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MathsWiz

A course in Mathematics

BOOK 5

S.K. GUPTA
ANUBHUTI GANGAL

S. CHAND School

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MathsWiz

A course in Mathematics

Book 5

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Preface

MathsWiz, a series of nine textbooks for KG to class 8, is a course based on the National Curriculum Framework and the guidelines provided therein.

The content of the series is student-centred and activity-based with emphasis on developing problem-solving skills, encouraging the child to think creatively and work independently. The methodology facilitates the teacher, the student and the parent to ensure full involvement of the child in the classroom and at home.

All the mathematical concepts are presented in a very simple and easy-to-understand form. The concepts are explained by taking examples from our daily life situations. The examples and problems also make use of modern tools, gadgets and technology commonly used. An abundant use of visual tools such as diagrams, illustrations, cartoons, tables and charts makes learning fun and helps in greater retention. The approach helps create passion for mathematics in children rather than fear for the subject. It encourages them to enquire, explore and discover rather than only learn by rote.

Each book of the series is accompanied by an interactive **student CD** to help concept-building by showing its application in daily life. The CD also supplements the book content through visuals, interactive practice and additional information.

Teacher's Manuals with extensive teaching ideas and solutions are also available separately.

Web Support includes interactive tests, worksheets, term-wise updated papers, unit-wise test papers to support classroom teaching.

The salient features of the series are

- ***Warm Up*** for refreshing the concepts learnt earlier.
- ***Worksheets*** provide interactive and application-based activities.
- Extensive drilling, including ***Class Work***, ***MCQs***, with an integrated ***Chapter Test*** in each chapter.
- Term-wise ***Model Test Papers*** for better evaluation.
- ***Maths Lab Activities***, ***Fun Activities***, ***Projects*** etc. facilitate hands-on learning.
- ***Mental Maths*** to sharpen the mathematical skills.
- ***Higher Order Thinking Skill*** (***HOTS***) involves the learning of complex judgemental skills.
- ***Enrichment*** provides facts and encourages to think creatively.

We are thankful to the management and the editorial team of S. Chand And Company Pvt. Ltd., New Delhi, for help and support in the publication of the books of this series.

Suggestions and feedback for the improvement of this newly introduced series from the principals, teachers, students and parents would be most welcome. You may write in at **anubhutigangal@hotmail.com**

Authors

Contents

Special Features of the Series

To give a quick recap of the concepts learnt earlier in the form of questionnaires, activities, games etc.

Warm Up

To reinforce the understanding and help the child to master the new concepts

Class Work

Use the code. Colour the turtles.

(a)	Blue	–	first	(b)	Purple	–	fifth
(c)	Orange	–	seventh	(d)	Yellow	–	ninth
(e)	Green	–	second	(f)	Red	–	third
(g)	Black	–	eighth	(h)	Pink	–	tenth
(i)	White	–	fourth	(j)	Brown	–	sixth

To enhance analytical and problem solving skills

HOTS

1. **I am a 2 digit number.**
2. **I am less than 50.**
3. **Count in sixes and there I am !**
4. **Whenyoudividemytensdigitbymyonesdigit you get 2. Who am I?**

Designed as per the CBSE guidelines to develop conceptual understanding

Maths Lab Activity

To record the number of edges and corners obtained after folding a rectangular sheet of paper from each corner one by one.

Procedure:

Step 1 Take a rectangular sheet of paper and observe that it has four corners. Mark them as 1, 2, 3, 4. Clearly it has 4 edges.

Step 2 Fold one of the corners of the rectangular sheet and observe the new shape of the sheet.[Fig. 7(b)]

Step 3 Count the number of edges and corners of the new shape of the sheet.

Step 4 Record the observations.

Step 5 Fold the second corner of the sheet and observe the new shape of the sheet. [Fig. 7(c)]

Step 6 Count the number of edges and corners of the new shape after folding two corners. Similarly count the number of corners and edges after folding 3rd and 4th corner.

