New

COMPOSITE MATHEMATICS

Class 5

Enriched with:

- Maths Lab Activities, Fun Activities and Projects
- MCQs, Self Assessment Tests

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Web Support

1 Revision

Exercise 1

1. **Write the Roman numerals for each of the following Hindu-Arabic numerals.**
   (a) 18 (b) 26 (c) 33 (d) 39 (e) 44
   (f) 65 (g) 77 (h) 82 (i) 91 (j) 99

2. **Write the Hindu-Arabic numerals corresponding to each of the following.**
   (a) LXVI (b) XXXI (c) XLV (d) LXVIII (e) XC
   (f) XCVII (g) LXXIII (h) LXXXI (i) LXXIX (j) XCIV

3. **Observe the periods and write the number names.**
   (a) 5,37,412 (b) 88,088 (c) 636,905 (d) 1,01,001
   (e) 49,06,090 (f) 14,00,140 (g) 9,536,087 (h) 8,080,080

4. **Express the following numbers in figures, placing the commas at the right places.**
   (a) Twenty thousand twenty-two (b) Five lakh five thousand five hundred five
   (c) Four lakh forty thousand forty (d) Ten lakh thirty
   (e) Two hundred six thousand five hundred one
   (f) One million three hundred fifty-four thousand fifteen
   (g) Two million thirty-two thousand one hundred eight (h) Five million eight

5. (a) How many thousands make a lakh? (b) How many lakhs make a million?

6. **Find the place value of each of the digits in the following numbers.**
   (a) 28,967 (b) 5,30,194 (c) 52,67,908

7. **Answer the following.**
   (a) Find the difference between the place value and face value of 9 in 3,09,812.
   (b) Find the difference between the place values of 1 and 6 in the numbers 17,68,905.
   (c) Find the difference between the place values of two 7s in the numbers 72,08,763.

8. **Write each of the following numbers in expanded form.**
   (a) 80,656 (b) 4,05,077 (c) 18,65,540

9. **Write in short form.**
   (a) 2,00,000 + 8,000 + 6 = ...
   (b) 10,00,000 + 10,000 + 500 + 50 = ...
   (c) 20,00,000 + 3,00,000 + 4,000 + 4 = ...

10. Compare the numbers and put the correct symbol >, < or = in the placeholders.

(a) 10,056 ◯ 10,506 (b) 72,070 ◯ 70,270

(c) 5,50,505 ◯ 5,55,050 (d) 2,31,031 ◯ 2,31,310

(e) 90,999 ◯ 99,099 (f) 28,31,467 ◯ 28,34,167

11. (a) Write the smallest number of different digits formed by using the digits 5, 9, 3, 1 and 0.

(b) Write the greatest number of different digits formed by using the digits 2, 0, 8, 7 and 5.

12. (a) Write the smallest 4-digit number using the digits 6, 0 and 5 repeating 5 twice.

(b) Write the greatest 4-digit number using the digits 3, 6 and 9 repeating 6 twice.

13. Add:

(a) 37548 + 20976 + 11694 = _____

(b) 205968 + 34593 + 54876 = _____

(c) 1650784 + 439567 + 86249 = _____

(d) 283967 + 3032188 + 9793 = _____

14. The cost of a refrigerator is ₹ 48,748 and the cost of a motorcycle is ₹ 29,657more than that of a refrigerator. What is the total cost of both the refrigerator and the motorcycle?

15. In an election, 4,98,656 votes were found valid, 6768 votes were found invalid and 83,865 persons did not cast their votes. How many votes were registered in all?

16. Subtract:

(a) 510324 − 274569 = _____

(b) 801605 − 534578 = _____

(c) 32402026 − 17856966 = _____

17. The sum of two numbers is 102003. If one of them is 64597, find the other.

18. The difference between two numbers is 78489. If the larger number is 350102, find the smaller number.

19. Fill in the placeholders.

(a) 168574 × 10 = ☐ (b) 39623 × 100 = ☐

(c) 9785 × 1000 = ☐ (d) 207 × 300 = ☐

(e) 725 × 6000 = ☐ (f) 585 × 9000 = ☐

20. Find the following products.

(a) 23719 × 87 = _____

(b) 9647 × 238 = _____

(c) 8765 × 306 = _____

21. The cost of a mobile phone is ₹ 2786. What is the cost of 257 such mobile phones?

22. **In each of the following division sums, find the quotient and remainder.**

(a) 66863 ÷ 76 (b) 431035 ÷ 49 (c) 850658 ÷ 97

(d) 132507 ÷ 10 (e) 1046549 ÷ 100 (f) 235174 ÷ 1000

23. An aeroplane takes 17 hours to fly a distance of 15419 km. How far does it fly in one hour?

24. The cost of a fluorescent tube is ₹ 57. How many such tubes can be bought for ₹ 19893?

25. **List all the factors of:**

(a) 48 (b) 120

26. (a) Write the first five multiples of 7.

(b) Write the first four multiples of 18.

27. (a) Write down the first 20 odd numbers.

(b) Write down all even numbers between 70 and 90.

