New

Perfect Composite Mathematics

Including Activity Worksheets

CLASS – III

[In accordance with the latest NCF prepared by the NCERT, New Delhi]

SPECIAL EDITION FOR ARMY SCHOOLS

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APC BOOKS

Preface

This book is one from the series **New Perfect Composite Mathematics** and is based on the syllabus developed by the National Council of Educational Research and Training (NCERT), New Delhi.

The subject matter is produced in such a way that it relates to the environment and focuses on the development and understanding of the students. It also aims to improve their thinking and reasoning skills. All books in this series are activity based and are written in a simple language.

The subject matter has been presented in graded form. The age, the learning ability and the mathematical difficulties faced by the students at all levels have been kept in mind while presenting difficult concepts.

The syllabus includes the four fundamental operations, namely, addition, subtraction, multiplication and division. These operations have been dealt in a step-by-step approach to enable students understand exactly what is to be done. The traditional and stereotype questions have been avoided.

Salient Features of this book are:

- The book covers the entire prescribed syllabus.
- Number system up to 5 digits has been explained.
- Formation of **mathematical stories** or **word problems** has been taught.
- **Standard algorithm** and **Lattice multiplication algorithm** have been introduced.
- In geometry, the concept of **symmetry** in familiar 2-D and 3-D shapes has been explained in a simple way.
- Drawing of 2-D shapes by using dot papers and geoboard has been explained.
- **Reading of simple maps** is explained in geometry.
- **Making of border strips and tiling patterns** have been explained with examples.
- **Lab Activities** have been given to make the subject interesting for the students.
- Questions in the form of **cross-numbers**, **puzzles** and **quizzes** have been included.
- Four model papers and two papers for each term have been given for practice.
- A few high level questions have been given under the head "Put on Your Thinking Cap".

The books of the series will surely prove to be useful for the students.

I would like to thank Mrs. Sunita Jai Singh and Mrs. Shuchi Goyal for their valuable suggestions which helped me in bringing the series in the present form.

Last but not the least, I am thankful to the publishers who have taken great pains in making the books reader-friendly.

Suggestions for further improvement of the series will be gratefully acknowledged.

AUTHOR

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Syllabus

Geometry (16 hrs.)

Shapes and Spatial Understanding

- Creates shapes through paper folding, paper cutting.
- Identifies 2-D shapes.
- Describes the various 2-D shapes by counting their sides, corners and diagonals.
- Makes shapes on the dot-grid using straight lines and curves.
- Creates shapes using tangram pieces.
- Matches the properties of two 2-D shapes by observing their sides and corners (vertices).
- Tiles a given region using a tile of a given shape.
- Distinguishes between shapes that tile and that do not tile.
- Intuitive idea of a map. Reads simple maps (not necessarily scaled).
- Draws some 3-D objects.

Numbers (42 hrs.)

Number sequence up to 1000

- Reads and writes 3-digit numbers.
- Expands a number w.r.t. place values.
- Counts in different ways - starting from any number.
- Compares numbers.
- Forms greatest and smallest numbers using given digits.

Addition and Subtraction

- Adds and subtracts numbers by writing them vertically in the following two cases:
  – without regrouping.
  – with regrouping.
- Uses the place value in standard algorithm of addition and subtraction.
- Solves addition and subtraction problems in different situations presented through pictures and stories.
- Frames problems for addition and subtraction facts.
- Estimates the sum of, and difference between two given numbers.

Multiplication

- Explains the meaning of multiplication (as repeated addition).
- Identifies the sign of multiplication.
- Constructs the multiplication tables of 2, 3, 4, 5 and 10.
- Uses multiplication facts in situations.
- Multiplies two digit numbers using standard algorithm and Lattice multiplication algorithm.

Division

- Explains the meaning of division from context of equal grouping and sharing.
- Relates division with multiplication.
- Completes division facts:
  – by grouping
  – by using multiplication tables.

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Mental Arithmetic

- Adds and subtracts single digit numbers and two digit numbers mentally.
- Doubles two digit numbers mentally (result not exceeding two digits).

Money (5 hrs.)

- Converts Rupee to Paise using play money.
- Adds and subtracts amounts using column addition, and subtraction without regrouping.
- Makes rate charts and bills.

Measurement (21 hrs.)

Length

- Appreciates the need for a standard unit.
- Measures length using appropriate standard units of length by choosing between centimetres and metres.
- Estimates the length of given object in standard units and verifies by measuring.
- Uses a ruler
- Relates centimetre and metre.

Weight

- Weighs objects using non-standard units.
- Appreciates the conservation of weight.

Volume

- Measures and compares the capacity of different containers in terms of non-standard units.
- Appreciates the conservation of volume.

Time

- Reads a calendar to find a particular day and date.
- Reads the time correct to the hour.
- Sequences the events chronologically.

Data Handling (6 hrs.)

- Records data using tally marks.
- Collects data and represents in terms of pictograph choosing appropriate scale and unit for display through pictographs.
- Draws conclusions from the data by discussing with the teacher.

Patterns (6 hrs.)

- Identifies simple symmetrical shapes and patterns.
- Makes patterns and designs from straight lines and other geometrical shapes.
- Identifies patterns in the numerals for odd and even numbers and in adding odd and even numbers.
- Partitions a number in different ways.
- Identifies patterns in his surroundings.
- Identifies patterns in multiplication with, and dividing by 10s.

APC BOOKS

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APC BOOKS

Warm-Up

1. Skip count by 5 and fill in the missing numbers:

   (a) 35 ____ 45 ____ ____

   (b) 102 107 ____ ____ ____

2. Write the number names in the space provided:

   (a) 908 _____

   (b) 725 _____

   (c) 310 _____

3. Write the place value of the coloured digit in the box:

   (a) 3**7**5 ____ (b) 1**0**7 ____

   (c) **5**59 ____ (d) 72**8** ____

4. Which is greater?

   (a) 457 or 547 ____ (b) 819 or 198 ____

   (c) 792 or 927 ____ (d) 601 or 610 ____

5. Fill in the missing numbers:

   (a) 101 + ____ = 201 (b) 52 + ____ + 75 = 130

   (c) 69 + ____ + 41 = 120 (d) 220 + ____ = 720

6. A car is moving. Add the distance travelled and show on the metre scale:

APC BOOKS

7. Write in expanded form:

(a) 728 = _____ + _____ + _____ (b) 304 = _____ + _____

(c) 560 = _____ + _____ (d) 339 = _____ + _____ + _____

8. A fruit seller bought 90 kg apples and sold only 52 kg of them. How much apples he could not sell?

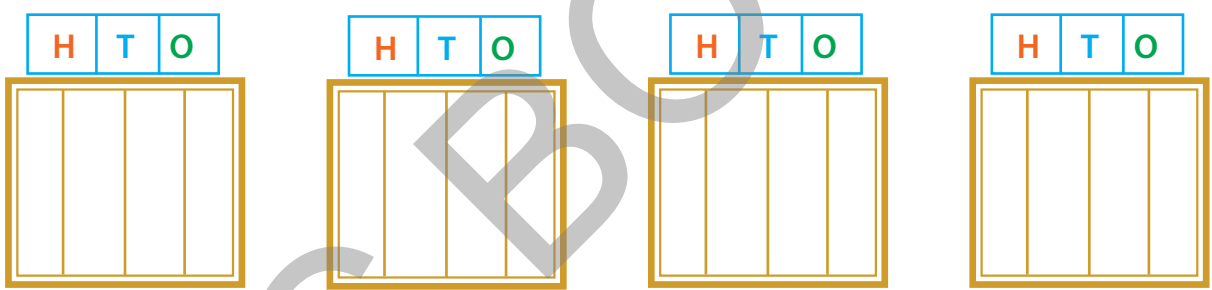
9. In the hall, there were 241 children. 48 more children came in and then 75 left. How many children are there now?

10. Multiply and fill in the placeholders:

(a) $3 \times 2 = \square$ (b) $4 \times 7 = \square$

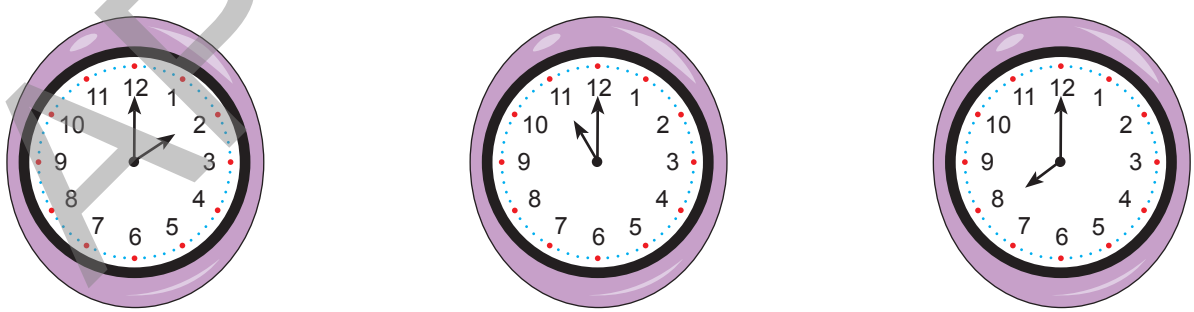
(c) $5 \times 5 = \square$ (d) $6 \times 8 = \square$

11. Draw beads on the abacus to show the number indicated:



405 870 999 323

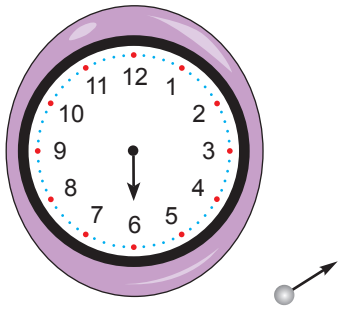
12. Read the time in the clock and write in the box:



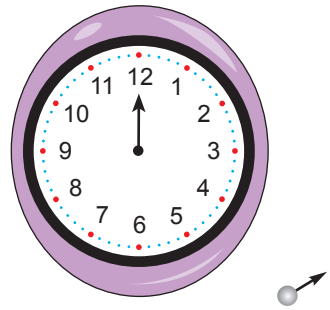
o'clock o'clock o'clock

APC BOOKS

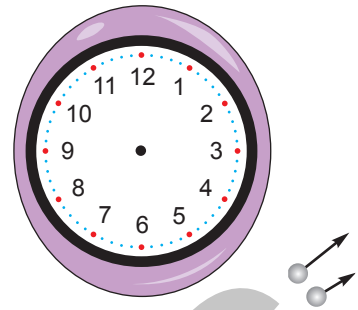
13. Fix the missing hands according to the given time:



6 o'clock



3 o'clock



5 o'clock

14. Ronit got ₹ 85 from his father and ₹ 39 from his mother. How much money altogether did he get?

15. A man had 385 L milk. He sold out 334 L milk. How much milk he still has to sell?

16. Fill in the blanks:

(a) June has _____ days.

(b) Republic day comes in the month of _____ .

(c) December has _____ days.

(d) _____ months make a year.

(e) _____ lies between January and March.

(f) _____ comes after October.

(g) Today is Monday. Yesterday was _____ .

(h) _____ comes after Wednesday.

17. Select the suitable answer from the given options:

(a) During which season do we wear woollen clothes?

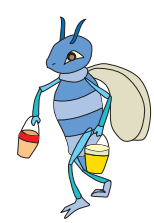
(i) Summer (ii) Winter (iii) Rainy

(b) During which season cold drinks are preferred?

(i) Summer (ii) Winter (iii) Rainy

(c) What do we use during rainy season?

(i) Room heaters (ii) Umbrellas (iii) Sun glasses



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Numbers and Number Names

In standard II, we have learnt numbers up to 1000. 1000 can be obtained by adding 1 to 999 in the following way:

999 + 1 = 9 hundreds + 9 tens + 9 ones + 1 one
= 9 hundreds + 9 tens + 10 ones
= 9 hundreds + 9 tens + 1 ten
= 9 hundreds + 10 tens
= 9 hundreds + 1 hundred
= 10 hundreds = 1 thousand = 1000

1000 is the smallest number of four digits.