Fig. 7(a) Fig. 7(b) Fig. 7(c)

Provides a cumulative assessment of understanding of the chapter content

Chapter Test

Tick (✓) the correct answer.

1. $\frac{5}{2}$ **of 1 h 10 min is**
   (a) 55 min ◯ (b) 50 min ◯ (c) 60 min ◯ (d) 65 min ◯
2. **What time does the clock show?**
   (a) 5:07 ◯ (b) 5:35 ◯
   (c) 7:05 ◯ (d) 7:24 ◯
3. **Which one of the following is wrong?**
   (a) 2 h 15 min = 135 s ◯ (b) 3 h = 180 min ◯
   (c) 2 weeks 4 days = 18 days ◯ (d) 15 months = 1 year 3 months ◯

Gives extension materials exposing the children to historical and new exploration of mathematics to widen their horizon of mathematical knowledge

Enrichment

Lattice Multiplication Method

Find the product of 27 and 34.

Step 1: Draw a grid (2 rows and 2 columns) as shown in (a). Write one factor on top and the other on the right as shown. Also draw the diagonals (shown in blue) thus completing the lattice as in (b).

(a) (b)

To develop skills in rapid calculations

Mental Maths

Fill in the blanks and boxes:

1. 3 sixes = 2 _____
2. 9 times 8 + 8 = _____ tens
3. If ◯ = 6, then ◯◯◯◯◯◯ = _____ = 4 × _____
4. Write the next four numbers in the given skip counting pattern.
   55 50 ◯◯◯◯
5. ◯ × 10 = 0
6. 9 × 9 = _____ ones

Creatively designed using the real-world scenarios involving practical applications and evaluation of knowledge and skills

Worksheet

1. **Put the letters in each of the following in the correct order to get a number name and then write the number beside it.** Subject Link → English

	Number name	Number
(a) E N E T N I E N		
(b) R Y F O T · I F V E		
(c) R E T H E		
(d) Y W E T N T		

Provides continuous reinforcement of previously studied concepts

Quick Review

1. Place value of 5 in 3750 is _____ .
2. Compare 4392 and 4932. Which is greater?
3. **Write in standard form:**
   4000 + 30 + 9 = _____ .

To warn against the likely mistakes and misconceptions

Maths Alert !

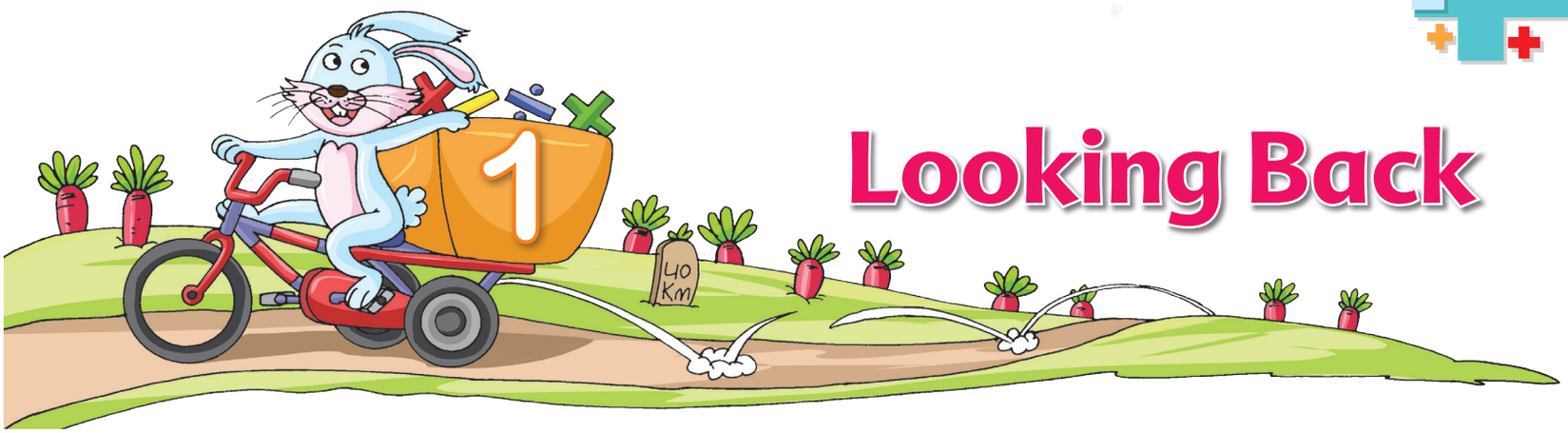
Only equal parts make a fraction. A whole should be divided into equal parts to name fractions. The parts in the following pictures do not make fractions.