28. **Circle the prime numbers.**

2	5	9	13	17	21	27	31	37	43	49	54	63	68
69	71	73	75	77	83	85	87	91	93	95	97	99	

29. **Find the HCF of:**

(a) 32 and 56 (b) 90 and 105

30. **Find the LCM of:**

(a) 6 and 8 (b) 15, 20 and 30

31. **Fill in the missing numerals.**

(a) $\frac{9}{16} = \frac{27}{\square}$ (b) $\frac{9}{13} = \frac{\square}{78}$ (c) $\frac{11}{17} = \frac{\square}{51}$

32. **Find an equivalent fraction of $\frac{75}{90}$ with**

(a) numerator 15 (b) denominator 36 (c) numerator 35 (d) denominator 60

33. **Put the correct symbol > or < in the placeholders.**

(a) $\frac{5}{9} \square \frac{8}{9}$ (b) $\frac{19}{20} \square \frac{17}{20}$ (c) $\frac{3}{8} \square \frac{7}{8}$

(d) $\frac{7}{11} \square \frac{7}{15}$ (e) $\frac{15}{23} \square \frac{15}{19}$ (f) $\frac{21}{20} \square \frac{21}{29}$

34. **Arrange the following fractions in ascending order.**

(a) $\frac{2}{7}, \frac{3}{7}, \frac{6}{7}, \frac{5}{7}$ (b) $\frac{13}{19}, \frac{15}{19}, \frac{2}{19}, \frac{10}{19}$ (c) $\frac{1}{7}, \frac{1}{4}, \frac{1}{2}, \frac{1}{5}, \frac{1}{3}$ (d) $\frac{5}{6}, \frac{5}{10}, \frac{5}{8}, \frac{5}{11}, \frac{5}{9}$

35. **Add:**

(a) $\frac{3}{7} + \frac{2}{7}$ (b) $\frac{2}{9} + \frac{5}{9}$ (c) $\frac{3}{8} + \frac{4}{8}$ (d) $\frac{3}{11} + \frac{4}{11} + \frac{2}{11}$

36. Find the difference.

(a) $\frac{4}{5} - \frac{2}{5}$ (b) $\frac{5}{7} - \frac{2}{7}$ (c) $\frac{9}{13} - \frac{7}{13}$ (d) $\frac{11}{15} - \frac{7}{15}$

37. Convert each of the following mixed numerals into an improper fraction.

(a) $6\frac{5}{7}$ (b) $9\frac{3}{8}$ (c) $5\frac{11}{17}$

38. Convert the following improper fractions into mixed numerals.

(a) $\frac{107}{9}$ (b) $\frac{189}{11}$ (c) $\frac{212}{15}$

39. Express each of the following fractions as a decimal.

(a) $\frac{3}{10}$ (b) $\frac{7}{100}$ (c) $\frac{23}{100}$ (d) $\frac{9}{1000}$ (e) $\frac{79}{1000}$

40. Express each of the following as a fraction.

(a) 0.6 (b) 0.75 (c) 32.5 (d) 0.064 (e) 65.189

41. Write each of the following decimals in an expanded form.

(a) 18.956 (b) 402.05 (c) 59.003

42. Add the following.

(a)
₹ 256.83
₹ 308.75
+ ₹ 98.06
_____

(b)
₹ 80.96
₹ 119.18
+ ₹ 763.38
_____

(c)
₹ 100.28
₹ 9.96
+ ₹ 75.87
_____

43. Subtract:

(a)
₹ 787.85
− ₹ 94.92
_____

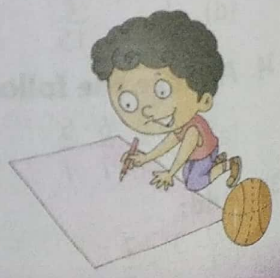
(b)
₹ 436.56
− ₹ 378.64
_____

(c)
₹ 926.39
− ₹ 834.68
_____

44. Sarita went to a confectionery store. She purchased biscuits worth ₹ 105.60, bread worth ₹ 19.75, juice tins worth ₹ 228.65 and toffees worth ₹ 8.80. She gave a 500-rupee note to the shopkeeper. What amount did she get back?

45. A cricket bat costs ₹ 376.65. What is the cost of 35 such bats?

46. Rahul bought 7 chocolates for ₹ 68.25. What is the cost of 1 chocolate?



47. Change:

(a) 2 hm 3 dam into metres (b) 8 m 56 mm into mm

(c) 3 quintals 65 kg into kg (d) 2 kL 5 L into L

(e) 15 L 730 mL into mL (f) 12 kg 220 g into g

48. Change:

(a) 5530 mm into m and cm (b) 2685 mL into L and mL

(c) 565 kg into quintals and kg (d) 8760 g into kg and g

49. Add:

(a) 68 kg 756 g and 86 kg 968 g (b) 57 m 68 cm and 75 m 86 cm

(c) 26 km 774 m and 84 km 668 m (d) 54 L 565 mL and 79 L 785 mL

50. Find the difference between:

(a) 21 m 12 cm and 7 m 84 cm (b) 105 km 413 m and 39 km 788 m

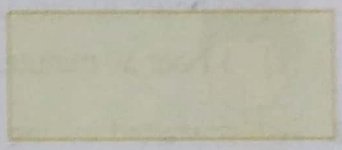
(c) 467 kg 205 g and 278 kg 457 g (d) 92 L 142 mL and 65 L 566 mL

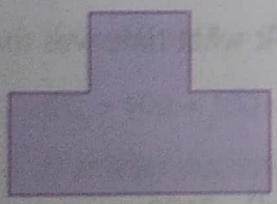
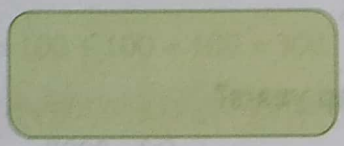
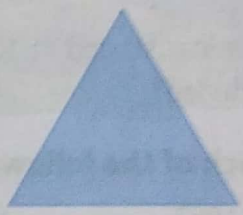
51. An electrician bought 500 metres of wire. He sold 43 m 75 cm of the wire to one customer and 158 m 50 cm of it to another customer. What length of wire is now left with him?

52. A tin full of pulses weighs 15 kg 200 g. If the empty tin weighs 1 kg 375 g, what is the net weight of the pulses contained in the tin?

