

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

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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 ; _ _ _
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: 9 ; 8 ; 7 ; 6 ; 5 ; 4 ; 3 ; 2 ; 1
- (b) Natural numbers between 21 and 28: 22 ; 23 ; 24 ; 25 ; 26 ; 27
- (c) Even numbers between 52 and 64 54 ; 56 ; 58 ; 60 ; 62
- (d) Uneven numbers from 35 to 45: 35 ; 37 ; 39 ; 41 ; 43 ; 45
- (e) Even numbers smaller than 146 but greater than 140: 144 ; 142
- (f) The natural numbers smaller than 21 but greater than 15 16 ; 17 ; 18 ; 19 ; 20
- (g) The first 5 whole numbers which will be uneven: 1 ; 3 ; 5 ; 7 ; 9
- (h) The first 5 whole numbers which are natural numbers 1 ; 2 ; 3 ; 4 ; 5
- (i) The even numbers from 132 to 142: 132 ; 134 ; 136 ; 138 ; 140 ; 142
- (j) The whole numbers between 164 and 172 which are also divisible by 2 166 ; 168 ; 170
- (k) Write the three uneven numbers preceding 60 006 60 005 ; 60 003 ; 60 001
- (l) Write the first three uneven numbers following 5 999: 6 001 ; 6 003 ; 6 005

(2) Complete the next 5 numbers in the following sequences:

- (a) 2 ; 4 ; 6 ; 8 ; 10 ; 12 ; 14 ; 16 ; 18 ; 20 (+2)
- (b) 110 ; 120 ; 130 ; 140 ; 150 ; 160 ; 170 ; 180 ; 190 (+10)
- (c) 11 ; 21 ; 31 ; 41 ; 51 ; 61 ; 71 ; 81 ; 91 ; 101 (+10)
- (d) 18 ; 27 ; 36 ; 45 ; 54 ; 63 ; 72 ; 81 (+9)

(e) 1 ; 2 ; 3 ; 4 ; 5 ; 6 ; 7 ; 8 ; 9 (+1)

(f) 19 200 ; 9 600 ; 4 800 ; 2 400 ; 1 200 ; 600 ; 300 ; 150 ($\div 2$)

(g) 3 ; 9 ; 15 ; 21 ; 27 ; 33 ; 39 ; 45 (+6)

(h) 72 ; 63 ; 54 ; 45 ; 36 ; 27 ; 18 ; 9 ; 0 (-9)

(i) 1 ; 4 ; 9 ; 16 ; 25 ; 36 ; 49 ; 64 ; 81 (1 x 1, 2 x 2, 3 x 3 etc)

-1 -2 -3 -4

(j) 100 ; 99 ; 97 ; 94 ; 90 ; 85 ; 79 ; 72 ; 64 ; 55

(k) a ; i ; b ; i ; c ; i ; d ; i ; e ; i

(l) 906 ; 900 ; 894 ; 888 ; 882 ; 876 ; 870 ; 864 (Subtract 6)

+4 +6

(m) 28 ; 32 ; 38 ; 46 ; 56 ; 68 ; 82 ; 98

(n) 51 ; 43 ; 36 ; 30 ; 25 ; 21 ; 18 ; 16 ; 15 (-8 ; -7 ; -6)

(3) Complete the following:

(a) The four even numbers preceding 10 000 9 998 ; 9 996 ; 9 994 ; 9 992

(b) The four even numbers following 7 984: 7 986 ; 7 988 ; 7 990 ; 7 992

(c) The largest six-digit number: 999 999

(d) The smallest four-digit number : 1 000

A.1.2 RULES OF DIVISIBILITY:

<p><u>Divisible by '2'</u> All numbers ending on an even number or '0' are divisible by '2' EXAMPLE: '3 458' The number ends on an '8' and is therefore divisible by '2'.</p>	<p><u>Divisible by '5'</u> 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'.</p>	<p><u>Divisible by '10'</u> 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'.</p>
<p><u>Divisible by '3'</u> 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'</p>	<p><u>Divisible by '4'</u> 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'.</p>	<p><u>Divisible by '6'</u> 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'.</p>

ADDITION

Date: _____

A method to improve your mental maths.

(1) Add the tens and then the ones.

Write your answer in the space.

Write the final answer.