To deal with the life skills and values attained by the students like self-awareness, empathy, decision making, problem solving, interpersonal relationships, emotions etc.

Value Based Question

5. The money collected from the school winter carnival goes to an orphanage. For the carnival, 3 girls made quite a lot of effort and Divya sold 234 tickets, Kiran sold 169 tickets and Arpita sold 245 tickets. How many tickets did the 3 girls sell altogether? What moral value is shown by the girls?

[Value Based Question]



Looking Back

NUMERATION AND NOTATION

Vocabulary

- Counting Numbers
- Whole Numbers
- Numerals
- Periods
- Expanded Form
- Dividend
- Divisor
- Quotient

1. The following numbers are the **counting numbers**.

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, ...

When you add 0 to the list of counting numbers, you obtain the **whole numbers**.

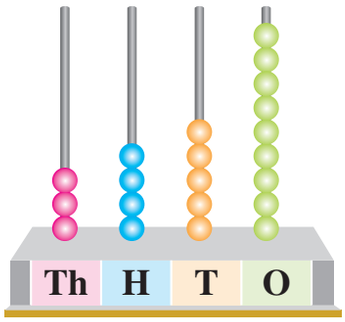
0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, ...

2. Names or symbols for numbers are called **numerals**.

3. The diagram below shows the first few whole numbers on a **number line**.

4. The following are three ways of showing the number 3459.

Abacus

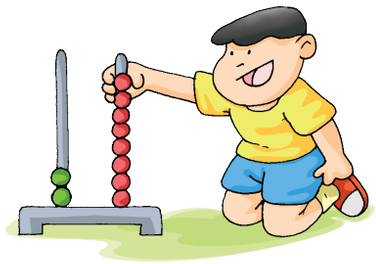


Place Value Chart

Th	H	T	O
3	4	5	9

Expanded Form

3000 + 400 + 50 + 9



5. Indian place value chart

Lakhs			Thousands		Ones	
Ten Lakhs 10 00 000	Lakhs 1 00 000	Ten Thousands 10 000	Thousands 1 000	Hundreds 100	Tens 10	Ones 1
7 digits	6 digits	5 digits	4 digits	3 digits	2 digits	1 digit

The **first three** digits from the right make **ones** or the **units** period, the **next two** make **thousands** period and the **next two** make **lakhs** period.

We write the numerals by leaving some space or by putting a comma between each period.

While reading a number, the digits in the same period are read together and the name of the period (except ones) is read along with them.

Numeral	Written as	Read as
2653	2 653 or 2,653	Two thousand six hundred fifty-three
42576	42 576 or 42,576	Forty-two thousand five hundred seventy-six
237409	2 37 409 or 2,37,409	Two lakh thirty-seven thousand four hundred nine

Maths Alert!

The word 'and' is not used in reading and writing number names of the whole numbers.