53. An oil tanker has a capacity of 100 litres. If it contains 76 L 275 mL of oil, how much more oil it can have?

54. Which of the following figures are polygons?

(a)  (b)  (c) 

(d)  (e)  (f) 

55. Fill in the blanks.

(a) A ..... has no length, breadth or thickness.

(b) A ..... has only one end-point.

(c) A curve which does not intersect itself is called a ..... .

(d) A polygon is formed of ..... or more line segments.

(e) The diagonals of a ..... are always equal.

(f) ..... is the longest chord of a circle.

(g) The perimeter of a circle is called its ..... .

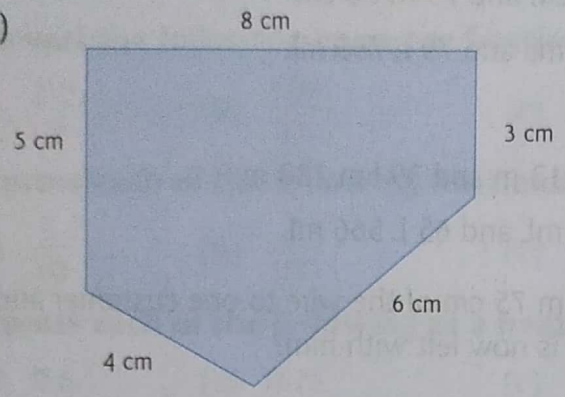
56. Draw a quadrilateral. Name it EFGH. Write the names of the four sides and two diagonals.

57. A circle has a radius of 12 cm. How long is its diameter?

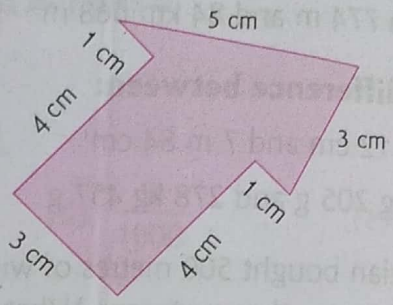
58. A circle has a diameter of 16 cm. How long is its radius?

59. Find the perimeter of each of the following figures.

(a)



(b)



60. Find the perimeter of:

(a) a rectangle of length = 9 m 35 cm and breadth = 6 m 45 cm

(b) a square of each side = 8 m 35 cm

61. What time will it be:

(a) 2 hours 30 minutes after 10 : 40 p.m.?

(b) 30 minutes before 12 noon?

(c) 1 hour 50 minutes after 11 : 20 a.m.?

(d) 10 hours after 3 a.m.?

62. Ashish started writing a letter at 9 : 25 a.m. He finished writing at 11 : 05 a.m. How much time did he take to write the letter?

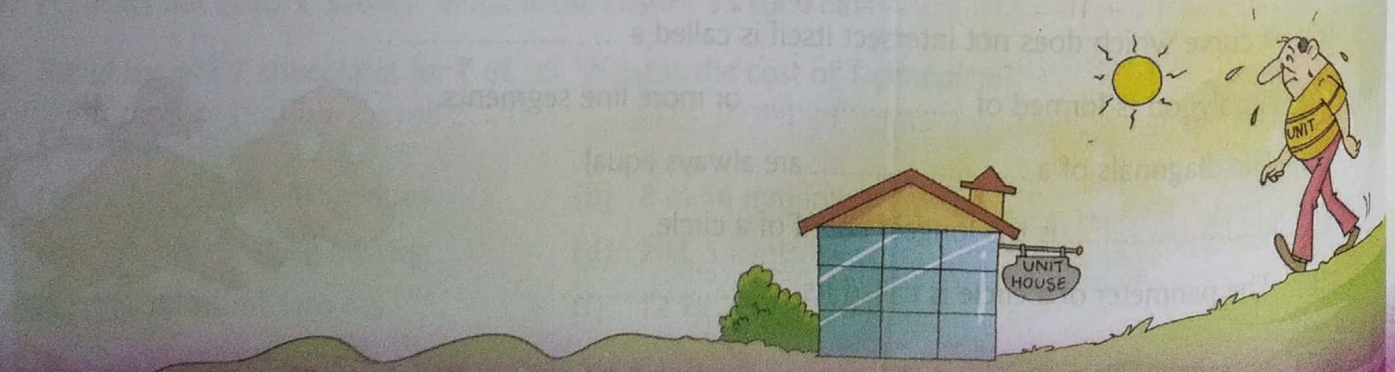
63. A seminar started at 10 : 10 a.m. and it lasted for 3 hours 35 minutes. At what time was the seminar concluded?

64. Which of the following are leap years?

(a) 1982 (b) 1992 (c) 2002 (d) 2100

65. If 2nd November in a certain year was Monday, what was the day on 11th December?

66. Kailash joined service in a company on 30th April, 2010 and worked for 42 days. On what date did he leave the job?



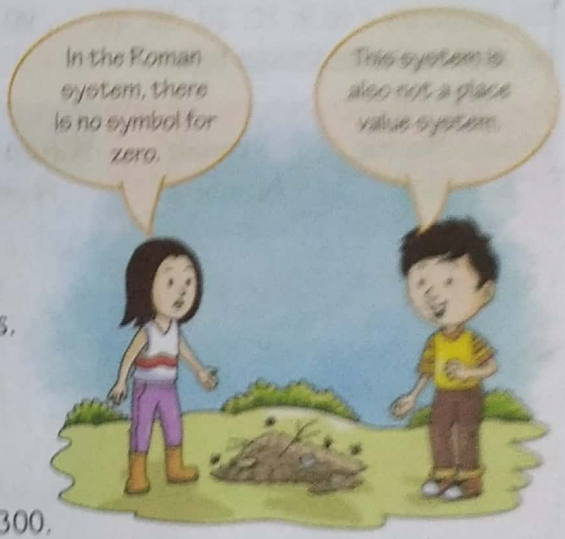
2 Roman Numerals

In Class 4, we have learnt reading and writing Roman numerals up to 100. In this section, we shall extend learning of reading and writing of these numerals up to 500.