We read 1000 as "one thousand".

1001 stands for 1 thousand, 0 hundreds, 0 tens and 1 one. It is read as "one thousand one."

1010 stands for 1 thousand, 0 hundreds, 1 ten and 0 ones. It is read as "one thousand ten."

1100 stands for 1 thousand, 1 hundred, 0 tens and 0 ones. It is read as "one thousand one hundred."

2000 stands for 2 thousands, 0 hundreds, 0 tens and 0 ones. It is read as "two thousand."

Similarly,

4000 is read as "four thousand."

5000 is read as "five thousand."

6000 is read as "six thousand."

7000 is read as "seven thousand."

8000 is read as "eight thousand."

9000 is read as "nine thousand."

9999 is read as "nine thousand nine hundred ninety nine."

9999 is the greatest number of 4 digits.

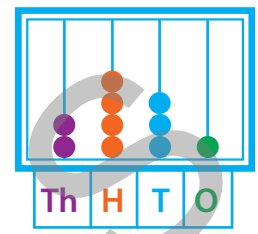
9999 + 1 = 10000 is the smallest number of 5 digits.

APC BOOKS

FOUR DIGIT NUMBERS ON ABACUS

We use four spikes to represent a four digit number on abacus. Starting from right, the number of beads in a spike represents number of ones, tens, hundreds and thousands.

For example, the abacus shown here represents the number 2431.



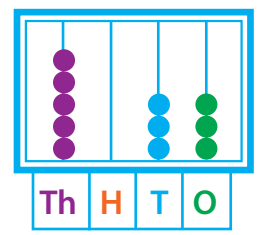
We have 2 thousands, 4 hundreds, 3 tens and 1 one. We read it like, "two thousand four hundred thirty one".

PLACE VALUE CHART

Let us take the same numeral 2431. It can be written in a place value chart as shown below:

Th	H	T	O
2	4	3	1

Example 1. Show the numeral 5033 on abacus and write its name. Write the number on place value chart also.



Solution. The numeral on abacus is 5033.
We read it as "five thousand thirty three".

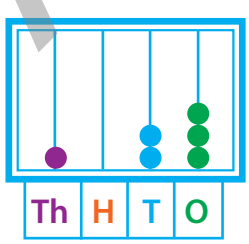
Place value chart

Th	H	T	O
5	0	3	3

Exercise 1.1

1. Read the abacus and write the numeral and its number name.

(a)



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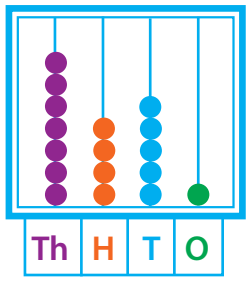
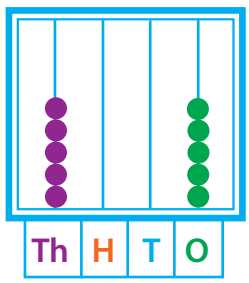
(b)



(c)



2. Show the given numeral on the abacus and make its place value chart:

(a) 5932 (b) 2069 (c) 3330

(d) 2222 (e) 4835 (f) 1531

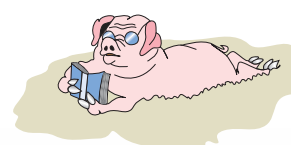
3. Fill in the placeholders:

		Th	H	T	O
2851	=				
3593	=				
2090	=				
1535	=				
6666	=				
8581	=				

NUMBERS IN WORDS (NUMBER NAMES)

Consider the following numbers:

(a) 3592 (b) 2067 (c) 5104



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We can see that:

(a) 3592 has 3 thousands, 5 hundreds, 9 tens and 2 ones.
We name it as "three thousand five hundred ninety two".

(b) 2067 has 2 thousands, 0 hundreds, 6 tens and 7 ones.
We name it as "two thousand sixty seven."

(c) 5104 has 5 thousands, 1 hundred, 0 tens and 4 ones.
We name it as "five thousand one hundred four."

NUMBERS IN FIGURES

Consider the following number names:

(a) Two thousand five hundred sixteen. (b) Five thousand sixty two.

(c) Nine thousand two hundred five.

We can write the above numbers as:

	Thousands	Hundreds	Tens	Ones
(a)	2	5	1	6
(b)	5	0	6	2
(c)	9	2	0	5

Hence the numbers in figures are:

(a) 2516 (b) 5062 (c) 9205

Exercise 1.2

1. Write the number names of the following numbers:

(a) 3792 .....

(b) 7056 .....

(c) 9005 .....

(d) 8760 .....

(e) 3806 .....

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2. Write the following numbers in figures:

(a) Three thousand four hundred fifty seven

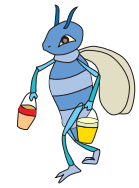
(b) Seven thousand three hundred six

(c) Nine thousand ninety six

(d) One thousand eight hundred thirty

(e) Seven thousand seven hundred

(f) One thousand nineteen



3. Rewrite the following numbers by interchanging the digits at the thousands and tens places:

Example: 5621 → 2651

(a) 7392 (b) 4087 (c) 3190

4. Rewrite the following numbers by using the digits in the reverse order:

Example: 2395 → 5932

(a) 8751 (b) 3506 (c) 4026

EXPANDED FORM

Using place value chart, we can write a number in its expanded form.

For example, let us take the number 7541, its place value chart is

Th	H	T	O
7	5	4	1

i.e., 7 thousands, 5 hundreds, 4 tens, and 1 one. Therefore, its expanded form is

7000 + 500 + 40 + 1

Example 1. Write in the expanded form: (a) 8536 (b) 3406

Solution. (a) 8536 has 8 thousands, 5 hundreds, 3 tens and 6 ones.

∴ 8536 = 8000 + 500 + 30 + 6 (∴ stands for therefore)

(b) 3406 has 3 thousands, 4 hundreds, 0 tens and 6 ones.

∴ 3406 = 3000 + 400 + 6

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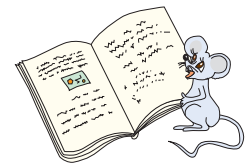
Example 2. Write the following numbers in short form:

(a) 3000 + 800 + 50 + 6 (b) 4000 + 30 + 9



Solution. (a) 3000 + 800 + 50 + 6 stands for 3 thousands, 8 hundreds, 5 tens and 6 ones, i.e., 3856.

∴ 3000 + 800 + 50 + 6 = 3856

(b) 4000 + 30 + 9 stands for 4 thousands, 0 hundreds, 3 tens and 9 ones, i.e., 4039.

∴ 4000 + 30 + 9 = 4039

Exercise 1.3

1. Fill in the missing digits. The first one is done for you.

(a) 3516 = 3 thousands 5 hundreds 1 ten 6 ones

(b) 5302 = ... thousands ..... hundreds ..... tens ..... ones

(c) 4059 = ... thousands ..... hundreds ..... tens ..... ones

(d) 8080 = ... thousands ..... hundreds ..... tens ..... ones

(e) 7634 = ... thousands ..... hundreds ..... tens ..... ones

2. Write the following numbers in the expanded form:

(a) 2937 = ... + ... + ... + ...

(b) 8019 = ... + ... + ... (c) 9270 = ... + ... + ...

(d) 9700 = ... + ... (e) 4807 = ... + ... + ...

(f) 6003 = ... + ...

3. Write the following numbers in the short form:

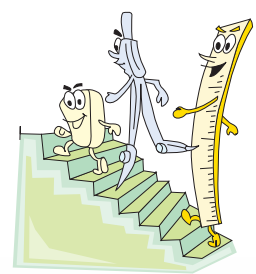
(a) 3000 + 200 + 80 + 9 .....

(b) 7000 + 0 + 80 + 1 .....

(c) 2000 + 500 + 9 .....

(d) 5000 + 700 + 50 .....

(e) 8000 + 20 + 5 .....



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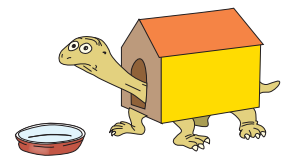
PLACE VALUE – FACE VALUE OF A DIGIT

Let us take the number 72.



72 = **7 tens** + **2 ones**

= 70 + 2

In 72, 7 is at the tens place.

The place value of 7 is 70 The face value of 7 is 7

The digit 2 is at the ones place.

The place value of 2 is 2 The face value of 2 is 2

Now let us take a three digit number 468.

468 = 4 **hundreds** + 6 **tens** + 8 **ones**

= 400 + 60 + 8

In 468, the digit 4 is at the hundreds place.

The place value of 4 is 400 The face value of 4 is 4

The digit 6 is at the tens place.

The place value of 6 is 60 The face value of 6 is 6

The digit 8 is at the ones place.

The place value of 8 is 8 The face value of 8 is 8

Lastly, take a four digit number 5359.

5359 = **5 thousands** + **3 hundreds** + **5 tens** + **9 ones**

= 5000 + 300 + 50 + 9

In 5359, 5 is at the thousands place.

The place value of 5 is 5000

The face value of 5 is 5

The digit 3 is at the hundreds place.

The place value of 3 is 300

The face value of 3 is 3

Easy Method!

5	3	5	9
↓	↓	↓	↓
5	0	0	0

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The digit 5 is at the tens place.

The place value of 5 is 50

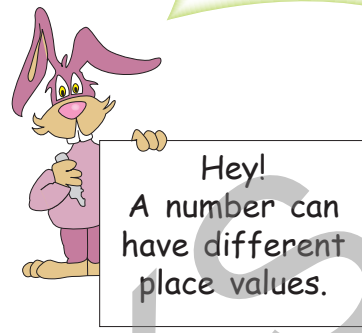
The face value of 5 is 5

5 3 5 9
↓ ↓
5 0

The digit 9 is at the ones place.

The place value of 9 is 9

The face value of 9 is 9



From the above discussion, we note that:

The place value of a digit changes according to the place it occupies in the number, but the face value remains unchanged and is the value of the digit itself.

Example 1. Find the place value of each digit in 3906.

Solution.

Number	Place value
6 ones	6
0 tens	0
9 hundreds	900
3 thousands	3000

Note: Place value of 0 is always zero.

Example 2. Find the place values of two fours in 8414.

Solution.

8 4 1 4
↓ ↓ ↓
4 0 0

Place value of 4 = 400.

8 4 1 4
↓
4

Place value of 4 = 4

APC BOOKS

Example 3. Write the face value of 4 in the numbers 346, 4593 and 3214.

Solution. In 346, the face value of 4 is 4.

In 4593, the face value of 4 is 4.

In 3214, the face value of 4 is 4.

Exercise 1.4

1. Arrange the numerals in the place value table:

	Thousands	Hundreds	Tens	Ones
567	.....	.....	.....	.....
6409	.....	.....	.....	.....
7013	.....	.....	.....	.....
9820	.....	.....	.....	.....

2. Write the place value in the box of each red coloured digit in the following numbers:

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

3. Write the place value of the digit 6 in the box:

361	206	631
2695	6320	3600

4. Write the place values of 8's in 8483.

5. Find the difference of the place values of two sevens in 6577.

APC BOOKS

6. Tick Reena's number. It has 2 hundreds, 3 tens, 5 thousands and 6 ones.

2356 3265 5236 5326

7. Encircle Rahul's number. It has 8 tens, 4 thousands and 2 ones.

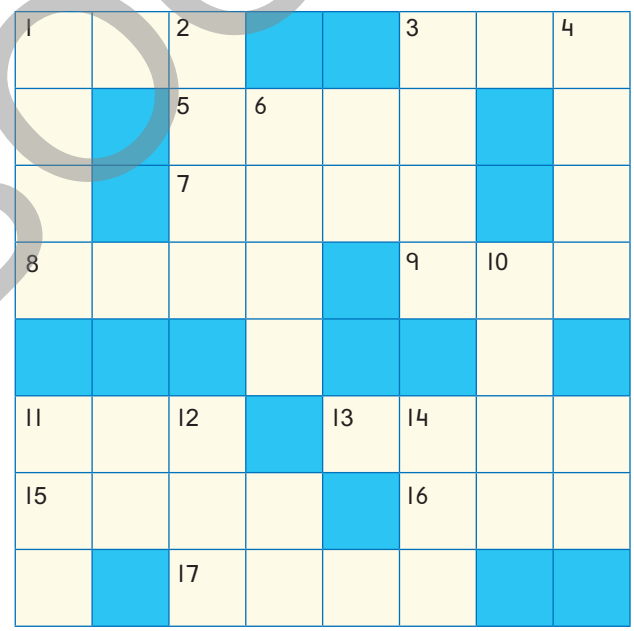
842 482 4028 4082

8. Which of the following statements are correct?
   (a) The place value of 3 in 4316 is 316.
   (b) The place value of 0 in 6801 is 10.
   (c) The place value of 4 in 4325 is 4000.

