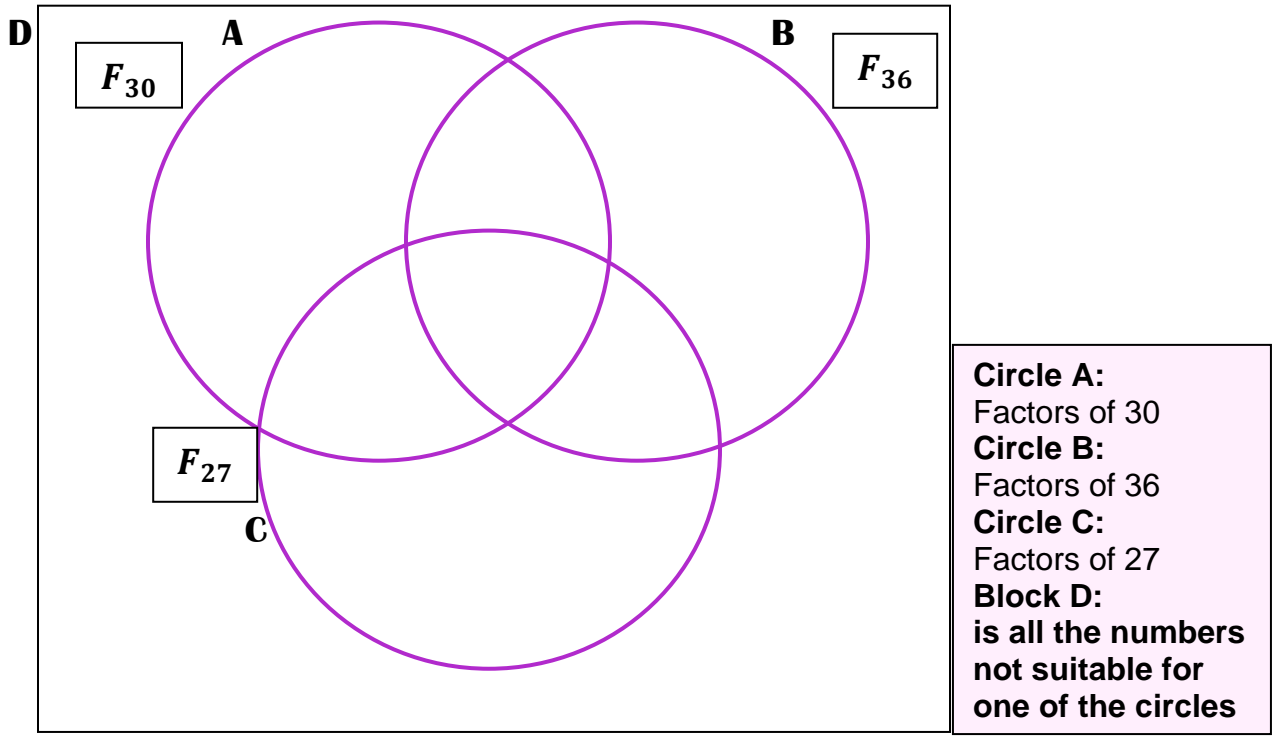(a)   56 and 64   _____   (b)   36 and 48   _____

(c)   144 and 60   _____   (d)   45 and 90   _____

(e)   36 and 40   _____   (f)   45 and 63   _____

(7) A challenge!

Complete the venn diagram by writing the numbers in the correct space and answer the questions.

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

D **A** F_{30} **B** F_{36}

F_{27}

C

Circle A:
Factors of 30
Circle B:
Factors of 36
Circle C:
Factors of 27
Block D:
is all the numbers
not suitable for
one of the circles

(a) Which of the numbers are common factors of 30, 36 and 27? _____

(b) Which numbers are common factors of 30 and 36? _____

(c) Which numbers are common factors of 36 and 27. _____

(d) Write down the numbers in block D, that is not part of A, B or C. _____

(e) Arrange the numbers in block D in **descending order**.

(f) Arrange the common factors of 30 and 36 in **ascending order**. _____

(g) What is the **GCF(HCF)** of 30 and 36? _____

(h) What is the **GCF(HCF)** 30 and 27? _____

(i) What is the **GCF(HCF)** 27 and 36? _____

ADDITION AND SUBTRACTION (Speed Test)

Exercise A1E: Date: _____

Write the answers.

(a) 21 + 17 =_____	(a) 31 + 16 = _____	(a) 45 + 45 =_____
(b) 24 + 18 = _____	(b) 25 + 24 = _____	(b) 24 + 76 = _____
(c) 33 - 15 = _____	(c) 51 + 61 = _____	(c) 9 + 81 = _____
(d) 41 + 19 = _____	(d) 65 + 17 = _____	(d) 21 + 14 = _____
(e) 43 + 13 = _____	(e) 64 + 13 = _____	(e) 24 +19 = _____
(f) 23 + 17 = _____	(f) 35 - 15 = _____	(f) 21 + 13 = _____
(g) 46+ 14 = _____	(g) 67 + 14 = _____	(g) 56 + 14 = _____
(h) 54+ 14 = _____	(h) 54 - 5 = _____	(h) 43 + 19 = _____
(i) 64 + 18 = _____	(i) 15 + 9 = _____	(i) 56 + 16 = _____
(j) 83 + 16 = _____	(j) 67 + 13 = _____	(j) 76 +17 = _____
Total:	**Total:**	**Total:**

Total out of 30