We already know that there are seven basic symbols to write any Roman numeral.

These symbols with their corresponding Hindu-Arabic numerals are given below.

Roman Numeral	I	V	X	L	C	D	M
Hindu-Arabic Numeral	1	5	10	50	100	500	1000



Rules for forming Roman Numerals

Rule 1: Repetition of a Roman numeral means addition.

Caution: (1) Only I, X, C and M can be repeated.

(2) V, L and D cannot be repeated.

(3) No numeral can be repeated more than 3 times.

Examples: II = 1 + 1 = 2, III = 1 + 1 + 1 = 3,

XX = 10 + 10 = 20, XXX = 10 + 10 + 10 = 30,

CC = 100 + 100 = 200, CCC = 100 + 100 + 100 = 300.

Rule 2: A smaller numeral written to the right of a larger numeral is always added to the larger numeral.

Examples: VI = 5 + 1 = 6, VII = 5 + 1 + 1 = 7, VIII = 5 + 1 + 1 + 1 = 8,

XI = 10 + 1 = 11, XII = 10 + 1 + 1= 12, XIII = 10 + 1 + 1 + 1 = 13, XV = 10 + 5 = 15,

LX = 50 + 10 = 60, LXX = 50 + 10 + 10 = 70, LXXX = 50 + 10 + 10 +10 = 80,

CX = 100 + 10 = 110, CXX = 100 + 10 + 10 = 120,

CXXX = 100 + 10 + 10 + 10 = 130, CL = 100 + 50 =150.

Rule 3: A smaller numeral written to the left of a larger numeral is always subtracted from the larger numeral.

Caution: (1) V, L and D are never subtracted.

(2) I can be subtracted from V and X only.

Examples: IV = 5 − 1 = 4, IX = 10 − 1 = 9

(3) X can be subtracted from L and C only.

Examples: XL = 50 −10 = 40, XC = 100 − 10 = 90.

(4) C can be subtracted from D and M only.

Example: CD = 500 − 100 = 400.

Rule 4: When a smaller numeral is placed between two larger numerals, then it is always subtracted from the larger numeral immediately following it.

Examples: XIV = 10 + (5 − 1) = 14, XIX = 10 + (10 − 1) = 19,

CXIV = 100 + 10 + (5 − 1) = 114, CXC = 100 + (100 − 10) = 190.

Writing Roman Numerals for Hindu-Arabic Numerals up to 500

The numerals 1 to 9; 10, 20, 30, 40, ..., 90 and 100, 200, ..., 500 can be written in Roman numerals using the above rules as shown below.

Hindu-Arabic Numeral	Roman Numeral	Hindu-Arabic Numeral	Roman Numeral	Hindu-Arabic Numeral	Roman Numeral
1	I	10	X	100	C
2	II	20	XX	200	CC
3	III	30	XXX	300	CCC
4	IV	40	XL	400	CD
5	V	50	L	500	D
6	VI	60	LX		
7	VII	70	LXX		
8	VIII	80	LXXX		
9	IX	90	XC		

When we write any number in Roman numeral, we write it in expanded form first and then write the Roman numeral for the hundreds first, followed by the Roman numeral for the tens and then for the ones to the right of it.

Thus, we have:

(a) 89 = 80 + 9
= LXXX + IX
= LXXXIX

(b) 97 = 90 + 7
= XC + VII
= XCVII

(c) 146 = 100 + 40 + 6
= C + XL + VI
= CXLVI

(d) 199 = 100 + 90 + 9
= C + XC + IX
= CXCIX

(e) 258 = 200 + 50 + 8
= CC + L + VIII
= CCLVIII

(f) 335 = 300 + 30 + 5
= CCC + XXX + V
= CCCXXXV

(g) 410 = 400 + 10
= CD + X
= CDX

(h) 444 = 400 + 40 + 4
= CD + XL + IV
= CDXLIV

Similarly, we have:

(a) CIX = C + IX
= 100 + 9
= 109

(b) CLXIX = C + L + X + IX
= 100 + 50 + 10 + 9
= 169

(c) CXCIV = C + XC + IV
= 100 + 90 + 4
= 194

(d) CCXLVII = CC + XL + VII
= 200 + 40 + 7
= 247

(e) CDXXXVIII = CD + XXX + VIII
= 400 + 30 + 8
= 438

Exercise 2

1. Write the Roman numeral for each of the following Hindu-Arabic numerals.

(a) 78 (b) 189 (c) 247 (d) 196 (e) 365
(f) 399 (g) 449 (h) 495 (i) 344 (j) 466

2. Write the Hindu-Arabic numerals corresponding to each of the following.

(a) LXIX (b) XCI (c) CXLVI (d) CXCII
(e) CCCLXXXV (f) CCLIX (g) CCXCVI (h) CXCVI
(i) CCLXVI (j) CCCXIII

3. Which of the following are meaningless?

(a) IC (b) CI (c) IL (d) LI (e) VC
(f) CV (g) CXXXXVI (h) CCCCXVI (i) LLIV (j) CCV

4. Compare and put the correct symbol >, < or = in the placeholders.

(a) XCIII ☐ CXIII (b) CD ☐ CCCXC
(c) CCLIX ☐ CCXLI (d) CDXL ☐ CDLX
(e) CXLIX ☐ CLXXXIX (f) CCXXVI ☐ CCXXIX

Assessment 1

QUESTION BAG 1

(Objective Type Questions)

Tick (✓) the correct answer.

