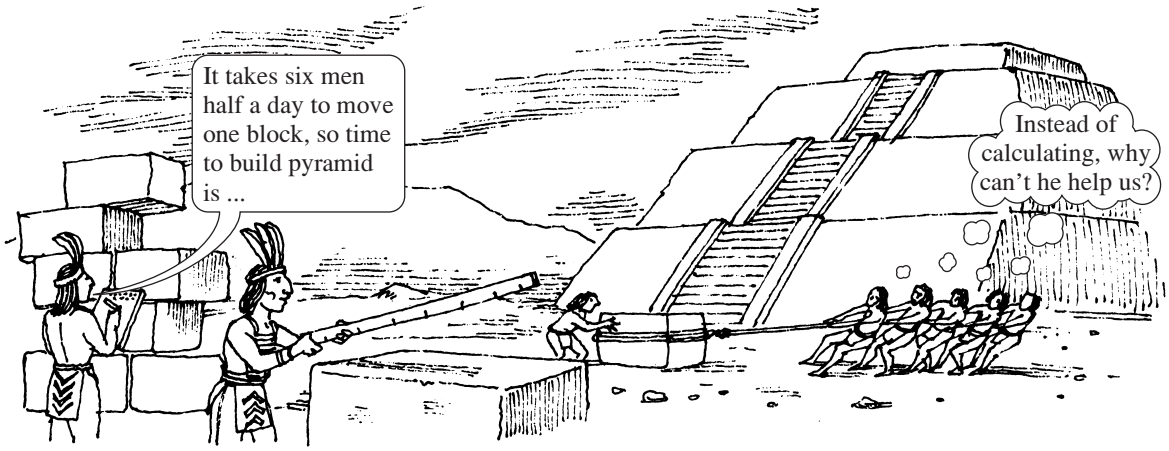
1 Number

This unit will help you to:

- ✓ learn about some ancient number systems
- ✓ understand the importance of place value
- ✓ find factors and multiples of numbers
- ✓ identify prime and composite numbers
- ✓ use the distributive law to multiply large numbers
- ✓ understand the basics of long division
- ✓ use a calculator



Before you start

You should know ...	Check up
1 There are: 10 units in a ten 10 tens in a hundred and 10 hundreds in a thousand.	**1** **(a)** How many units are there in a hundred? **(b)** How many tens are there in 50? **(c)** How many hundreds are there in 700?
2 Your multiplication tables up to 10×10.	**2** Write down the answers to: **(a)** 2×7 **(b)** 3×6 **(c)** 8×4 **(d)** 5×4 **(e)** 9×7 **(f)** 9×8

1.1 The story of numbers

No one knows when man first started to use numbers. It probably began when people started to live in groups and keep animals.

One of the earliest users of numbers was the Mayan peoples of Mexico and Guatemala. Like the Egyptians they built pyramids. To do so they must have been excellent mathematicians. They were also among the first people to use zero as a number.

The symbols you use for numbers today came from the Hindu peoples of India. They used the idea of **place value** to show numbers. For example,

59	for fifty-nine
590	for five hundred and ninety
905	for nine hundred and five

Over the years, these numerals changed in shape, so that now the ten **digits** or symbols used to show numbers are:

0, 1, 2, 3, 4, 5, 6, 7, 8, 9

and:

59	is fifty nine
590	is five hundred and ninety
905	is nine hundred and five

This way of writing numbers makes use of the position of the digits. This is called using **place value**. The digit 9 can mean nine or ninety or nine hundred depending on its place in the number.

Example 1

What is the value of the digit 4 in these numbers?
(a) 94 **(b)** 481 **(c)** 4012

(a) four
(b) four hundred
(c) four thousand

Exercise 1A

1 Write down the value of the 4 in:
(a) 24 **(b)** 42 **(c)** 402
(d) 645 **(e)** 4132 **(f)** 49 206
(g) 14 873

2 Write each of these sets of numbers in order of size, smallest first.
(a) 9, 16, 2, 27, 81
(b) 29, 0, 308, 111, 99
(c) 401, 268, 41, 1001, 999
(d) 4132, 1234, 4321, 2413, 2134
(e) 3, 71 506, 6002, 8109, 610

3 Write down the number that is
(a) 1 more than 2499
(b) 10 more than 1090
(c) 2 more than 898
(d) 20 more than 10 980
(e) 1 less than 2500
(f) 10 less than 1001
(g) 20 less than 2012
(h) 2 less than 7101

4 Write down the largest number you can make using all four of these digits:

0, 0, 3, 1

5 Write down the smallest number you can make using all four of these digits:

7, 9, 8, 6

6 The Mayan religious calendar used twenty months each containing thirteen days. Using our numerals, the sixth day of the fourth month would be written 4.6. And ten days later would be 5.3, the third day of the fifth month.
How many days later than 4.6 is the date
(a) 4.9 **(b)** 5.1 **(c)** 5.6?