HINT:
Start by adding the larger numbers first.
(Addition is commutative)

Example:		Answer of tens	Answer of ones	Final answer.
(a)	$16 + 12 + 14 + 36 + 29 + 45 =$	120	32	152
(b)	$11 + 21 + 12 + 11 + 32 + 23 =$	100	10	110
(c)	$12 + 21 + 32 + 44 + 12 + 11 =$	120	12	132
(d)	$12 + 22 + 32 + 42 + 62 + 12 =$	170	12	182
(e)	$14 + 14 + 12 + 15 + 32 + 24 =$	90	21	111

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

Example:		Answer of hundreds	Answer of tens	Answer of ones	Final answer
(a)	$123 + 241 + 135 + 420 =$	800	110	9	919
(b)	$315 + 211 + 612 + 120 =$	1200	50	8	1 258
(c)	$215 + 122 + 232 + 421 =$	900	80	10	990
(d)	$612 + 224 + 108 + 421 =$	1300	50	15	1 365
(e)	$718 + 123 + 412 + 518 =$	1 700	50	21	1 771

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): The last number is a '5'(b) 6 890 (Divisible by 10): The last number is a '0'(c) 6 348 (Divisible by 2): The last number is an 'even number'(d) 23 648 (Divisible by 4): The last two numbers are divisible by '4'(e) 156 (Divisible by 6): The number is divisible by '2' and '3'(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 be divisible by '4'.67 76 x x = x = 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

$$1 \times 12$$

$$2 \times 6$$

$$3 \times 4$$

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

Exercise 3:

Date: _____

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

(a)

20

$$1 \times 20$$

$$2 \times 10$$

$$4 \times 5$$

F_{20}

1 ; 2 ; 4 ; 5 ; 10 ; 20

(b)

24

$$1 \times 24$$

$$2 \times 12$$

$$3 \times 8$$

$$4 \times 6$$

F_{24}

1 ; 2 ; 3 ; 4 ; 6 ; 8 ; 12 ; 24

(c)

36

$$1 \times 36$$

$$2 \times 18$$

$$3 \times 12$$

$$4 \times 9$$

$$6 \times 6$$

F_{36}

1 ; 2 ; 3 ; 4 ; 6 ; 9 ; 12 ;
18 ; 36

(d)

56

$$1 \times 56$$

$$2 \times 28$$

$$4 \times 14$$

$$7 \times 8$$

F_{56}

1 ; 2 ; 4 ; 7 ; 8 ; 14 ; 28 ;
56

(e)

72

$$1 \times 72$$

$$2 \times 36$$

$$3 \times 24$$

$$4 \times 18$$

$$6 \times 12$$

$$8 \times 9$$

F_{72}

1 ; 2 ; 3 ; 4 ; 6 ; 8 ; 9 ;
12 ; 18 ; 24 ; 36 ; 72

(f)

100

$$1 \times 100$$

$$2 \times 50$$

$$4 \times 25$$

$$5 \times 20$$

$$10 \times 10$$

F_{100}

1 ; 2 ; 4 ; 5 ; 10 ; 20 ;
25 ; 50 ; 100

(g)	70	(h)	90	(i)	42
	1×70		1×90		1×42
	2×35		2×45		2×21
	5×14		3×30		3×14
	7×10		5×18		6×7
			6×15		
			9×10		

F_{70} 1 ; 2 ; 5 ; 7 ; 10 ; 14 ; 35 ; 70	F_{90} 1 ; 2 ; 3 ; 5 ; 6 ; 9 ; 10 ; 15 ; 18 ; 30 ; 45 ; 90	F_{42} 1 ; 2 ; 3 ; 6 ; 7 ; 14 ; 21 ; 42
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(2) Write the factors of the following numbers:

(a) F_{21} : 1 ; 3 ; 7 ; 21

(b) F_{30} : 1 ; 2 ; 3 ; 5 ; 6 ; 10 ; 15 ; 30

(c) F_{60} : 1 ; 2 ; 3 ; 4 ; 5 ; 6 ; 10 ; 12 ; 15 ; 20 ; 30 ; 60

(d) F_{72} : 1 ; 2 ; 3 ; 4 ; 6 ; 8 ; 9 ; 12 ; 18 ; 24 ; 36 ; 72

(e) F_{64} : 1 ; 2 ; 4 ; 8 ; 16 ; 32 ; 64

(f) F_{80} : 1 ; 2 ; 4 ; 5 ; 8 ; 10 ; 16 ; 20 ; 40 ; 80

* (g) F_{200} : 1 ; 2 ; 4 ; 5 ; 8 ; 10 ; 20 ; 25 ; 40 ; 50 ; 100 ; 200

* (h) F_{1000} : 1 ; 2 ; 4 ; 5 ; 8 ; 10 ; 20 ; 25 ; 40 ; 50 ; 100 ;