EXERCISE 1A

1. What is the smallest counting number?
2. What is the smallest whole number?
3. **Complete the following table.**

Type of Counting Numbers	Numbers From - to -	Smallest Number	Greatest Number
1-digit numbers	1 – 9	1	9
2-digit numbers	10 – 99	10	99
3-digit numbers			
4-digit numbers			
5-digit numbers			
6-digit numbers			

4. **Write each number name in numerals.**

Number Name	Numeral
(a) Thirteen thousand five hundred eighty-six	13,586
(b) Fifty-four thousand nine hundred seven	
(c) Eighty thousand seven hundred	
(d) Sixty thousand five	
(e) Five lakh forty-three thousand nine hundred fifty-six	
(f) Eight lakh ninety thousand three hundred	

5. **Write each of the following numbers in words.**

(a) 59,380 (b) 3,05,784 (c) 9,00,008 (d) 9,99,999

6. **Counting by fives write the numbers from**

(a) 8723 to 8743 (b) 80989 to 81014

7. **What is the place value of**

(a) 7 in 57930? (b) 8 in 823500? (c) 6 in 63102? (d) 5 in 24053?

8. **Arrange in ascending order.**

(a) 80808, 80088, 88008, 80008, 88808 (b) 68750, 9165, 126560, 59713, 265930

9. **Arrange in descending order.**

(a) 76845, 87465, 67854, 86754 (b) 420000, 427245, 423675, 421032

10. **What is the difference between the place values of the**

(a) two sevens in the 70674? (b) two eights in 878513?

11. **Write the numeral for the greatest and the smallest possible numbers made from each of the following groups of digits.**

(a) 4, 3, 7, 0, 9 (b) 8, 0, 6, 2, 3, 7

ADDITION AND SUBTRACTION

In the following exercise, we will practice and recapitulate the concepts of addition and subtraction of numbers.

EXERCISE 1B

1. **Find the sum of**

(a) 80396, 6194, 876, 75928 (b) 66578, 9728, 16736, 6500

(c) 73257, 4372, 89499, 5876, 62903 (d) 99142, 5364, 27943, 12397, 58430

2. **Fill in the blanks.**

(a) 54637 + 0 = _____ (b) 21739 + 4103 = 4103 + _____

(c) 85619 + _____ = 85619 (d) _____ + 65980 = 65980 + 16307

3. For a primary health centre, ₹ 28,680 were given in the first year. In the second year, ₹ 5,850 more than the first year were given. In the third year, ₹ 4,700 more than the amount given in the second year were given. What was the total amount given to the centre in three years?

4. **Find the difference.**

(a) 9 8 3 7 6 − 8 9 6 6 7 (b) 3 8 4 6 9 1 − 2 7 9 5 8 3 (c) 6 0 0 7 5 8 − 8 7 9 6 1 (d) 3 2 1 0 9 7 − 1 8 8 6 8 7

5. What must be added to 16,003 to make it equal to 1,25,000?

6. **Fill in the blanks.**

(a) 58437 – _____ = 58437 (b) 30029 – 0 = _____

(c) _____ – 0 = 23568 (d) 52320 – _____ = 52,320

7. Geeta deposited ₹ 30,000 in her bank account. Later, she withdrew ₹ 18,237 from it. How much money is there in her account now?

8. A sweet shop received the following amounts of money on Monday, Tuesday, Wednesday and Thursday respectively: ₹ 1507.36, ₹ 2003.58, ₹ 1923.91 and ₹ 2019.87. What was the total sale of the shop in those four days?

MULTIPLICATION

In the following exercise, we will practice and recapitulate the concepts of multiplication of numbers.

EXERCISE 1C

1. **Write the simplest multiplication statement for the following.**

(a) 4 + 4 + 4 + 4 + 4 = 5 × 4 (b) 5 + 5 + 5 + 5 + 5 + 5

(c) 0 + 0 + 0 + 0 (d) 137 + 137 + 137 + 137

2. **Multiply:**

(a) 510 by 80 (b) 3900 by 50 (c) 53 by 10, 100, 1000, 10,000

3. **Fill in the boxes.**

(a) 879 × 1 = ☐ (b) ☐ × 1 = 0

(c) 58 × 729 = ☐ × 58 (d) 59246 × ☐ = 0

4. **Find the product.**

(a) 654 × 376 (b) 847 × 9570 (c) 5608 × 298

5. A factory produces 470 toy-cars a day. How many cars did it produce in the year 1988, if there were 86 holidays in that year?