9. Solve the number puzzle by writing numbers:

Across →

1. 2 hundreds 7 tens 9 ones
3. 4 hundreds 8 tens 6 ones
5. 5 thousands 7 hundreds 8 tens
7. Three thousand three hundred thirty three
8. Nine thousand fifty five
9. 6 hundreds 2 tens 6 ones
11. 6 hundreds + seventy eight
13. 5 thousands 3 hundreds 9 tens
15. Eight thousand one hundred twenty six
16. 50 more than 140
17. 2 thousands 5 hundreds 5 tens



Down ↓

1. Two thousand nine hundred fifty nine
2. 9 thousands 5 hundreds 3 tens 5 ones
3. 4 thousands 0 hundreds 3 tens 6 ones

APC BOOKS

4. Six thousand three hundred ninety six
6. 7 thousands 3 hundreds 5 tens 4 ones
10. 2 thousands 5 hundreds 9 tens 9 ones
11. 20 more than 665
12. 100 less than 922
14. Three hundred ten

SUCCESSOR OF A NUMBER

The number which comes just after a given number is called its **successor**.

For example, 26 is successor of 25.

It means when we add 1 to a number, we get its successor as 25 + 1 = 26.

Similarly, successor of 2569 is 2570.

PREDECESSOR OF A NUMBER

The number which comes just before a given number is called its **predecessor**.

For example, 49 is the predecessor of 50.

It means when we subtract 1 from a given number, we get its predecessor as

50 – 1 = 49

CONSECUTIVE NUMBERS

In a given pattern, any pair of numbers written adjacent to each other are called **consecutive numbers**.

For example, in the pattern 203, 206, 209, 212, 215

Consecutive numbers are (203, 206), (206, 209), (209, 212) and (212, 215).

SKIP COUNTING

When we write some numbers with a fixed gap between every two consecutive numbers, then this pattern of numbers is called **skip counting**.

For example,

skip counting by 2	—	12, 14, 16, 18, 20, 22
skip counting by 5	—	15, 20, 25, 30, 35
skip counting by 10	—	215, 225, 235, 245, 255
skip counting by 1000	—	5203, 6203, 7203, 8203

APC BOOKS

Exercise 1.5

1. Write all numbers lying between:

   (a) 1000 and 1004

   (b) 2231 and 2235

   (c) 6659 and 6663

2. Write the successor of each of the following numbers:

   (a) 4530 (b) 8346 (c) 8152

3. Write the predecessor of each of the following numbers:

   (a) 5637 (b) 8910 (c) 9810

4. For each of the following write the next three numbers:

   (a) 7786

   (b) 6999

5. Counting by twos, write numbers starting from:

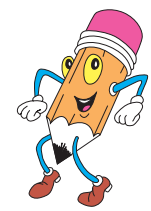
   (a) 7786

   (b) 4003

6. Counting by fives, write numbers starting from:

   (a) 3505

   (b) 7913



7. Counting by tens, write numbers starting from:

   (a) 5210

   (b) 9318

APC BOOKS

8. Counting by hundreds, write numbers starting from:

(a) 4358

(b) 7019

9. Counting by thousands, write numbers starting from:

(a) 4307

(b) 3718

10. Look at the pattern and write next three numbers:

(a) 2513, 2516, 2519

(b) 8307, 7307, 6307

11. Write the greatest number of:

(a) 2 digits (b) 3 digits (c) 4 digits

12. Write the smallest number of:

(a) 2 digits (b) 3 digits (c) 4 digits

COMPARISON OF NUMBERS

We have already learnt to find the greater of the two 3-digit numbers. Here we shall learn to find the greater of the two 4-digit numbers.

We have learnt that "8 is greater than 4" and it is written as $8 > 4$.

We also know that "3 is less than 9" and we write it as $3 < 9$.

Also, 8 is greater than 4 is the same as 4 is less than 8.

$\therefore$ In symbols, $8 > 4$ is the same as $4 < 8$.

In our previous class, we have learnt that:

(a) A number having more digits is greater than the number having less digits.

For example, $16 > 9$; $325 > 87$; $201 > 99$.

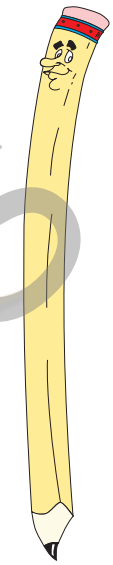
APC BOOKS

(b) If the two given numbers have the same number of digits, then

- we compare the digits on the extreme left and decide;
- if the digits on the extreme left are equal, we keep on comparing the next digits on the right.

For example, 83 > 79; 423 > 180; 689 > 629; 725 > 721.

Now, by using these rules, we solve a few examples.



Think and answer

Example 1. Which is smaller: (a) 389 or 1201 (b) 4876 or 8751?

Solution. (a) 389 has three digits.

1201 has four digits.

Three digit number is smaller than four digit number.

∴ 389 < 1201.

(b) Each number has 4 digits. We compare the digits at the thousand's places.

Th	H	T	O
4	8	7	6
8	7	5	1

The digit on the extreme left of 4876 is 4.

The digit on the extreme left of 8751 is 8.

We know that 4 < 8.

∴ 4876 < 8751.

Example 2. Which is greater: 5384 or 5297?

Solution. 5384 has 5 thousands.

5297 has 5 thousands.

Since the number of thousands in both the numbers is same, so we compare the digits at the hundred's places.

Th	H	T	O
5	3	8	4
5	2	9	7

5384 has 3 hundreds.

5297 has 2 hundreds.

Since 3 hundreds are more than 2 hundreds,

∴ 5384 is greater than 5297

or 5384 > 5297.

APC BOOKS

Example 3. Which is smaller: 9836 or 9840?

Solution. 9836 has 9 thousands and 8 hundreds.

9840 also has 9 thousands and 8 hundreds.

Since both the numbers have same number of thousands and hundreds, so we compare the digits at the ten's places.

9836 has 3 tens and 9840 has 4 tens.

Since 3 tens are less than 4 tens,

∴ 9836 is less than 9840

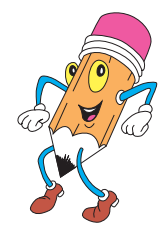
or 9836 < 9840.

Th	H	T	O
9	8	3	6
9	8	4	0

Exercise 1.6

Put > or < or = in the space provided to make the given sentences true:

1. 4890 ☆ 521
2. 768 ☆ 789
3. 423 ☆ 441
4. 8821 ☆ 6557
5. 7201 ☆ 9209
6. 2539 ☆ 2327
7. 8034 ☆ 8289
8. 5669 ☆ 5686
9. 1889 ☆ 1886
10. 999 + 1 ☆ 1000
11. 2009 ☆ Two thousand and ninety.
12. 3018 ☆ 3000 + 10 + 8.
13. 3206 ☆ Three thousand twenty six.
14. 8029 ☆ Eight thousand twenty nine.



15. The population of two villages A and B is 8506 and 8985 respectively. Which village has more population?
16. A village has 3591 males and 3089 females. Who are less in number, males or females?

ABC BOOKS

ASCENDING OR DESCENDING ORDER

Ascending order means "from smaller to greater."

Descending order means "from greater to smaller."

Example 1. Write the following numbers in ascending (increasing) order:
7540, 989, 4354, 67.

Solution. Here the smallest number is 67. The next number greater than 67 is 989. The other numbers greater than 67 in order are 4354 and 7540.

∴ The given numbers, when written in ascending order are:
67, 989, 4354, 7540.

You can check by making place value chart.

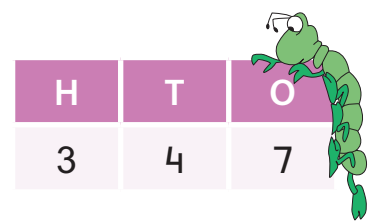
Example 2. Write the following numbers in descending (decreasing) order:
737, 8301, 786, 1256, 8309.

Solution. Here the greatest number is 8309. The next number smaller than 8309 is 8301. The other numbers smaller than 8309 in order are 1256, 786 and 737.

∴ The given numbers when written in descending order are:
8309, 8301, 1256, 786, 737

FORMATION OF SMALLEST AND GREATEST NUMBERS

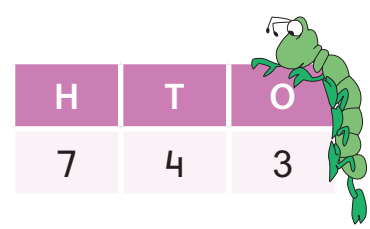
Suppose we are given three digits 3, 7 and 4. We want to form smallest number of 3 digits, using all the given digits without repetition. First we select the smallest digit and write it in the hundred's place. Then we write the next greater digit in the ten's place and lastly, the greatest digit in the one's place.



H	T	O
3	4	7

∴ The smallest number is 347.

If we want to form the greatest number of 3 digits, using all the given digits without repetition, first we select the greatest digit and write it in the hundred's place. Then we write the next smaller digit in the ten's place and lastly, the smallest digit in the one's place.



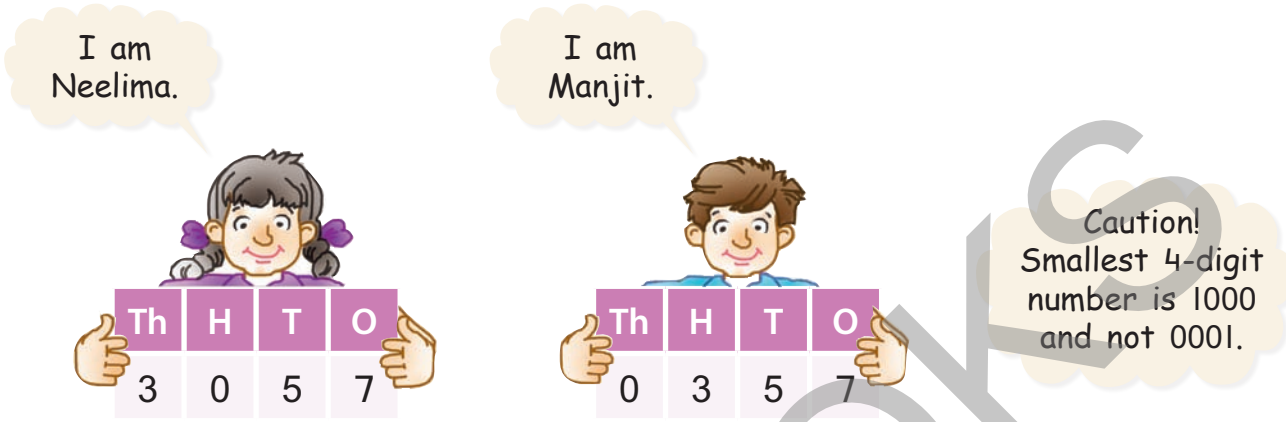
H	T	O
7	4	3

∴ The greatest number is 743.

APC BOOKS

Let us now take four digits 3, 0, 5, 7 and form smallest and the greatest numbers of 4 digits using all the given digits only once.

Applying the same rule, Neelima and Manjit formed smallest 4-digit numbers as given under:



But 0 on the extreme left place has no meaning, so the correct 4-digit smallest number was formed by Neelima.