125 ; 200 ; 250 ; 500 ; 1 000

* (i) F_{120} : 1 ; 2 ; 3 ; 4 ; 5 ; 6 ; 8 ; 10 ; 12 ; 15 ; 20 ; 24 ; 30 ; 40 ; 60 ; 120

* (j) F_{144} : 1 ; 2 ; 3 ; 4 ; 6 ; 8 ; 9 ; 12 ; 16 ; 18 ; 24 ; 36 ; 48 ; 72 ; 144

(3) Write down the missing factors:

*(a) F_{156}

1	2	3	4	6	12	13	26	39	52	78	156
---	---	---	---	---	----	----	----	----	----	----	-----

*(b) F_{96}

1	2	3	4	6	8	12	16	24	32	48	96
---	---	---	---	---	---	----	----	----	----	----	----

*(c) F_{112}

1	2	4	7	8	14	16	28	56	112
---	---	---	---	---	----	----	----	----	-----

*(d) F_{108}

1	2	3	4	6	9	12	18	27	36	54	108
---	---	---	---	---	---	----	----	----	----	----	-----

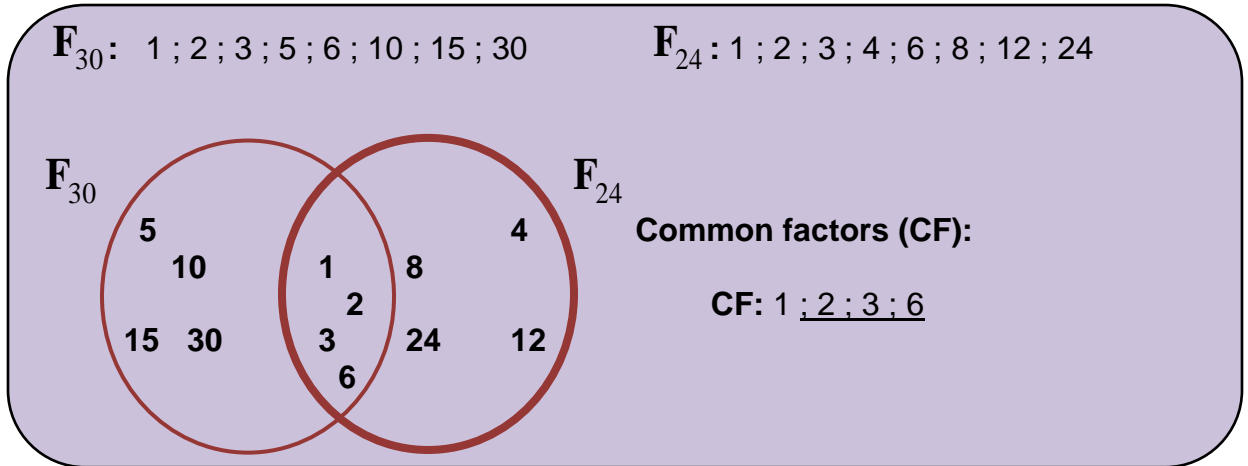
*(e) F_{216}

1	2	3	4	6	8	9	12	18	24	27	36	54	72	108	216
---	---	---	---	---	---	---	----	----	----	----	----	----	----	-----	-----

(4) Consider the following:

MORE ADVANCED FACTORS:		Use the rules of divisibility to do the sums!!	
Find the factors of:			
600		1 500	
1 x 600	8 x 75	1 x 1 500	10 x 150
2 x 300	10 x 60	2 x 750	12 x 125
3 x 200	12 x 50	3 x 500	15 x 100
4 x 150	15 x 40	4 x 375	20 x 75
5 x 120	20 x 30	5 x 300	25 x 60
6 x 100	24 x 25	6 x 250	30 x 50
_____		_____	
F_{600} 1 ; 2 ; 3 ; 4 ; 5 ; 6 ; 8 ; 10 ; 12 ; 15 20 ; ; 24 ; ; 25 ; 30 ; 40 ; 50 ; 60 75 ; 100 ; 120 ; 150 ; 200 ; 300 ; 600		$F_{1 500}$ 1 ; 2 ; 3 ; 4 ; 5 ; 6 ; 10 ; 12 ; 15 ; 20 ; 25 ; 30 ; 50 ; 60 ; 75 ; 100 ; 125 ; 150 ; 250 ; 300 ; 375 ; 500 ; 750 ; 1 500	