1. In Roman numerals, there are only ..... basic symbols.

   (a) 7 ☐ (b) 8 ☐ (c) 9 ☐ (d) 10 ☐

2. Roman numeral for the smallest 4-digit number is

   (a) X ☐ (b) C ☐ (c) M ☐ (d) D ☐

3. Which of the following numerals cannot be repeated?

   (a) I ☐ (b) V ☐ (c) X ☐ (d) C ☐

4. IX + XV + XX = ...

   (a) 35 ☐ (b) 40 ☐ (c) 44 ☐ (d) 45 ☐

5. I can be subtracted from

   (a) V ☐ (b) V and X ☐ (c) X and C ☐ (d) V, X and C ☐

6. Compare: CDXLIX ☐ CDLX

   (a) > ☐ (b) < ☐ (c) = ☐ (d) None of these ☐

7. XIX + XXIX = ...

   (a) XXXVIII ☐ (b) XLVII ☐ (c) XXXIX ☐ (d) XLVIII ☐

8. CC − CXXV = ...

   (a) LXV ☐ (b) LXXV ☐ (c) LXXXV ☐ (d) XCV ☐

QUESTION BAG 2

1. **Complete the following table.**

	Hindu-Arabic Numeral	Roman Numeral		Hindu-Arabic Numeral	Roman Numeral
(a)	198	.....	(b)	.....	CCXCVI
(c)	229	.....	(d)	350	.....
(e)	.....	CCCXLIX	(f)	389	.....
(g)	430	.....	(h)	.....	CDIV
(i)	495	.....	(j)	.....	CDXCIX

2. Fill in the blanks.

(a) Symbols ....., ... and ..... are never subtracted or repeated.

(b) X can be subtracted from ..... and ..... only.

(c) C can be subtracted from ..... and ..... only.

3. Cross (×) the Roman numerals which are not written correctly.

(a) XD (b) VX (c) CDXL

(d) CVX (e) CVV (f) ICC

(g) XLIX (h) LC (i) CCCXC

4. Write the following Roman numerals in ascending order.

(a) CXIX, XCIX, CXXI, CIX, CXX

(b) CCLX, CCXC, CCXX, CXC, CCXL

(c) CDLXIX, CDLXV, CDLXIII, CDXLV, CDLVIII

5. Solve and write the answer in Roman numerals.

(a) XCII – XV = ... (b) XLIX + XXXIX = ...

(c) LVII – XXIX = ... (d) LIV × VI = ...

(e) CVIII + CXLVI = ... (f) LXIX × VII = ...

3 Large Numbers
(UP TO TEN CRORES)

Introduction

In Class 4, we have studied up to 7-digit numbers.

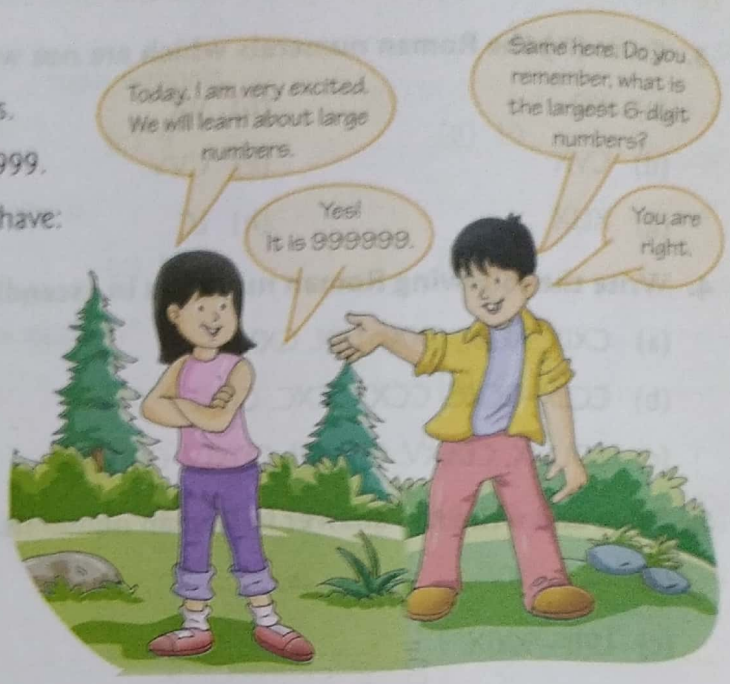
We know that the largest 7-digit number is 9999999.

Putting its digits in Indian Place Value Chart, we have:

TL	L	TTh	Th	H	T	O
9	9	9	9	9	9	9

So, we can read it easily as:

'Ninety-nine lakh ninety-nine thousand nine hundred ninety-nine'.



On adding 1 to 9999999, we get:

$$\begin{array}{r} 9\ 9\ 9\ 9\ 9\ 9\ 9 \\ +\quad\quad\quad\quad\quad\quad 1 \\ \hline 1\ 0\ 0\ 0\ 0\ 0\ 0\ 0 \end{array}$$

Thus, 9999999 + 1 = 10000000.

We read 10000000 as one crore.

This is the smallest 8-digit number.

The eighth place is called the crores place.

We may now extend the place value chart to 8 places.

Thus, 20000000 is read as two crores;

30000000 is read as three crores;

70000000 is read as seven crores;

90000000 is read as nine crores.

The largest 8-digit number is 99999999.

Putting its digits in Indian Place Value Chart having 8 places, we have:

C	TL	L	TTh	Th	H	T	O
9	9	9	9	9	9	9	9

Thus, we can read it as:

'Nine crore ninety-nine lakh ninety-nine thousand nine hundred ninety-nine.'