Thus the smallest number of given 4 digits is 3057.

Applying the rule explained in the previous example for the greatest number of 3 digits, the greatest number of 4 digits in this case is 7530.

Notes: 1. 0 is not written on the extreme left place of a number.

2. 0357 is a 3-digit number 357.

Example 3. Write the greatest and smallest 2-digit numbers using 3, 5 only once.

Solution. For greater number, write the greater of 3 and 5 under tens column and the other digit under ones column.

T	O
5	3

∴ Greater number = 53

Similarly, smaller number = 35

T	O
3	5

Example 4. Write the smallest and the greatest numbers using 8, 0, 5 (without repeating a digit).

(a) 2 digits (b) 3 digits

Solution. (a) 2-digit smallest number = 50

2-digit greatest number = 85

(b) 3-digit smallest number = 508

3-digit greatest number = 850

ARC BOOKS

Example 5. Write the smallest and the greatest 4-digit numbers by changing positions of the digits, if need arises, in the following numbers:

(a) 3856 (b) 5029

Solution. (a) Smallest number = 3568 Greatest number = 8653

(b) Smallest number = 2059 Greatest number = 9520

Exercise 1.7

1. In each of the following, encircle the greatest number:

(a) 586, 209, 834

(b) 603, 599, 573, 537

(c) 525, 5205, 5025, 5250

2. In each of the following, encircle the smallest number:

(a) 356, 906, 305

(b) 923, 933, 801, 810

(c) 5550, 5055, 4031, 3140

3. Rewrite the following numbers in ascending (increasing) order:

(a) 1234, 1046, 2986, 756 ....

(b) 9856, 98, 991, 7603 ....

(c) 7707, 7007, 777, 7770 ....

4. Rewrite the following numbers in descending (decreasing) order:

(a) 186, 923, 9230, 8251 ....

(b) 4321, 2341, 4121, 3241 ....

(c) 766, 5431, 2466, 7789 ....

5. Write whether the following numbers are arranged in descending or ascending order:

(a) 56, 566, 5660, 7637, 7673, 7773 .....

(b) 9836, 9810, 5638, 3731, 1065, 785 .....

(c) 9856, 9800, 8637, 8037, 7865, 7856 .....

APC BOOKS

6. Write the smallest and the greatest numbers of 2-digits using 7 and 1 only once.

7. Write the smallest and the greatest numbers of 3-digits (using each digit only once):

(a) 3, 1, 2 (b) 6, 0, 8

8. Write any four 4-digit numbers using all the digits 3, 4, 1, 2 and then arrange them in descending order.

9. Write the smallest and the greatest 2-digit numbers (without repeating a digit) from the following digits:

	Smallest	Greatest
(a) 3, 6, 5	.....	.....
(b) 2, 0, 7	.....	.....

10. Write the smallest and the greatest 3-digit numbers by changing the positions of the digits, if need arises, in the following numbers:

	Smallest	Greatest
(a) 439	.....	.....
(b) 805	.....	.....

11. Write the smallest and the greatest 4-digit numbers by changing the positions of the digits, if need arises, in the following numbers:

	Smallest	Greatest
(a) 7615	.....	.....
(b) 3508	.....	.....

APC BOOKS

Chapter Test

Time: 30 minutes **M.M. 10**

Note: *Each question is of 2 marks.*

Space for rough work

1. Find the mystery number which has

5 in hundreds place, 4 in thousands place

7 in ones place, 2 in tens place

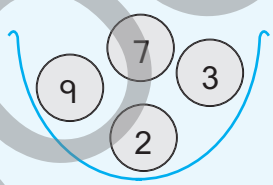
The mystery number is .....

2. Write the number:

(a) Five thousand three hundred four .....

(b) Nine thousand fifty six .....

3. You are given here number coins.



Rearrange them to make the largest and smallest numbers.

Largest number ..... Smallest number .....

4. Write the number names for the following:

(a) 789 .....

(b) 5172 .....

(c) 9044 .....

(d) 6105 .....

5. Encircle the correct answer from the given options:

(a) The smallest number of 4 digits is

(i) 0001 (ii) 0100

(iii) 0010 (iv) 1000

(b) The expanded form of 2037 is

(i) 20000 + 30 + 7 (ii) 2000 + 30 + 7

(iii) 200 + 30 + 7 (iv) 2000 + 300 + 7

APC BOOKS

Addition

In standard two, we have learnt the addition of 2-digit numbers without and with regrouping. We have also learnt the addition of 3-digit numbers without regrouping. In this class we shall first recapitulate and then learn the addition of 3-digit numbers with regrouping and addition of 4-digit numbers without regrouping.

The result obtained after addition is called the **Sum**.

ADDITION WITHOUT REGROUPING

(a) Column addition of 3-digit numbers (without regrouping)

Example 1. Add: 324 and 452. Write the number sentence.

Solution. Putting numbers in the column form:

H	T	O
3	2	4
+ 4	5	2
		6

Adding **ones**:
4 + 2 = 6

H	T	O
3	2	4
+ 4	5	2
	7	6

Adding **tens**:
2 + 5 = 7

H	T	O
3	2	4
+ 4	5	2
7	7	6

Adding **hundreds**:
3 + 4 = 7

Number sentence: 324 + 452 = 776

(b) Column addition of 4-digit numbers (without regrouping)

We have recapitulated the addition of 3-digit numbers. Now, we apply the same rule to add 4-digit numbers.

Example 2. Add together: 1063, 6705 and 120. Write the sum in words.

APC BOOKS

Solution.

	Th	H	T	O
	1	0	6	3
+	6	7	0	5
+		1	2	0
	7	8	8	8

Add ones to ones, tens to tens, hundreds to hundreds and thousands to thousands.

Sum: Seven thousand eight hundred eighty eight

Exercise 2.1

Add together:

1. H T O: 1 2 3 + 4 5 4

2. H T O: 2 0 5 + 6 8 4

3. H T O: 4 6 0 + 2 3 7

4. Th H T O: 3 4 2 6 + 2 3 7 2

5. Th H T O: 3 5 4 8 + 6 1 4 0

6. Th H T O: 5 0 3 6 + 4 7 2 1

7. 3 4 0 6 + 5 4 9 2

8. 2 0 3 5 + 1 6 0 2

9. 3 4 1 5 + 2 3 0 1

10. 6 0 4 6 + 3 4 5 0

11. 6 8 5 3 + 2 0 4 5

12. 4 3 2 0 + 2 2 6 7

13. 7 4 3 2 + 1 3 5 0

14. 5 6 2 3 + 4 1 6 5

15. 1 5 6 1 + 8 3 2 6

APC BOOKS

16.

	Th	H	T	O
	4	2	7	4
+			2	5
+	2	6	0	0

17.

	Th	H	T	O
	5	6	1	4
+		1	7	3
+	3	2	0	2

18.

	Th	H	T	O
	2	3	0	5
+	4	0	8	2
+		4	0	1

19. Write in columns and add. Write the sum in words.

(a) 2612 + 3104 + 2061

(b) 8302 + 261 + 316

(c) 4033 + 1506 + 240

(d) 7114 + 2021 + 463

ADDITION WITH REGROUPING (CARRY OVER)

When sum of the digits at ones, tens or at hundreds place is more than 9, we carry ones to tens, tens to hundreds and hundreds to thousands place.

Let us understand this with an example.

Example 1. Add 437 and 296. Write the number sentence also.

Solution.

	H	T	O
		1	
	4	3	7
+	2	9	6
			3

Add **ones**

7 + 6 = 13

13 **ones** =

1 **ten** + 3 **ones**

	H	T	O
	1	1	
	4	3	7
+	2	9	6
		3	3

Add **tens**

1 + 3 + 9 = 13

13 **tens** =

1 **hundred** + 3 **tens**

	H	T	O
	1	1	
	4	3	7
+	2	9	6
	7	3	3

Add **hundreds**

1 + 4 + 2 = 7

Number sentence: 437 + 296 = 733

APC BOOKS

In short, we put it as under:

	H	T	O
	I	I	
	4	3	7
+	2	9	6
	7	3	3

Regroup and add.

Number sentence: 437 + 296 = 733

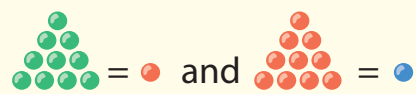
Lab Activity

We can verify that 437 + 296 = 733 in mathematics lab as follows:

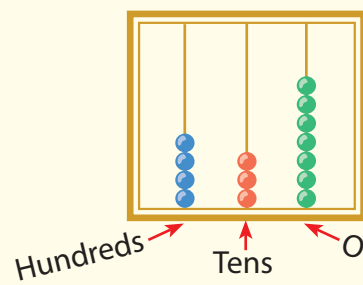
Take some green, red and blue beads. Let 1 green, 1 red and 1 blue bead represent 1 one, 1 ten and 1 hundred respectively. We know that

10 ones = 1 ten and 10 tens = 1 hundred

∴ 10 green beads = 1 red bead and
10 red beads = 1 blue bead

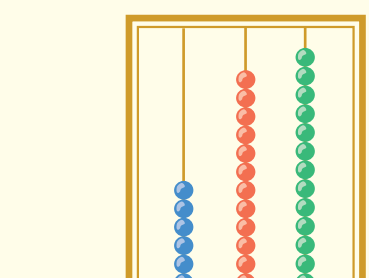


Take an abacus. To show the number 437 on it, fix 7 green beads in ones stick, 3 red beads in tens stick and 4 blue beads in hundreds stick.



To add 296 to 437, fix 6 more green beads to ones stick, 9 more red beads to tens stick and 2 more blue beads to hundreds stick.

Now count the number of green beads in ones stick. It has 7 + 6 or 13 green beads.



APC BOOKS

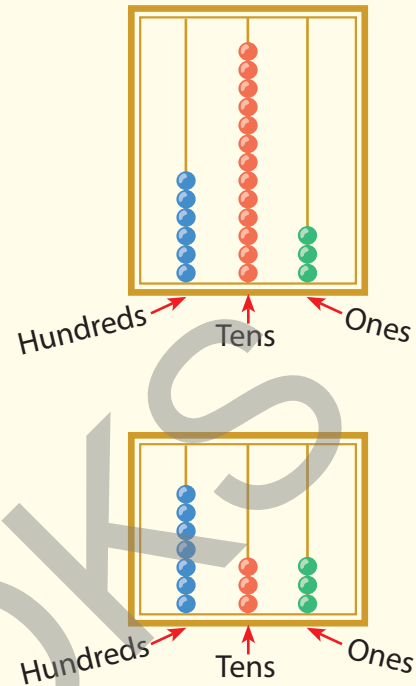
Remove 10 green beads and instead add 1 red bead to tens stick as 10 green beads represent 1 red bead.

Again, count the number of red beads in tens stick. It has 1 + 9 + 3 or 13 red beads.

Remove 10 red beads from tens stick and instead add 1 blue bead to hundreds stick as 10 red beads represent 1 blue bead.

Lastly count the number of blue beads in hundreds stick. We have 1 + 2 + 4 or 7 blue beads. The number represented by the last abacus is 733.

∴ 437 + 296 = 733



Example 2. Add 4272 and 1859. Write the sum in words.

Solution.

Step 1.

	Th	H	T	O
			1	
	4	2	7	2
+	1	8	5	9
			1	

2 + 9 = 11

11 **ones** = 1 **ten** + 1 **one**

Add ones and regroup.

Step 2.

	Th	H	T	O
		1	1	
	4	2	7	2
+	1	8	5	9
			3	1

1 + 7 + 5 = 13

13 **tens** = 1 **hundred** + 3 **tens**

Add tens and regroup.

APC BOOKS

Step 3.

	Th	H	T	O
	1	1	1	
	4	2	7	2
+	1	8	5	9
		1	3	1

Add hundreds and regroup.

1 + 2 + 8 = 11

11 **hundreds** = 1 **thousand** + 1 **hundred**

Step 4.