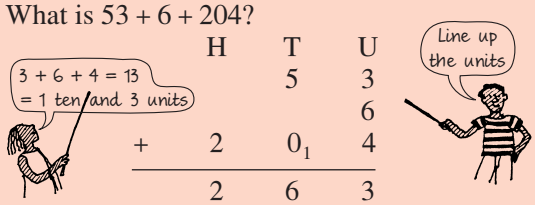
7 Write down the Mayan date that comes:
(a) 4 days after 4.6
(b) 9 days after 4.6
(c) 13 days after 4.6
(d) 26 days after 4.6
(e) 13 days before 4.6

1.2 Adding and subtracting numbers

To add numbers you must line up their place values.

Example 2

What is 53 + 6 + 204?

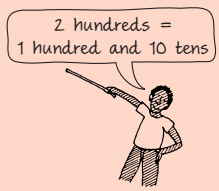


	H	T	U
		5	3
			6
+	2	0_1	4
	2	6	3

Subtraction is done in a similar way.

Example 3

Work out 205 – 34.



	H	T	U
	$^{1}2$	$^{1}0$	5
–		3	4
	1	7	1

Exercise 1B

1 Add these numbers:
(a) 3 + 27 + 4
(b) 62 + 39
(c) 615 + 4 + 14
(d) 1068 + 39 + 7 + 214
(e) 295 + 86 + 9
(f) 6 + 1009 + 219

2 Work out:
(a) 75 – 24 **(b)** 69 – 5
(c) 63 – 25 **(d)** 52 – 6
(e) 127 – 32 **(f)** 101 – 9
(g) 253 – 64 **(h)** 504 – 128
(i) 1024 – 9 **(j)** 1111 – 222

3 At Market School there are 93 students in Form 1, 105 in Form 2, 87 in Form 3, 79 in Form 4 and 81 in Form 5. How many students are there altogether?

4 Albert wants to buy a new bicycle for $1000. He has saved $824. How much more does he need?

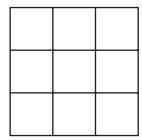
5 Jamaica became independent in 1962. In which year will it celebrate its 50th anniversary of independence?

6 In the cricket World Cup tournaments of 1979, 1983 and 1987 Viv Richards scored 217 runs, 367 runs and 391 runs respectively. How many runs did he score altogether?

7 In their test careers to the year 2000, Curtly Ambrose had scored 1297 runs compared to Carl Hooper's 4153 runs. How many more runs would Ambrose need to score to reach Hooper's mark?

8 18 years ago Chris was 5 years old. How old will he be in 16 years time?

9 ≡



(a) Arrange the numbers 3, 3, 3, 5, 5, 5, 7, 7, 7 in the square above so that each row, column and diagonal adds up to 15.
(b) Repeat for the numbers 1, 2, 3, 4, 5, 6, 7, 8, 9.

10 ≡ The number 24 has a digit sum of 6: (2 + 4 = 6). 24 is exactly 4 times the sum of its digits: (6 × 4 = 24).
(a) Which other numbers are exactly 4 times the sum of their digits?
(b) Which numbers are exactly 2 times the sum of their digits?

1.3 Multiples and factors

Multiples

ACTIVITY

You will need 36 counters. You can use bottle tops or matchsticks or beans as your counters. You can work with a friend.

(a) Take two counters.

○
○

(b) Add two more counters to the group.

○ ○
○ ○

How many counters do you have?

(c) Add two more counters.

○ ○ ○
○ ○ ○

How many counters do you have?

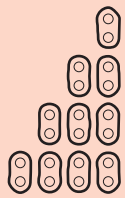
(d) Continue adding two more counters until you have used all your counters.

(e) Write down how many counters you had each time you added two more.

The numbers you should have written down are:

2, 4, 6, 8, 10, 12, 14, 16, 18.

They are called multiples of two. They make up your two times table:



$1 \times 2 = 2$
$2 \times 2 = 4$
$3 \times 2 = 6$
$4 \times 2 = 8$

... and so on.

Repeat what you just did but this time add three counters each time.

■ The **multiples** of a number are all the numbers from its times table.
For example, the multiples of 3 are 3, 6, 9, 12, …

Exercise 1C

1 Use the method in the Activity to show the multiples of four.

2 **(a)** Write down the first six multiples of five.
(b) Write down the first six multiples of seven.

3 **(a)** What is the eighth multiple of six?
(b) What is the fifth multiple of twelve?
(c) What is the tenth multiple of nine?

4 Copy and complete:
(a) 4, 8, 12, 16, 20, □, □
(b) 9, 18, 27, 36, 45, □, □
(c) 12, 24, 36, 48, 60, □, □
(d) 16, 32, 48, 64, 80, □, □
(e) 63, 70, 77, 84, 91, □, □

5 Write down two numbers that are multiples of
(a) 2 and 3
(b) 3 and 5
(c) 4 and 6

6 How can you tell if a number is a multiple of 5?

7 What patterns can you find in the
(a) multiples of 9
(b) multiples of 6?

INVESTIGATION

Look at the number grid below. It has ten columns and ten rows. The multiples of 3 have been coloured.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100