On adding 1 to 99999999, we get:

	9	9	9	9	9	9	9	9
+									1
	1	0	0	0	0	0	0	0	0

We read 100000000 as ten crores.

This is the smallest 9-digit number.

The ninth place is called the ten crores place.

Thus, we may now extend the Indian Place Value Chart to 9 places.

Periods in a Place Value Chart

In an Indian Place Value Chart, the nine places are grouped into four periods.

These periods from right to left are: Ones, Thousands, Lakhs, Crores.

Given below is the place value chart showing the first nine places.

Indian Place Value Chart

Periods →	Crores		Lakhs		Thousands		Ones		
Places →	Ten Crores 100000000	Crores 10000000	Ten Lakhs 1000000	Lakhs 100000	Ten Thousands 10000	Thousands 1000	Hundreds 100	Tens 10	Ones 1
	TC	C	TL	L	TTh	Th	H	T	O

In a given numeral, starting from the right, the first three places make the ones period, the next two places make the thousands period, the next two places make the lakhs period and the next two places make the crores period.

How to Write a Number?

In a given number, we separate the periods by using commas (,).

The following examples will make the ideas more clear.

Example 1: Write the number 183672123 by separating the periods.

Solution: Starting from the right we make bunches of 3 digits, 2 digits, 2 digits and 2 digits respectively and separating the bunches by commas, we may write 183672123 as

TC	C	TL	L	TTh	Th	H	T	O
1	8	3	6	7	2	1	2	3

So, we write it as 18,36,72,123.

Example 2: Arrange the digits of each of the following numerals in the place value chart and write it by separating the periods.

(a) 29574 (b) 136095 (c) 3705160

(d) 18256479 (e) 20703584 (f) 240800218

Solution: Starting from the right, we make entries of the digits of each numeral in the place value chart as shown below.

Now, separating the periods, we may write the given numerals as under.

	Given Numeral									Using Commas
	Crores		Lakhs		Thousands		Ones			
	TC	C	TL	L	TTh	Th	H	T	O	
(a)					2	9	5	7	4	29,574
(b)				1	3	6	0	9	5	1,36,095
(c)			3	7	0	5	1	6	0	37,05,160
(d)		1	8	2	5	6	4	7	9	1,82,56,479
(e)		2	0	7	0	3	5	8	4	2,07,03,584
(f)	2	4	0	8	0	0	2	1	8	24,08,00,218

How to Read a Number?

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

Example 3: Write the following numbers in words.

(a) 295708 (b) 1407319 (c) 12043056

(d) 50834570 (e) 230305211 (f) 920517068

Solution: Separating the periods of ones, thousands, lakhs and crores from the right in each numeral, we may write the given numerals as under.

	Given Numeral									Number Names
	Crores		Lakhs		Thousands		Ones			
	TC	C	TL	L	TTh	Th	H	T	O	
(a)				2	9	5	7	0	8	Two lakh ninety-five thousand seven hundred eight
(b)			1	4	0	7	3	1	9	Fourteen lakh seven thousand three hundred nineteen
(c)		1	2	0	4	3	0	5	6	One crore twenty lakh forty-three thousand fifty-six
(d)		5	0	8	3	4	5	7	0	Five crore eight lakh thirty-four thousand five hundred seventy
(e)	2	3	0	3	0	5	2	1	1	Twenty-three crore three lakh five thousand two hundred eleven
(f)	9	2	0	5	1	7	0	6	8	Ninety-two crore five lakh seventeen thousand sixty-eight

Example 4: Find the place value of each of the digits in the number 367405281.

Solution: We may write the given number as:

TC	C	TL	L	TTh	Th	H	T	O
3	6	7	4	0	5	2	8	1

Place value of 1 = 1 one = 1 × 1 = 1

Place value of 8 = 8 tens = 8 × 10 = 80

Place value of 2 = 2 hundreds = 2 × 100 = 200

Place value of 5 = 5 thousands = 5 × 1000 = 5000

Place value of 0 = 0 ten thousands = 0 × 10000 = 0

Place value of 4 = 4 lakhs = 4 × 100000 = 400000

Place value of 7 = 7 ten lakhs = 7 × 1000000 = 7000000

Place value of 6 = 6 crores = 6 × 10000000 = 60000000

Place value of 3 = 3 ten crores = 3 × 100000000 = 300000000

Example 5: Write 490570316 in the expanded form.

Solution: The given number may be written as:

TC	C	TL	L	TTh	Th	H	T	O
4	9	0	5	7	0	3	1	6

Thus, we have:

490570316 = 4 ten crores + 9 crores + 0 ten lakhs + 5 lakhs + 7 ten thousands + 0 thousands + 3 hundreds + 1 ten + 6 ones

= 4 × 100000000 + 9 × 10000000 + 0 × 1000000 + 5 × 100000 + 7 × 10000 + 0 × 1000 + 3 × 100 + 1 × 10 + 6 × 1

= 400000000 + 90000000 + 0 + 500000 + 70000 + 0 + 300 + 10 + 6

= 400000000 + 90000000 + 500000 + 70000 + 300 + 10 + 6.