	Th	H	T	O
	1	1	1	
	4	2	7	2
+	1	8	5	9
	6	1	3	1

Add thousands

1 + 4 + 1 = 6 **thousands**

Sum = Six thousand one hundred thirty one

Exercise 2.2

Add:

1. 783 + 198 = ____

2. 168 + 274 = ____

3. 496 + 385 = ____

4. 578 + 287 = ____

5. 786 + 258 = ____

6. 583 + 128 = ____

7. 389 + 475 = ____

8. 486 + 198 = ____

9. 239 + 672 = ____

10. 298 + 426 = ____

11. 746 + 179 = ____

12. 289 + 503 = ____

APC BOOKS

13.

$$\begin{array}{r} 2687 \\ +\ \ 348 \\ \hline \end{array}$$

14.

$$\begin{array}{r} 4340 \\ +\ 2980 \\ \hline \end{array}$$

15.

$$\begin{array}{r} 5282 \\ +\ 3949 \\ \hline \end{array}$$

16.

$$\begin{array}{r} 8393 \\ +\ \ 678 \\ \hline \end{array}$$

17.

$$\begin{array}{r} 8869 \\ +\ 1298 \\ \hline \end{array}$$

18.

$$\begin{array}{r} 6873 \\ +\ 3455 \\ \hline \end{array}$$

19.

$$\begin{array}{r} 9836 \\ +\ 2560 \\ \hline \end{array}$$

20.

$$\begin{array}{r} 4830 \\ +\ 9379 \\ \hline \end{array}$$

21.

$$\begin{array}{r} 5798 \\ +\ 4319 \\ \hline \end{array}$$

22.

$$\begin{array}{r} 7084 \\ +\ 5946 \\ \hline \end{array}$$

23.

$$\begin{array}{r} 6955 \\ +\ 7105 \\ \hline \end{array}$$

24.

$$\begin{array}{r} 3972 \\ +\ 8470 \\ \hline \end{array}$$

Add and write the sum in words:

25. 312 + 489
26. 8075 + 2946
27. 4878 + 7464

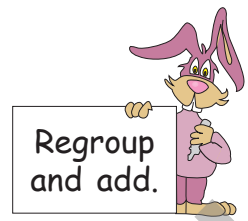
APC BOOKS

Addition of three numbers (3-digit)

Example 1. Add: 182, 273 and 48.

Solution. Putting numbers in columns and adding:

	H	T	O	
	2	1		←carried
	1	8	2	
+	2	7	3	
+		4	8	
	5	0	3	



Exercise 2.3

Find the sum:

1.
$$\begin{array}{r} 238 \\ +\ 347 \\ +\ 164 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 426 \\ +\ 268 \\ +\ 137 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 386 \\ +\ 248 \\ +\ 242 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 285 \\ +\ 309 \\ +\ 176 \\ \hline \end{array}$$

Find the sum:

5. 479 + 212 + 163
6. 228 + 362 + 109
7. 324 + 209 + 93

APC BOOKS

PROPERTIES OF ADDITION

Order property

Add:

14 + 39 = ...	39 + 14 = ...
Is the sum in both the cases same?	

48 + 32 = ...	32 + 48 = ...
Is the sum in both the cases same?	

25 + 38 = ...	38 + 25 = ...
Is the sum in both the cases same?	

57 + 89 = ...	89 + 57 = ...
Is the sum in both the cases the same?	

378 + 439 = ...	439 + 378 = ...
Is the sum in both the cases same?	

715 + 199 = ...	199 + 715 = ...
Is the sum in both the cases same?	

We notice that:

The sum of two numbers is the same when we change the order of the numbers.

Grouping Property:

Add 26, 95 and 37.

(26 + 95) + 37	26 + (95 + 37)
= 121 + 37	= 26 + 132
= 158	= 158

Is the sum in both the cases same? .....

APC BOOKS

Add and fill in the blanks:

(a) $(535 + 712) + 123$ $\qquad$ $535 + (712 + 123)$

$= \ldots\ldots\ldots + 123$ $\qquad$ $= 535 + \ldots\ldots\ldots$

$= \ldots\ldots\ldots$ $\qquad$ $= \ldots\ldots\ldots$

Is the sum in both the cases same? .....

(b) $843 + (935 + 412)$ $\qquad$ $(843 + 935) + 412$

$= 843 + \ldots\ldots\ldots$ $\qquad$ $= \ldots\ldots\ldots + 412$

$= \ldots\ldots\ldots$ $\qquad$ $= \ldots\ldots\ldots$

Is the sum in both the cases same? .....

What do we notice? We notice that:

The sum of three numbers is the same when we change the groupings of the numbers.

Addition Property of Zero

Add:

485	0	980	604
+ 0	+ 321	+ 0	+ 0
485	321	980	604

Add and fill in the blanks:

$439 + 0 = \ldots\ldots\ldots$ $\qquad$ $0 + 89 = \ldots\ldots\ldots$

What do we notice? We notice that:

When zero is added to a number or a number is added to zero, the sum is the number itself.

Exercise 2.4

Without adding, fill in the blanks:

1. $251 + 408 = 408 + \ldots\ldots\ldots\ldots$
2. $831 + 364 = \ldots\ldots\ldots\ldots + 831$

ABC BOOKS

3. 481 + 396 + 267 = 396 + ... + 267

4. 607 + 812 + ... = 812 + 607 + 321

5. 519 + 217 + 413 = 413 + ... + 217

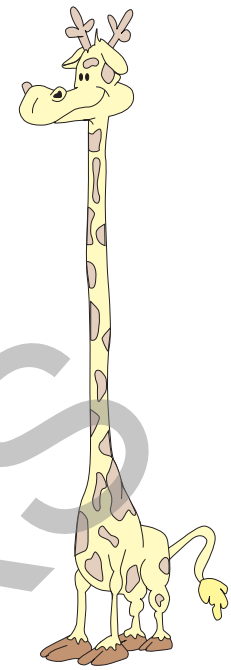
6. 819 + 0 = 0 + ...

7. 621 + 0 = ...

8. 819 + 812 + 706 = 812 + ... + 819

9. 514 + 606 + 400 = 400 + ... + 606

10. 702 + 281 + ... = 281 + 621 + 702



ADDITION USING EXPANDED FORM

It is easier to calculate the sum mentally if we break the number into hundreds, tens or ones. Generally we break the smaller number or both.

Example 1. Add 534 + 214.

Solution. 534 + 214 = 534 + 200 + 14

= 734 + 10 + 4

= 744 + 4

= 748.

Example 2. Add 359 and 732.

Solution. 359 + 732 = 300 + 59 + 700 + 32

= 300 + 700 + 59 + 32

= 1000 + 50 + 9 + 30 + 2

= 1000 + 80 + 11

= 1080 + 11

= 1091

APC BOOKS

Mental Problems

1. Fill in the placeholders:

(a) 78 + 13 = 88 + ◯ = ◯

(b) 190 + 78 = 200 + ◯ = ◯

(c) 225 + 57 = 230 + ◯ = ◯

2. Identify true and false statements:

(a) 1 hundred = 10 tens .....

(b) 3 hundreds 15 tens 12 ones = 3 hundreds 16 tens 2 ones .....

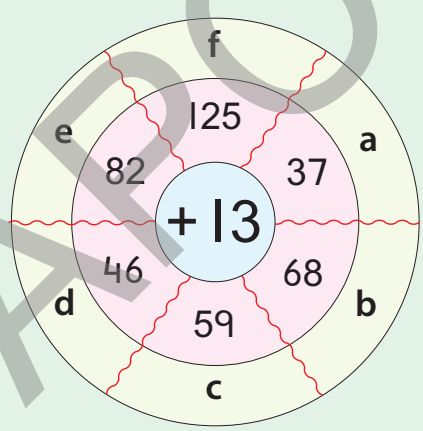
(c) (999 + 1) is the smallest number of 3 digits. .....

(d) The estimated sum of 34 and 48 is 80. .....

(e) The sum of smallest 4-digit number and the greatest 2-digit number is 1099. .....

(f) 139 + 256 = 256 + 139 .....

3. Add mentally and find the answer to each letter in the circle:



a = ☆

b = ☆

c = ☆

d = ☆

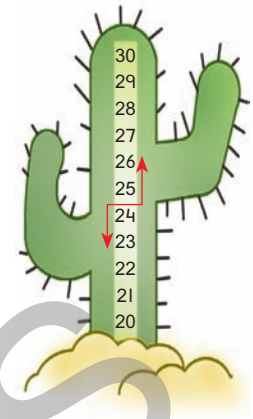
e = ☆

f = ☆

ABC BOOKS

ESTIMATING THE SUM

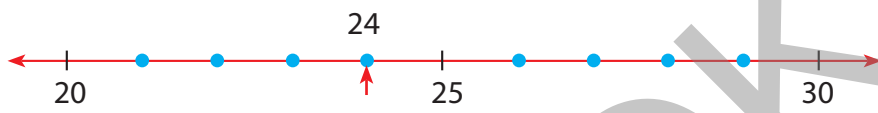
Sometimes instead of considering the actual number we estimate the number. For example, number of students in a school. Even if it is 2681, we say 2700.



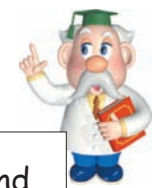
Rounding is the best way to find estimation.

Rounding means making a number smaller or larger.

When rounding to the nearest **tens**, look at the **ones** place. 24 lies between 20 and 30, but it is closer to 20 so it is rounded **down** to 20.



When rounding to the nearest **hundreds**, look at the **tens** place. 780 lies between 700 and 800, but it is closer to 800 so it is rounded **up** to 800.



Aha! When the number you are looking at is less than 5, always round down, when the number is 5 or more than 5, always round up.

Example 1. Round off to the nearest tens:

(a) 12 (b) 28 (c) 85

Solution.

(a) 12 lies between 10 and 20. But ones digit i.e., 2 is less than 5 so 12 is rounded down to 10.

(b) 28 lies between 20 and 30. But ones digit i.e., 8 is more than 5 so 28 is rounded up to 30.

(c) 85 lies between 80 and 90. But ones digit is 5 so 85 is rounded up to 90.

APC BOOKS

Example 2. Round off to the nearest hundreds and estimate the sum of 389 and 145.

Solution. 389 lies between 300 and 400. But tens digit i.e., 8 is more than 5 so 389 is rounded up to 400.

145 lies between 100 and 200. But tens digit i.e., 4 is less than 5 so 145 is rounded down to 100.

$\therefore$ Estimated sum of 389 and 145 = 400 + 100

= 500

Exercise 2.5

1. Add using expanded form:
   (a) 239 and 853 (b) 297 and 753
   (c) 122 and 869 (d) 836 and 457
2. Round off to the nearest tens:
   (a) 35 (b) 81
   (c) 57 (d) 136
3. Round off to the nearest hundreds:
   (a) 439 (b) 187
   (c) 358 (d) 4891
4. Find the estimated sum by rounding to the nearest tens:
   (a) 83 + 46 (b) 29 + 75 (c) 57 + 32
5. Find the estimated sum by rounding to the nearest hundreds:
   (a) 183 + 235 (b) 279 + 621 (c) 205 + 385

WORD PROBLEMS

The concept of addition is used in many daily life problems. Let us consider the following examples.

Example 1. A school has 329 boys and 286 girls. How many students are there in the school? Write the number sentence.

APC BOOKS

Solution. We add the number of boys and girls.

$$\begin{array}{r} {\scriptstyle 1\ \ 1\ \ } \\ 3\ 2\ 9 \\ +\ 2\ 8\ 6 \\ \hline 6\ 1\ 5 \end{array}$$

Total students = 615
Number sentence: 329 + 286 = 615

Example 2. A fruitseller sold 165 boxes of apples, 326 boxes of oranges and 89 boxes of grapes in a week. How many boxes of fruits did he sell altogether? Write the number sentence.