6. A factory packs 144 ball-pens in a carton. They have 395 cartons to be filled. They have already made 57,000 ball-pens. Do they need to make more ball-pens in order to fill all the cartons? If yes, how many more ball-pens are to be made, else find out how many extra ball-pens are lying in the factory.

DIVISION

Observe the following.

$$\begin{array}{r} 7 \leftarrow \text{Quotient} \\ 4\overline{)\,29} \leftarrow \text{Dividend} \\ -28 \\ \hline 1 \leftarrow \text{Remainder} \end{array}$$

Divisor → 4

Check: **Divisor × Quotient + Remainder = Dividend**

$4 \times 7 + 1 = 29$

EXERCISE 1D

1. **Divide and check your answer.**

   (a) 360973 ÷ 42 (b) 196997 ÷ 50 (c) 274516 ÷ 63

   (d) 258277 ÷ 49 (e) 3958 ÷ 57 (f) 30059 ÷ 48

   (**Hint:** Use divisor × quotient + remainder = dividend)

2. The seating capacity of a cricket stadium is 12,320. The stadium has 11 stands in all with the same seating capacity. Find out the number of spectators, who can be seated in one stand.

3. About 13,200 babies are born in the world every hour. About how many are born in a minute?

4. **Which of the following are meaningless operations.**

   (a) $0 \div 5$ (b) $\frac{0}{17}$ (c) $21 \div (7 - 7)$

   (d) $8 \div 0$ (e) $(9 - 9) \div 32$

5. A girl knits 718 stitches. If there are 25 stiches in each row of knitting, how many complete rows have been knitted?

6. The product of two numbers is 71,424. If one number is 93, what is the other number?

Mental Maths

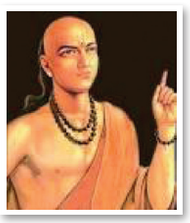
1. What is the place value of 7 in five lakh seventy-eight thousand forty-five? _____
2. By how much is one metre more than 33 cm? _____
3. The price of a television costing ₹ 28,950 is reduced by ₹ 3,750.
   What is the new price? _____
4. **Which is more?**
   ₹ 800 or (₹ 880 – ₹ 81) _____
5. If it is the morning of the 11th of July, how many complete days are left in July? _____
6. What is 200 times the sum of 127 and 33?
7. How much is 2,87,440 rounded off to the nearest ten-thousand?
8. **Which sign > or < will replace ☐ in the following?**
   550 ÷ 11 ☐ six nines.

Enrichment

KNOW YOUR NUMBERS

The number zero

- A **duck** is a score of zero in cricket. **Love** is a score of zero in tennis and badminton.
- When you subtract any number from itself, the result is zero. (**For example**, 7 – 7 = 0)
- **You cannot divide any number by zero.**
- The number zero was invented in India about 2200 years back. It was one of the biggest inventions in the history of numbers. By allowing the use of place value, it was made possible to write the same symbol, say 6 to represent different numbers, six, sixty, six hundred, six thousand etc. according to its place value.
- **Do you know about Aryabhata?**
  He was a mathematician and an astronomer. He stated that "from place to place each is ten-times preceding," which is the origin of modern decimal-based place value notation.
  Aryabhata utilized the concept of zero in his mathematical work, but he did not ascribe a symbol for it. The concept of the use of 'zero' or '0' comes from Aryabhata.



Large Numbers

Warm Up

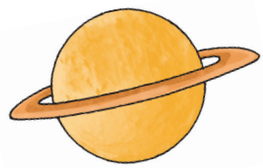
Jupiter is the largest planet in the solar system and the fifth planet from the sun. It is about 142984 kilometres wide at its equator.