Exercise 3

1. **Rewrite the following numbers using commas to separate the periods according to the Indian place value chart.**

(a) 623974 (b) 3768954 (c) 52673894 (d) 430615029 (e) 681008546

(f) 705000038 (g) 800808088 (h) 900000100 (i) 303100001

2. Write the following numbers in words.

(a) 74,10,507 (b) 39,00,302 (c) 2,41,05,063 (d) 10,00,53,109 (e) 22,07,08,518

(f) 36,10,06,284 (g) 50,19,00,006 (h) 10,01,01,100 (i) 4,04,04,004

3. Write the following numbers in figures.

(a) Ninety-two lakh five thousand fifty-five

(b) Six crore sixty-five lakh twenty thousand seven hundred sixteen

(c) Nine crore nineteen lakh nine thousand nine hundred ninety

(d) Twelve crore ten lakh three hundred sixty-five

(e) Five crore forty-two thousand one hundred nine

(f) Twenty-three crore five lakh seven thousand one hundred eight

(g) Thirty crore fifteen thousand eighteen

(h) Fifty-two crore one lakh thirty-one

(i) Thirteen crore five hundred seventy

(j) Ten crore ten thousand eleven

(k) One crore one thousand one

4. Using Indian place value system, write the place value of each of the digits in the numeral 64,19,70,528.

5. Using Indian system of numeration, find the place value of the underlined digits in each of the following.

(a) 5<u>9</u>0713568 (b) 635<u>7</u>09412 (c) <u>8</u>20307514

(d) 81<u>3</u>605247 (e) 246<u>0</u>53819 (f) 913<u>5</u>46007

6. Write the following numbers in an expanded form.

(a) 5,29,347 (b) 23,09,519 (c) 9,72,34,026

(d) 13,06,19,804 (e) 37,24,09,578 (f) 89,30,16,870

7. Write the following in standard form.

(a) 3000000 + 700000 + 60000 + 9000 + 70 + 6

(b) 60000000 + 8000000 + 30000 + 400 + 80 + 4

(c) 20000000 + 200000 + 2000 + 200 + 2

(d) 700000000 + 30000000 + 200000 + 80000 + 4000 + 60 + 9

(e) 500000000 + 5000 + 50 + 5

(f) 900000000 + 900000 + 900 + 9

(g) 40000000 + 10 + 7

8. Counting in thousands, write the numbers from 2906754 to 2911754.

9. Counting in lakhs, write the numbers from 52736109 to 53236109.

10. Counting in crores, write the numbers from 163057500 to 223057500.

11. Look at the pattern and write the next three numbers.

(a) 3140624, 3140724, 3140824, ..., ..., ...

(b) 3256419, 3257419, 3258419, ..., ..., ...

(c) 70809010, 70909010, 71009010, ..., ..., ...

(d) 191817600, 201817600, 211817600, ..., ..., ...

(e) 302010400, 292010400, 282010400, ..., ..., ...

12. Write the smallest 9-digit number and the largest 8-digit number.

13. Answer the following.

(a) What comes just after 9536999?

(b) What comes just before 9900000?

(c) What comes just after 13700899?

(d) What comes just before 10000000?

Order Relation

In order to compare two numbers, we adopt the following rules:

Rule 1: The number with less digits is less than the number with more digits.

Rule 2: Suppose we have to compare two numbers with the same number of digits.

Step 1: First compare the digits at the leftmost place in both the numbers.

Step 2: If they are equal in value, then compare the second digits from the left.

Step 3: If the second digits from the left are equal, compare the third digits from the left.

Step 4: Continue until you come across unequal digits at the corresponding places. Now, the number with greater such digit is the greater of the two.

The following examples will make the ideas clear.

Example 1: Which is greater 25476801 or 6789968?

Solution: Here, we have to compare 25476801 and 6789968.

Clearly, 25476801 consists of 8 digits while 6789968 contains 7 digits.

$\therefore$ 25476801 > 6789968.

Example 2: Which is greater 96580734 or 96721643?

Solution: Let us arrange the given numbers in a place value chart.

C	TL	L	TTh	Th	H	T	O
9	6	5	8	0	7	3	4
9	6	7	2	1	6	4	3

Both the numbers have 8 digits.

At the crores place both have the same digit, namely 9.

At the ten-lakhs place both have the same digit, namely 6.
But, at the lakhs place, the first number has 5 while the second has 7.
Clearly, $5 < 7$.
$\therefore$ 96580734 < 96721643.

Numbers in Ascending Order means the numbers from smallest to greatest.
Numbers in Descending Order means the numbers from greatest to smallest.

Example 3: Arrange the following numbers in ascending order.
3751234, 15267302, 143605217, 15458314, 4062341

Solution: Let us arrange the given numbers in a place value chart.

TC	C	TL	L	TTh	Th	H	T	O	
		3	7	5	1	2	3	4	← (1)
	1	5	2	6	7	3	0	2	← (3)
1	4	3	6	0	5	2	1	7	← (5)
	1	5	4	5	8	3	1	4	← (4)
		4	0	6	2	3	4	1	← (2)

Out of the given numbers two are 7-digit numbers, two are 8-digit numbers and one is a 9-digit number.
In 7-digit numbers, clearly 3751234 < 4062341 (Since 3 TL < 4 TL)
In 8-digit numbers, clearly 15267302 < 15458314 (Since 2 L < 4 L)
Clearly, the 9-digit number is the largest.
$\therefore$ 3751234 < 4062341 < 15267302 < 15458314 < 143605217
Hence, the given numbers in ascending order are:
3751234, 4062341, 15267302, 15458314, 143605217

Example 4: Arrange the following numbers in descending order.
483672906, 74635618, 483910257, 9876879, 74613898

Solution: Let us arrange the given numbers in a place value chart.

TC	C	TL	L	TTh	Th	H	T	O	
4	8	3	6	7	2	9	0	6	← (2)
	7	4	6	3	5	6	1	8	← (3)
4	8	3	9	1	0	2	5	7	← (1)
		9	8	7	6	8	7	9	← (5)
	7	4	6	1	3	8	9	8	← (4)

Out of the given numbers two are 9-digit numbers, two are 8-digit numbers and one is a 7-digit number.