Solution. We add boxes of all types of fruits sold.

$$\begin{array}{r} {\scriptstyle 1\ 2\ \ } \\ 1\ 6\ 5 \\ +\ 3\ 2\ 6 \\ +\ \ 8\ 9 \\ \hline 5\ 8\ 0 \end{array}$$

Boxes sold = 580
Number sentence: 165 + 326 + 89 = 580

Example 3. In a school library, there were 2317 books. The school bought 3170 books more. How many books are there now?

Solution. We add old and new books.

$$\begin{array}{r} 2\ 3\ 1\ 7 \\ +\ 3\ 1\ 7\ 0 \\ \hline 5\ 4\ 8\ 7 \end{array}$$

Total books = 5487

ARC BOOKS

Exercise 2.6

1. The college canteen sold 136 packed lunches on Monday and 293 packed lunches on Tuesday. How many packed lunches were sold in these two days? Write the number sentence.
2. Tony sold 432 chocolates. His sister Rita sold 179 chocolates more than him. How many chocolates did Rita sell? Write the number sentence.
3. A weaver makes 247 and 318 bundles of cloth in two months. How many bundles of cloth does he make in all?
4. Manav is fond of collecting post office stamps. He has 879 of them. His brother Pranav has 394 stamps. How many stamps do they have altogether?

5. In three one-day cricket matches, Indian team scored 279, 246 and 283 runs. How many total runs were scored by the team in these matches? Write the number sentence.
6. There are 236 white, 382 red and 127 grey coloured cars in a parking lot. How many cars are there in the parking lot?
7. A shopkeeper has 2306 cold drink bottles and 1283 milk bottles. How many bottles does he have?
8. A water tanker supplied 4870 litres of water to one colony and the remaining 3026 litres of water to another colony. How many litres of water was there in the tanker?
9. There are 3527 cows and 4231 buffaloes in a village. How many total cattle are there in the village?
10. A poultry farm sold 2367 eggs on Saturday. If it had sold 1010 more eggs next day, how many eggs did it sell on Sunday?

APC BOOKS

FRAMING OF WORD PROBLEMS (STORY WRITING)

So far we have learnt the method of solving word problems based on addition. Now we shall discuss, how to form word problems when a statement, in the form of numbers, is given.

Suppose, we are given the following statement:

5 apples + 9 apples = ? apples

We can frame the following word problem corresponding to the above statement:

Ankit has 5 apples and Priya has 9 apples. How many apples do they have altogether?

Again suppose, we are given:

2 + 8 = ?

We can frame different word problems corresponding to this statement. For example,

(a) There are 2 bananas in one plate and 8 bananas in another plate. How many bananas are there in the two plates?

(b) Chhavi ate 2 toffees and her sister ate 8 toffees. How many toffees did they eat?

(c) 2 students of section A and 8 students of section B got full marks in mathematics. How many students in all got full marks in mathematics?

(d) Vipul has 2 comic books and 8 story books. How many books altogether does he have?

and so on.

Note to the Teacher: Take one numerical statement and encourage the students to form different word problems for it.

Framing of word problems enhances thinking power!

APC BOOKS

Now learn the following solved examples.

Example 1. Form a simple word problem for: 48 + 15 = ?

Solution. Abdul has 48 toffees. He bought 15 toffees more. How many toffees does he have now?

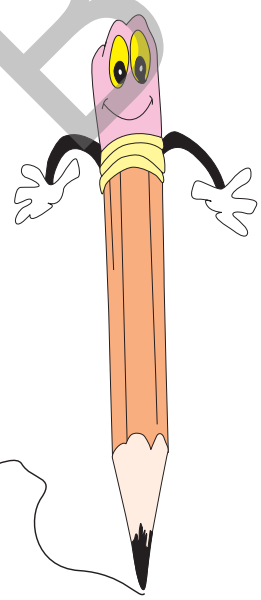
Example 2. Form a simple word problem for: 513 + 429 = ?

Solution. Sneha sold 513 apples on Monday and 429 on Tuesday. How many apples did she sell in two days?

Exercise 2.7

Form a simple verbal word problem for each of the following statements:

1. 9 + 3 = ?
2. 7 + 3 = ?
3. 5 + 5 = ?
4. 10 + 7 = ?
5. 6 + 9 = ?
6. 7 + 7 = ?



APC BOOKS

Chapter Test

Time: 30 minutes **M.M. 10**

Note: *Each question is of 2 marks.*

Space for rough work

1. Put > or < in the blank to make the sentence correct.

   (a) 220 + 148 ..... 198 + 215

   (b) 311 + 225 ..... 408 + 96

2. Write in columns and add:

   (a) 3056 + 2932 .....

   (b) 819 + 785 .....

3. There were 356 red apples and 238 green apples in a shop. Estimate the number of apples by rounding to the nearest hundreds. .....

4. Fill in the blanks:

   (a) 878 + 0 = 0 + ... = ...

   (b) 190 + 58 = 200 + ...

5. Encircle the correct answer from the given options:

   (a) Which sum is incorrect?

   25 + 38 is

   (i) 20 + 43 (ii) 38 + 25

   (iii) 53 (iv) 63

   (b) Which number cannot be rounded off to 400 to the nearest hundreds?

   (i) 350 (ii) 328

   (iii) 367 (iv) 411

APC BOOKS

Subtraction

In standard two, we have learnt the subtraction of 2-digit numbers without and with borrowing. We have also learnt the subtraction of 3-digit numbers without borrowing. In this class we shall recapitulate and then learn the subtraction of 3-digit numbers with borrowing and subtraction of 4-digit numbers without borrowing.

The result obtained after subtraction is called the **difference**.

SUBTRACTION WITHOUT BORROWING

(a) Subtraction of 3-digit numbers (without borrowing)

Example 1. Subtract 235 from 689. Write the number sentence.

Solution. Putting the numbers in columns and subtracting:

	H	T	O
	6	8	9
–	2	3	5
			4

Subtract ones:
9 – 5 = 4 ones

	H	T	O
	6	8	9
–	2	3	5
		5	4

Subtract tens:
8 – 3 = 5 tens

	H	T	O
	6	8	9
–	2	3	5
	4	5	4

Subtract hundreds:
6 – 2 = 4 hundreds

Number sentence: 689 – 235 = 454

(b) Subtraction of 4-digit numbers (without borrowing)

We have recapitulated the subtraction of 3-digit numbers without borrowing. The same rule is applied when we subtract 4-digit numbers.

ABC BOOKS

Example 2. Subtract 5027 from 7839. Write the number sentence.

Solution. Putting numbers in column form:

	Th	H	T	O
	7	8	3	9
–	5	0	2	7
	2	8	1	2

Subtract ones from ones, tens from tens, hundreds from hundreds and thousands from thousands.

Number sentence: 7839 – 5027 = 2812

Example 3. Fill in the placeholders.

	5	☐	☐	9
–	☐	3	2	1
	2	5	4	☐

Think at each step.

Solution.

1st step

	5	☐	☐	9
–	☐	3	2	1
	2	5	4	8

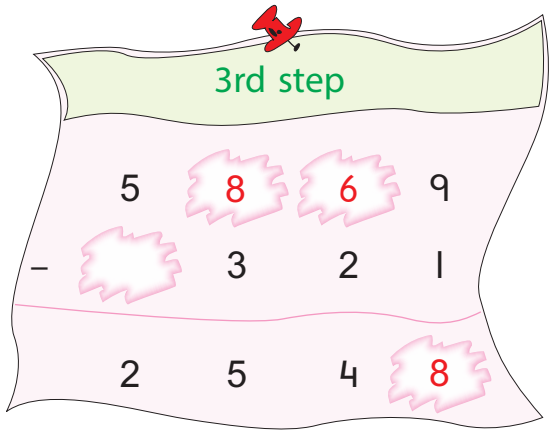
9 – 1 = ?

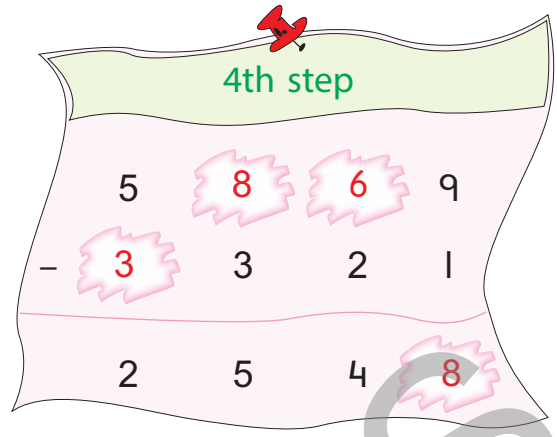
2nd step

	5	6		9
–	☐	3	2	1
	2	5	4	8

? – 2 = 4

APC BOOKS





? – 3 = 5

5 – ? = 2

Exercise 3.1

Subtract:

1.

H	T	O
5	8	3
– 2	7	1

2.

H	T	O
8	9	6
– 5	2	4

3.

H	T	O
3	5	8
– 1	2	3

4.

Th	H	T	O
5	8	7	9
– 2	5	6	7

5.

Th	H	T	O
9	6	7	3
– 5	4	5	1

6.

Th	H	T	O
8	6	8	5
– 4	3	2	0

7.

6	8	5	3
– 2	2	4	3

8.

9	8	4	2
– 6	7	0	1

9.

5	4	0	9
– 2	1	0	3

10.

9	8	7	6
– 2	0	4	3

11.

7	6	4	1
– 6	5	1	0

12.

5	3	2	9
– 1	0	1	3

APC BOOKS

Write in columns and find the difference:

13. 7625 – 4022 14. 8603 – 5401 15. 9840 – 7610

16. Find the difference between 3825 and 4946. Write the number sentence.

Note: While finding the difference, we write the greater of the two given numbers on the top and then subtract.

Fill in the placeholders:

17.

	2	☐	3	7
–	1	2	☐	6
	☐	7	2	☐

18.

	☐	6	☐	5
–	6	2	4	3
		3	☐	4

BORROWING

Let us recall:

1 ten = 10 ones

1 hundred = 10 tens

Similarly,

(a) 4 tens 2 ones = 3 tens 12 ones.

(b) 2 tens 0 ones = 1 ten 10 ones

(c) 7 hundreds 2 tens 9 ones = 6 hundreds 12 tens 9 ones

(d) 4 hundreds 0 tens 4 ones = 3 hundreds 10 tens 4 ones
= 3 hundreds 9 tens 14 ones.

Exercise 3.2

Borrow and fill in the blanks:

1. 3 tens 2 ones = 2 tens ..... ones.

T	O
3	2

→

T	O
2	
~~3~~	12

APC BOOKS

2. 2 hundreds 5 tens 8 ones = 1 hundred ..... tens 8 ones.

H	T	O
2	5	8

→

H	T	O
1		
~~2~~	15	8

3. 1 hundred 3 tens 2 ones = ... tens 2 ones.

H	T	O
1	3	2

→

H	T	O
0		
~~1~~	13	2

4. 7 hundreds 2 tens 9 ones = ... hundreds 12 tens 9 ones.

5. 7 hundreds 3 ones = 6 hundreds ..... tens 3 ones
= 6 hundreds ..... tens 13 ones.

SUBTRACTION (With borrowing)

Subtraction of 3-digit numbers

Example 1. Subtract 365 from 783.

Solution.

Subtract the ones:

We cannot subtract 5 ones from 3 ones.

So we break tens into ones.

8 tens 3 ones = 7 tens 13 ones

13 ones – 5 ones = 8 ones

	H	T	O
		7	13
	7	~~8~~	~~3~~
–	3	6	5
			8

Subtract the tens:

7 tens – 6 tens = 1 ten

	H	T	O
		7	13
	7	~~8~~	~~3~~
–	3	6	5
		1	8

Subtract the hundreds:

7 hundreds – 3 hundreds = 4 hundreds

∴ 783 – 365 = 418

	H	T	O
		7	13
	7	~~8~~	~~3~~
–	3	6	5
	4	1	8

APC BOOKS

Example 2. Subtract 426 from 913.

Solution. **Subtract ones:**

We cannot subtract 6 ones from 3 ones.

So we break tens into ones.