A1.4 Common factors:



Exercise 4:

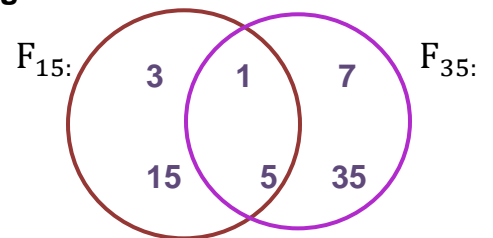
Date: _____

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

(a) F_{15} : 1 ; 3 ; 5 ; 15

F_{35} : 1 ; 5 ; 7 ; 35

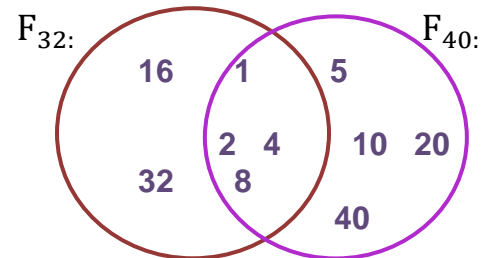
CF: 1 ; 5



(b) F_{32} : 1 ; 2 ; 4 ; 8 ; 16 ; 32

F_{40} : 1 ; 2 ; 4 ; 5 ; 8 ; 10 ; 20 ; 40

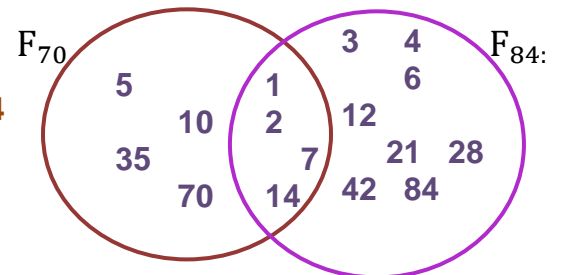
CF: 1 ; 2 ; 4 ; 8



(c) F_{70} : 1 ; 2 ; 5 ; 7 ; 10 ; 14 ; 35 ; 70

F_{84} : 1 ; 2 ; 3 ; 4 ; 6 ; 7 ; 12 ; 14 ; 21 ; 28 ; 42 ; 84

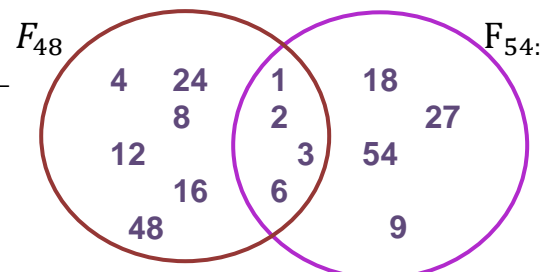
CF: 1 ; 2 ; 7 ; 14



(d) F_{48} : 1 ; 2 ; 3 ; 4 ; 6 ; 8 ; 12 ; 16 ; 24 ; 48

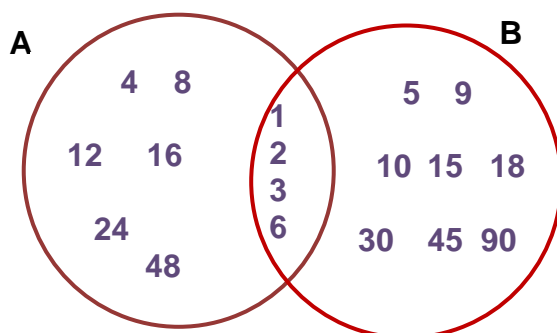
F_{54} : 1 ; 2 ; 3 ; 6 ; 9 ; 18 ; 27 ; 54

CF: 1 ; 2 ; 3 ; 6



(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? 48
- (b) The factors of which number is represented by B? 90
- (c) What are the common factors of A and B? 1 ; 2 ; 3 ; 6
- (d) What is the highest common factor (HCF) or (GCF) of A and B? 6
- (e) Which of the common factors are even numbers? 2 ; 6

(4) Complete the following:

F_{36} : 1 ; 2 ; 3 ; 4 ; 6 ; 9 ; 12 ; 18 ; 36

F_{60} : 1 ; 2 ; 3 ; 4 ; 5 ; 6 ; 10 ; 12 ; 15 ; 20 ; 30 ; 60

Common factors: 1 ; 2 ; 3 ; 4 ; 6 ; 12

GCF: 12

(5) Complete the following:

F_{56} : 1 ; 2 ; 4 ; 7 ; 8 ; 14 ; 28 ; 56

F_{49} : 1 ; 7 ; 49

Common factors: 1 ; 7

GCF: 7

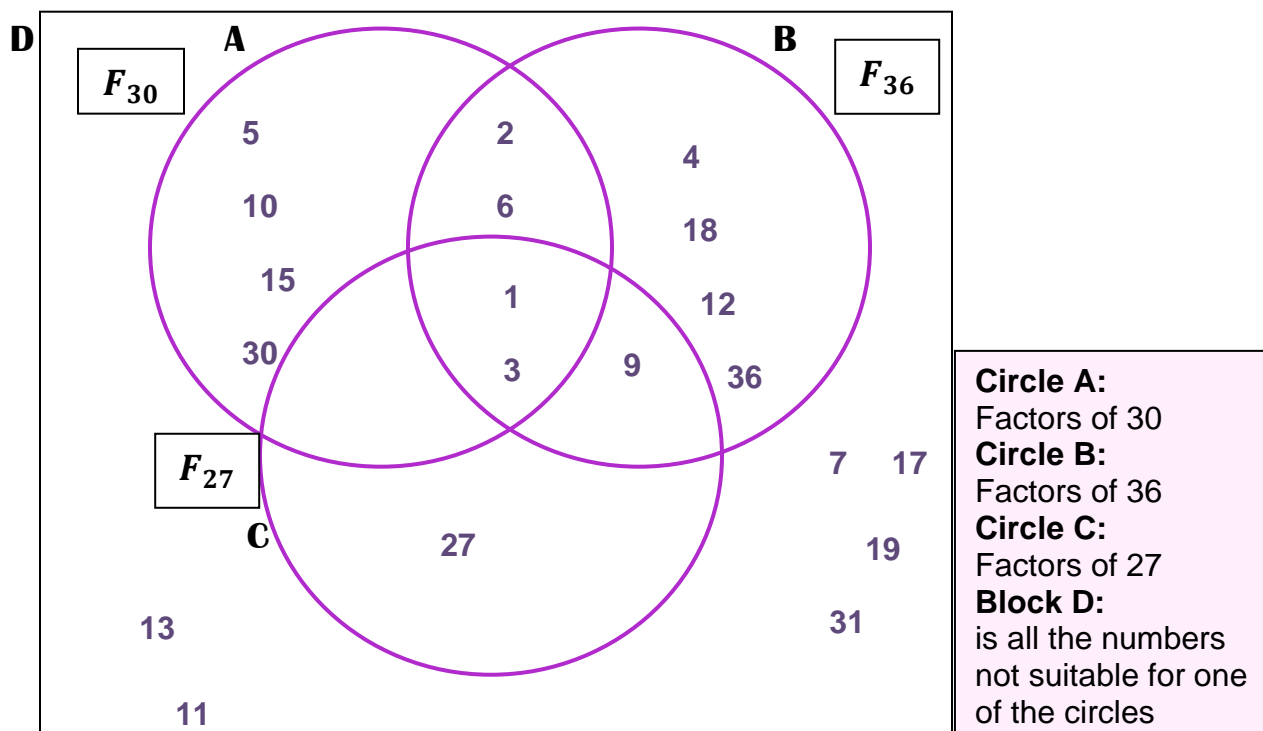
(6) Write the HCF(GCF) of the following numbers:

- (a) 56 and 64 8 (b) 36 and 48 12
- (c) 144 and 60 12 (d) 45 and 90 45
- (e) 36 and 40 4 (f) 45 and 63 9

(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



- (a) Which of the numbers are common factors of 30, 36 and 27? 1 ; 3
- (b) Which numbers are common factors of 30 and 36? 1 ; 2 ; 3 ; 6
- (c) Which numbers are common factors of 36 and 27. 1 ; 3 ; 9
- (d) Write down the numbers in block D, that is not part of A, B or C. 7 ; 11 ; 13 ; 17 ; 19 ; 31
- (e) Arrange the numbers in block D in **descending order**. 31 ; 19 ; 17 ; 13 ; 11 ; 7
- (f) Arrange the common factors of 30 and 36 in **ascending order**. 1 ; 2 ; 3 ; 6
- (g) What is the **GCF(HCF)** of 30 and 36? 6
- (h) What is the **GCF(HCF)** 30 and 27? 3
- (i) What is the **GCF(HCF)** 27 and 36? 9