Write this equatorial diameter of Jupiter in the following ways:

Standard form : _____

Expanded form : _____

Word form : _____



Jupiter

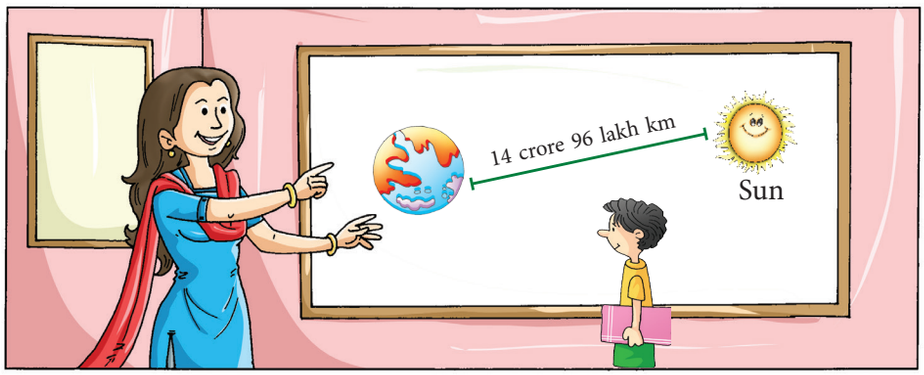
Also find the quotient of the place value of the digit at the ten thousands' place and the digit at the tens' place. _____

Vocabulary

- Crore
- Million
- Billion
- Trillion
- Periods

INTRODUCING LARGE NUMBERS

Sudhir read that the population of Delhi is about 2 crore 50 lakh. The sun is about 14 crore 96 lakh kilometres away from the earth. The population of India is more than 1 billion. He asked his teacher, "How much is a crore?" The teacher told him that a crore is a big number. If you could spend ₹ 100 a day for 250 years, you would not have spent a crore rupees.



You have learnt that the number 1,00,000 is the smallest 6-digit number. It is read as 1 lakh.

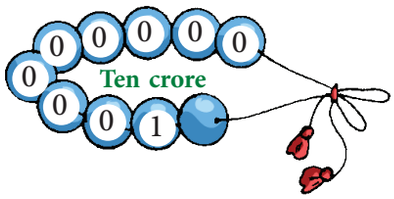
The greatest 6-digit number is →	9,99,999	→ Nine lakh ninety-nine thousand nine hundred ninety-nine
	+1	
	10,00,000	→ **10 lakh**
The greatest 7-digit number is →	99,99,999	→ Ninety-nine lakh ninety-nine thousand nine hundred ninety-nine
	+1	
	1,00,00,000	→ **100 lakh or 1 crore**

The number 1,00,00,000 (100 lakh) is the smallest 8-digit number. It is read as **1 crore**.

Similarly, 3,00,00,000 is read as 'three crore'.
7,00,00,000 is read as 'seven crore'.
9,00,00,000 is read as 'nine crore'.

9,99,99,999 is the greatest 8-digit number and is read as **'nine crore ninety-nine lakh ninety-nine thousand nine hundred ninety-nine.** If we add 1 to this number, we will get the **smallest 9-digit number.**

	9,99,99,999
	+1
The smallest 9-digit number →	10,00,00,000



10,00,00,000 is read as **'ten crore'.**

Similarly, 30,00,00,000 is read as 'thirty crore'.
50,00,00,000 is read as 'fifty crore'.
90,00,00,000 is read as 'ninety crore'.

99,99,99,999 is the greatest 9-digit number and is read as **'ninety-nine crore ninety-nine lakh ninety-nine thousand nine hundred ninety-nine.** If we add 1 to this number, we will get the **smallest** 10-digit number.

	99,99,99,999
	+1
The smallest 10-digit number →	1,00,00,00,000

1,00,00,00,000 is read as **'one arab'** or **'one hundred crore'**.

Mathswiz Book 5

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