1 ten 3 ones = 0 tens 13 ones

13 ones – 6 ones = 7 ones

	H	T	O
		0	13
	9	1	3
–	4	2	6
			7

Subtract tens:

We cannot subtract 2 tens from 0 tens.

So we break hundreds into tens.

9 hundreds 0 tens = 8 hundreds 10 tens

10 tens – 2 tens = 8 tens

	H	T	O
		10	
	8	0	13
	9	1	3
–	4	2	6
		8	7

Subtract hundreds:

8 hundreds – 4 hundreds = 4 hundreds

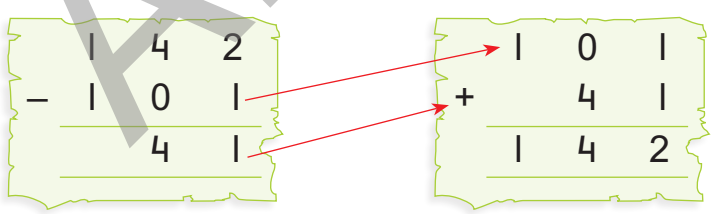
∴ 913 – 426 = 487

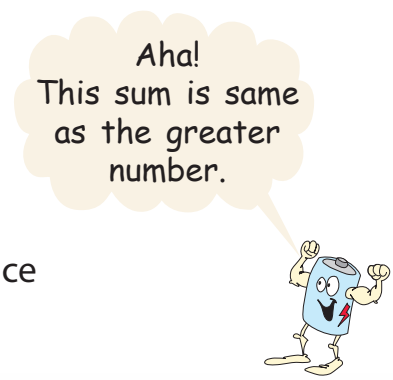
In short we put it as under:

	H	T	O
		10	
	8	0	13
	9	1	3
–	4	2	6
	4	8	7

CHECKING SUBTRACTION WITH ADDITION

Observe the following:

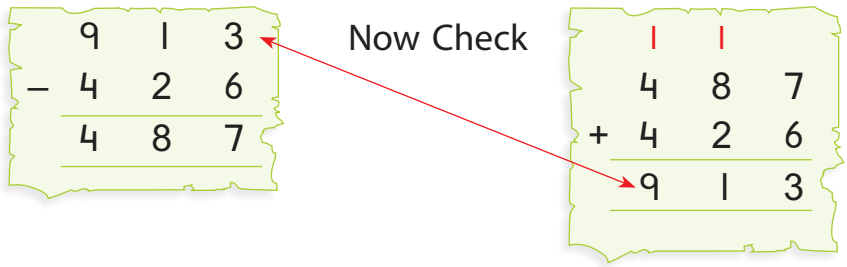




Therefore, you can check your answer by adding difference to the smaller number.

APC BOOKS

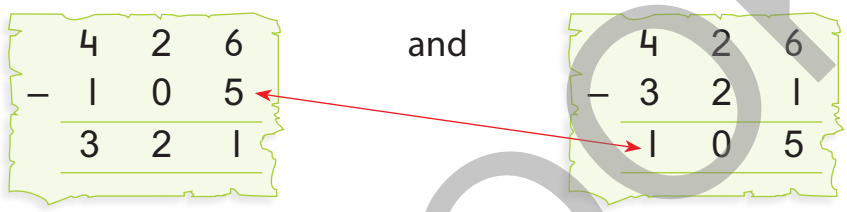
Let us take one more example,



Since we obtained the same answer, our answer is correct.

CHECKING SUBTRACTION WITH SUBTRACTION

Observe the following:



You can check your answer by subtracting the difference from the greater number.

Example 3. Subtract 389 from 600.

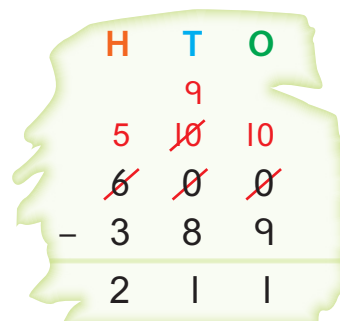
Solution. We cannot subtract 9 ones from 0 ones, so we borrow 1 ten. Here, there is no ten, so first we borrow 1 hundred or 10 tens, leaving behind 5 hundreds. From 10 tens, we borrow 1 ten or 10 ones, leaving behind 9 tens.

Now 10 ones – 9 ones = 1 one

and 9 tens – 8 tens = 1 ten

5 hundreds – 3 hundreds = 2 hundreds

$\therefore$ 600 – 389 = 211



Exercise 3.3

Fill in the blanks:

1. 2 hundreds 8 tens 3 ones – 4 tens 8 ones

   = 2 hundreds 7 tens ..... ones – 4 tens 8 ones

   = 2 hundreds 3 tens ..... ones.

APC BOOKS

2. 5 hundreds 2 tens 8 ones – 3 hundreds 8 tens 3 ones

= 4 hundreds ..... tens 8 ones – 3 hundreds 8 tens 3 ones

= 1 hundred ..... tens ..... ones.

Subtract:

	H	T	O
3.	5	3	2
	– 2	0	4

	H	T	O
4.	6	4	3
	– 3	2	8

	H	T	O
5.	7	5	2
	– 4	3	9

	H	T	O
6.	8	7	6
	– 2	5	7

7.	7	3	4
	– 4	2	8

8.	6	4	6
	– 3	0	9

9.	8	5	3
	– 4	2	8

10.	5	8	3
	– 2	6	6

11.	6	4	0
	– 3	8	6

12.	6	3	7
	– 3	5	9

13.	5	0	3
	– 2	7	6

14.	4	0	0
	– 1	9	3

Subtract and check your answer:

15.	9	5	4
	– 8	6	7

16.	8	7	6
	– 4	8	8

17.	6	3	0
	– 4	8	4

18.	4	0	3
	– 2	2	5

Fill in the boxes:

19.

	2	☐	5
+	4	3	☐
	☐	2	4

20.

	5	8	☐
–	2	☐	3
	☐	2	8

21.

	3	☐	2
–	☐	5	9
	1	5	☐

APC BOOKS

ESTIMATING THE DIFFERENCE

We have learnt the method of rounding to tens and hundreds and then estimating the sum. Here we shall apply the same rule to estimate the difference.

Example 1. Round off to tens and then estimate the difference:

(a) 53 – 29 (b) 535 – 412

Solution.

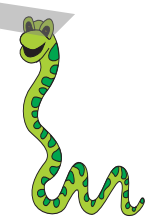
(a) 53 is rounded to 50.

29 is rounded to 30.

∴ Estimated difference = 50 – 30

= 20

Be careful in rounding up/down.



(b) 535 is rounded to 540.

412 is rounded to 410.

∴ Estimated difference = 540 – 410

= 130

Example 2. Round off to hundreds and find the difference of 344 and 793.

Solution.

344 is rounded to 300.

793 is rounded to 800.

∴ Estimated difference = 800 – 300

= 500

Subtract smaller number from larger one.

Exercise 3.4

1. Round off to tens and then find the estimated difference:

(a) 89 – 53 (b) 32 – 18 (c) 312 – 96

2. Round off to hundreds and then find the estimated difference:

(a) 429 – 282 (b) 561 – 444

APC BOOKS

WORD PROBLEMS

Like addition, the concept of subtraction is used in many day-to-day problems. Let us study the following examples.

Example 1. There are 5397 bags of wheat in a godown. If 3075 bags are taken out, how many bags will remain in the godown? Write the number sentence.

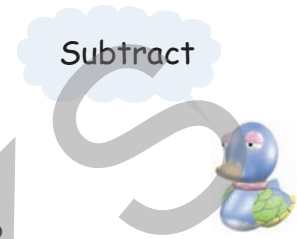
Solution.

Number of bags in the godown = 5397

Number of bags taken out = − 3075

Remaining bags = 2322

Number sentence: 5397 − 3075 = 2322



Example 2. At a World Book Fair, a bookseller sold 487 books on the opening day. He sold 189 fewer books the next day. How many books were sold the next day?

Solution.

			17	
		3	~~7~~	17
Books sold on the first day	=	~~4~~	~~8~~	~~7~~
Fewer books sold	= −	1	8	9
Books sold next day	=	2	9	8

Exercise 3.5

1. Shekhar bought 289 bottles of soft drinks. On his birthday 173 bottles were used and remaining bottles were used next day on his sister's birthday. How many bottles were used on his sister's birthday? Write the number sentence.
2. My mother baked 537 biscuits for the school fete. 185 were not sold. How many biscuits were sold?
3. Jatin has 3596 stamps. He collected 1243 stamps this year. How many stamps did he have till last year?
4. Aayush bought 5788 pairs of shoes in January for his shop. On 1st February he had 1475 pairs left. How many pairs did he sell in January?

5. Vicky and Ritu collected a total of 451 coins. Ritu alone collected 285 coins. How many coins did Vicky collect?

APC BOOKS

6. Anu bought 200 bottles of milk in the months of April and May. She bought 98 bottles in April. How many bottles did she buy in May?

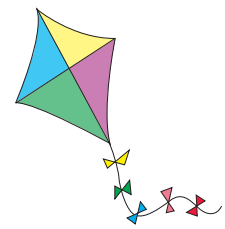
7. There are 430 seats in a cinema hall. On one day 85 seats were found vacant in a show. How many people saw the movie in that show? Write the number sentence.

8. There are 236 students in a school. The number of boys is 128. How many girls are there?

9. Tinu read 829 pages of her story book. The book contains 978 pages. How many pages are still to be read?

10. In a cricket match our team scored 435 runs and Australian team scored 146 runs less than our team. How many runs did Australian team score?

11. There were 205 kites in a shop. The shopkeeper sold 167 kites. How many are still to be sold?



12. Out of 425 books in a library, 268 books were issued to the students. How many books are still in the library?

13. By how much is 400 greater than 307?

14. By how much is 298 less than 325?

15. Kanu had ₹ 183 with him. He bought a book for ₹ 59. Estimate the amount left with him.

    [Hint: Round off to tens]

FRAMING WORD PROBLEMS (STORY WRITING)

Different word problems can be found for a single subtraction fact.
For example, 48 – 12 = ? can stand for any one of the following:

(a) There are 48 students in a class. 12 of them are girls, how many students are boys?

(b) Sahil bought 48 chocolates. He gave 12 chocolates to his sister. How many chocolates does he have now?

(c) Rahul invited 48 friends on his birthday. He had 12 ice creams for them. How many more ice creams does he need, if each friend gets one ice cream?

APC BOOKS

Exercise 3.6

Form a simple word problem for each of the following:

1. 30 – 14 = ?
2. 58 – 36 = ?
3. 96 – 15 = ?
4. 78 – 16 = ?
5. 50 – 45 = ?
6. 113 – 98 = ?

WRITING A NUMBER IN DIFFERENT WAYS

Any number can be expressed in different ways by performing addition or subtraction between two numbers.

For example, 48 = 38 + 10 = 28 + 20 = 18 + 30 = 36 + 12
= 50 – 2 = 60 – 12 = 80 – 32 = 54 – 6 etc.

Note: A number can also be expressed by performing multiplication between two numbers.

For example, 48 = 24 × 2 etc.

ADDITION AND SUBTRACTION TOGETHER

Example 1. Find 134 – 79 + 286.

Solution.

First, subtract 79 from 134

$$\begin{array}{r} 134 \\ -\ 79 \\ \hline 55 \end{array} \qquad \begin{array}{r} 55 \\ +\ 286 \\ \hline 341 \end{array}$$

Add the difference obtained to 286

$\therefore$ 134 – 79 + 286 = 341

Example 2. Solve: 289 + 135 – 374.

Solution.

First, add 289 to 135

$$\begin{array}{r} 289 \\ +\ 135 \\ \hline 424 \end{array} \qquad \begin{array}{r} 424 \\ -\ 374 \\ \hline 50 \end{array}$$

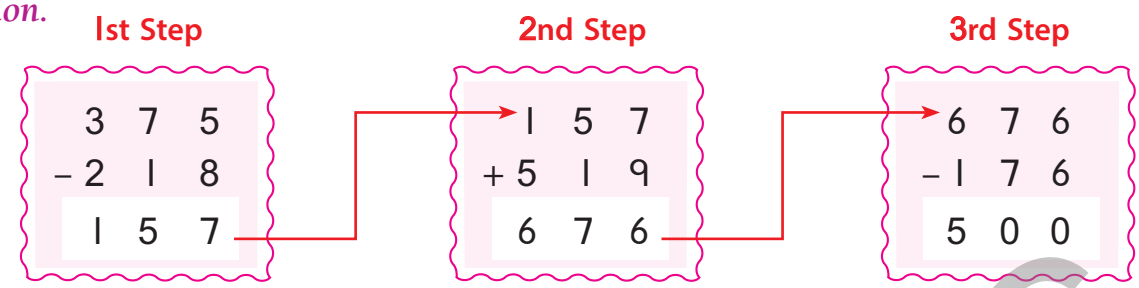
Subtract 374 from the sum obtained

$\therefore$ 289 + 135 – 374 = 50

APC BOOKS

Example 3. Simplify: 375 – 218 + 519 – 176.

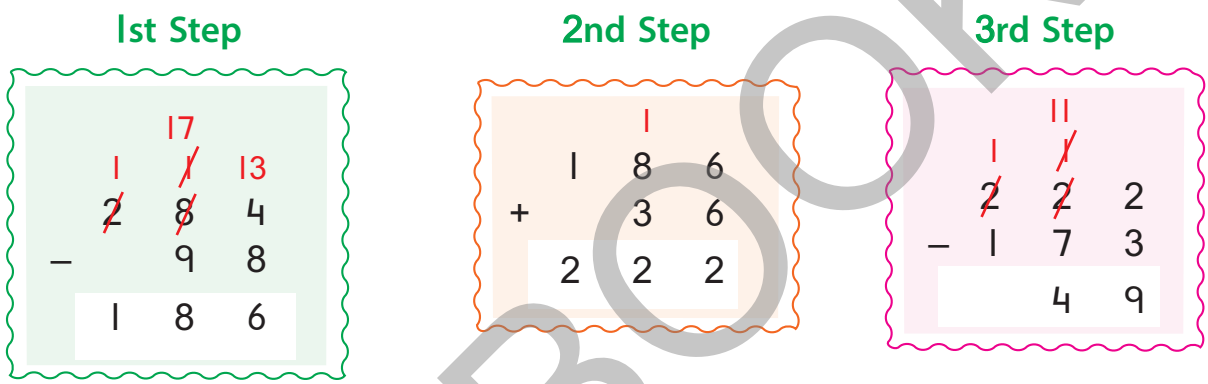
Solution.



$\therefore$ 375 – 218 + 519 – 176 = 500

Example 4. Find: 284 – 98 + 36 – 173.

Solution.



PROPERTIES OF SUBTRACTION

1. Order property

   We know that

   $$\begin{array}{r} 249 \\ -\ 200 \\ \hline 49 \end{array}$$

   Can you subtract 249 from 200? No

   Therefore, **we cannot change the order of numbers while subtraction.**

2. The difference of a number from itself is always 0.

   9 – 9 = 0, 291 – 291 = 0

3. When we subtract 0 from a number, we get the same number as difference.

   59 – 0 = 59, 1039 – 0 = 1039

APC BOOKS

Exercise 3.7

1. Fill in the blanks:

   (a) 53 – 53 = ...

   (b) 756 – 0 = ...

   (c) 13 – ..... = 0

   (d) ..... – 0 = 81

2. Simplify the following:

   (a) 523 – 231 + 175

   (b) 246 + 479 – 144

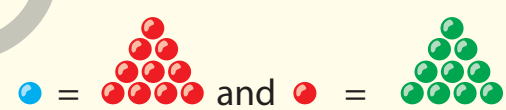
   (c) 163 + 685 – 374

   (d) 876 – 285 + 317

Lab Activity

We can verify 783 – 365 = 418 in mathematics lab as follows:

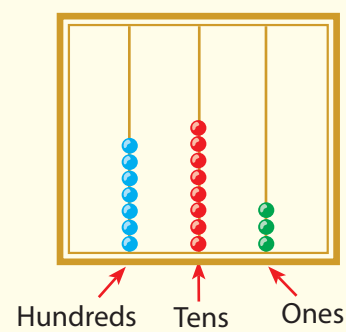
Take some green, red and blue beads. Let 1 green, 1 red and 1 blue bead represent 1 one, 1 ten, and 1 hundred respectively. We know that 1 ten = 10 ones and 1 hundred = 10 tens, so



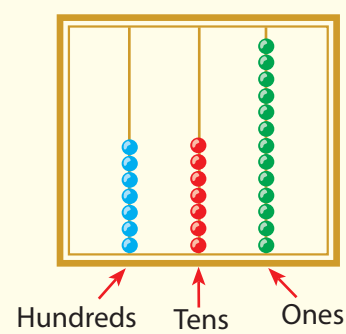
1 blue bead = 10 red beads

1 red bead = 10 green beads

Take an abacus. To show the number 783 on it, fix 3 green beads on ones stick, 8 red beads on tens stick and 7 blue beads on hundreds stick.

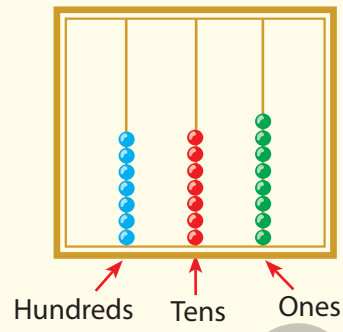


To subtract 365 from 783 we need to remove 5 green beads from ones stick. But it has only 3 green beads. We cannot take out 5 beads from 3 beads. So take out one red bead from tens stick, leaving behind 7 red beads. In lieu of this, put 10 more green beads in ones stick making a total of 13 green beads.



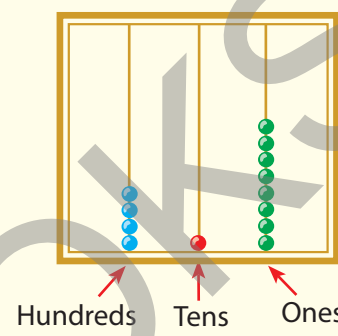
APC BOOKS

Now remove 5 green beads from 13 beads.



Again remove 6 beads from red beads and then 3 beads from 7 blue beads. The number shown on the last abacus is 418.

$\therefore$ 783 – 365 = 418



Mental Problems

1. Subtract and write the answer in the space provided:

(a) 45 – 12 = ... (b) 87 – 15 = ...

(c) 63 – 22 = ... (d) 59 – 34 = ...

(e) 93 – 18 = ... (f) 198 – 42 = ...

(g) 175 – 68 = ... (h) 1000 – 1 = ...

(i) 999 – 444 = ... (j) 3526 – 3000 = ...

(k) 4290 – 290 = ...

I will first subtract tens and then ones.
45 - 12 = 45 – 10 – 2
= 35 – 2
= 33

2. Estimate the difference and fill in the blanks:

(a) 48 – 31 = ...

(b) 73 – 28 = ...

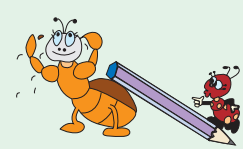
(c) 88 – 62 = ...

(d) 428 – 181 = ...

(e) 587 – 270 = ...

Round off to tens.

Round off to hundreds.



APC BOOKS

3. Fill in the blanks:

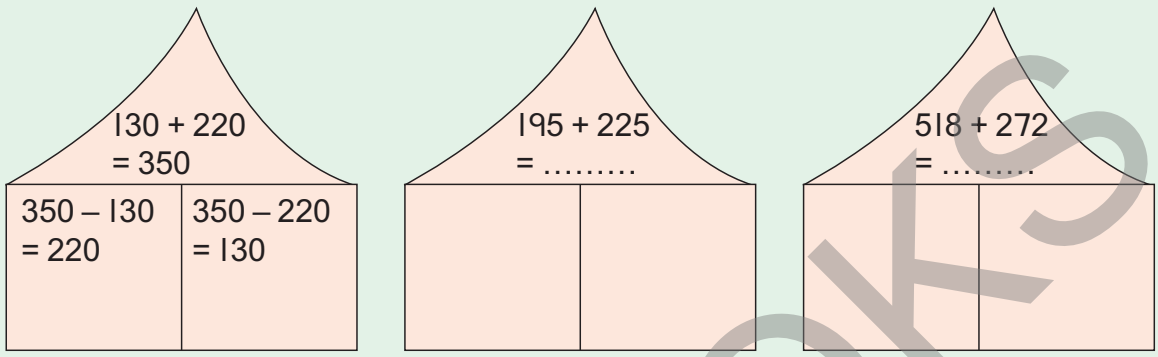
(a) 400 + 39 – 9 = ...

(b) 529 – 9 + 80 = ...

(c) 437 – 30 – 7 = ...

(d) 371 – 71 + 25 = ...

4. Subtraction is related to addition. Make two subtraction sums from a given addition sum. First one is done for you.



APC BOOKS

Chapter Test

Time: 30 minutes **M.M. 10**

Note: *Each question is of 2 marks.*

Space for rough work

1. Find the difference:

(a)
$$\begin{array}{r} 3\ 7\ 4\ 9 \\ -\ 1\ 6\ 2\ 5 \\ \hline \\ \hline \end{array}$$

(b)
$$\begin{array}{r} 7\ 3\ 2\ 0 \\ -\ 3\ 9\ 1\ 1 \\ \hline \\ \hline \end{array}$$

2. Find the difference and check your answer:

(a)
$$\begin{array}{r} 9\ 9\ 9\ 8 \\ -\ 1\ 2\ 2\ 9 \\ \hline \\ \hline \end{array}$$

(b)
$$\begin{array}{r} 7\ 0\ 0\ 0 \\ -\ 3\ 5\ 5\ 5 \\ \hline \\ \hline \end{array}$$

3. Fill in the placeholders.

(a)
$$\begin{array}{r} 4\ 8\ 2\ 9 \\ -\ 3\ \square\ \square\ 4 \\ \hline \square\ 5\ 9\ \square \\ \hline \end{array}$$

(b)
$$\begin{array}{r} 6\ \square\ 2\ 9 \\ -\ \square\ 4\ 3\ \square \\ \hline 6\ 3\ \square\ 6 \\ \hline \end{array}$$

4. Fill in the blanks:

(a) If 490 – 120 = 370, then 370 + __ = 490.

(b) 16 less than 36 is __.

5. Do the following:

(a) Find two numbers whose sum and difference is 6.

(b) What should be added to 129 to get 140?

ARC BOOKS

Model Paper-1 (Chapters 1–3)

Time: 1 hour **M.M. 20**

Note: *Questions* (1–4) *are of* 1 *mark each, questions* (5–7) *are of* 2 *marks each, questions* (8–9) *are of* 3 *marks each and question* 10 *is of* 4 *marks.*

Select the correct answer from the given options (1–4):

1. The number "Five thousand three hundred six" is
   (a) 5360 (b) 5036 (c) 5306 (d) 50306
2. 983 is the successor of
   (a) 984 (b) 982 (c) 981 (d) 985
3. 98 + 53 is not the same as
   (a) 76 + 75 (b) 75 + 76 (c) 77 + 84 (d) 90 + 61
4. 530 – 249 is
   (a) 281 (b) 381 (c) 291 (d) 391
5. Arrange the given numbers in descending order:

   3543, 3034, 3443, 3534, 3434

   ..... , ... , ... , ... , ... ,
6. Write the greatest number using all the digits 3, 0, 9 and 8 only once.
   .....
7. Write a story for 3056 + 2312 = ?
   .....
8. Add and write the sum on the space provided.
   (a) 4083 + 5316 = ... (b) 567 + 394 = ...
9. Subtract:
   (a) 3875 – 2603 = ... (b) 803 – 625 = ...
10. Fill in the missing numbers:

	...	3	...
+		8	...	5
...	5	0	4

Space for rough work

APC BOOKS