In 9-digit numbers, clearly 483910257 > 483672906 (Since 9 L > 6 L)

In 8-digit numbers, clearly 74635618 > 74613898 (Since 3 TTh > 1 TTh)

Clearly, the 7-digit number is the smallest.

∴ 483910257 > 483672906 > 74635618 > 74613898 > 9876879

Hence, the given numbers in descending order are:

483910257, 483672906, 74635618, 74613898, 9876879

Exercise 4

1. Fill in each of the following boxes with appropriate symbol > or <.

(a) 1002456 ☐ 987896 (b) 23507104 ☐ 14536523

(c) 54836903 ☐ 103213102 (d) 203645817 ☐ 164786938

(e) 35672416 ☐ 35670590 (f) 478907506 ☐ 478913401

(g) 613054901 ☐ 613045989 (h) 750890315 ☐ 750890410

(i) 89276584 ☐ 101625302 (j) 917263954 ☐ 917260954

2. Arrange the following numbers in descending order.

(a) 12965784, 3076897, 129654503, 2789988, 21345603

(b) 245368009, 45639918, 93216723, 53791325, 245370119

(c) 62790568, 627905480, 62791023, 627905623, 62790931

(d) 63082318, 30728510, 27169237, 50643701, 7987689

(e) 7546890, 23150014, 998765, 23149925, 7546785

3. Arrange the following numbers in ascending order.

(a) 14865710, 20507106, 30008215, 2786789, 2876879

(b) 9368516, 10540603, 91032401, 9367839, 10541201

(c) 2537928, 101002301, 20547946, 100515602, 14035710

(d) 38715206, 129405817, 73678314, 7876589, 69721656

(e) 743162109, 304288713, 561945107, 89590788, 602357100

4. **Encircle the largest number in each of the following.**

(a) 31650829, 307482134, 4536794, 41035106, 238590746

(b) 102234102, 93645753, 27810591, 102240003, 93646800

(c) 9037848, 12345716, 101010706, 91537964, 100718967

(d) 9000009, 90000001, 9935469, 87590909, 88888888

International Place Value System

This system is followed by a large number of countries in the world. In this system, we write:

1 lakh	=	100 thousands
10 lakhs	=	1 million
1 crore	=	10 millions
10 crores	=	100 millions

In this system, we have periods of ones, thousands and millions.

In a given numeral, proceeding from right to the left, first three places make ones period, next three places make thousands period and the next three places make the millions period.

Given below is the international place value chart.

International Place Value Chart

Millions			Thousands			Ones		
Hundred Millions 100000000	Ten Millions 10000000	Millions 1000000	Hundred Thousands 100000	Ten Thousands 10000	Thousands 1000	Hundreds 100	Tens 10	Ones 1
HM	TM	M	HTh	TTh	Th	H	T	O

Example 1: Rewrite the following numbers with proper commas, using International system of numeration.

(a) 94536708 (b) 765049813 (c) 400835029

Solution: Arranging the given numerals in an International place value chart and then separating the periods, we may write them as shown.

	Given Numeral									Notation
	Millions			Thousands			Ones			
	HM	TM	M	HTh	TTh	Th	H	T	O	
(a)		9	4	5	3	6	7	0	8	94,536,708
(b)	7	6	5	0	4	9	8	1	3	765,049,813
(c)	4	0	0	8	3	5	0	2	9	400,835,029

Example 2: Write the number names of the following.

(a) 56,472,083 (b) 120,907,406 (c) 374,006,035

(d) 30,805,107 (e) 10,001,001 (f) 450,000,045

Solution: We know that in each numeral, starting from the right, we have periods of ones, thousands and millions. So, we may write the given numbers as under.

	Numeral	Number Name
(a)	56, 472, 083	Fifty-six million four hundred seventy-two thousand eighty-three
(b)	120, 907, 406	One hundred twenty million nine hundred seven thousand four hundred six
(c)	374, 006, 035	Three hundred seventy-four million six thousand thirty-five
(d)	30, 805, 107	Thirty million eight hundred five thousand one hundred seven
(e)	10, 001, 001	Ten million one thousand one
(f)	450, 000, 045	Four hundred fifty million forty-five

Exercise 5

1. Rewrite the following numerals with proper commas, using the International system.

(a) 35684129 (b) 50968302 (c) 103854179

(d) 42560247 (e) 491560543 (f) 793654182

(g) 300700006 (h) 100006001 (i) 90007010

2. Write the number names of the following.

(a) 25,863,475 (b) 30,807,541 (c) 81,923,054

(d) 140,905,319 (e) 231,600,148 (f) 490,300,007

(g) 101,010,001 (h) 23,006,100 (i) 560,001,010

3. Write the following in figures.

(a) Sixty-four million one hundred nineteen thousand eighteen

(b) Two hundred eighty-nine million sixty-nine thousand forty-eight

(c) One hundred five million one hundred eight thousand seven

(d) Seven hundred sixteen million six hundred five

(e) Three hundred one million two thousand thirty-one

(f) Ten million three thousand thirty-six

(g) Nineteen million nineteen

(h) Sixty million forty-four thousand sixty-four

(i) Two hundred million two thousand twenty

Things to Remember

1. In Indian place value chart, the nine places are grouped into four periods, namely Ones, Thousands, Lakhs and Crores.

2. Given below is the place value chart, showing the first nine places.

Periods →	Crores		Lakhs		Thousands		Ones		
Places →	Ten Crores	Crores	Ten Lakhs	Lakhs	Ten Thousands	Thousands	Hundreds	Tens	Ones
Short Form	TC	C	TL	L	TTh	Th	H	T	O

3. Starting from the right, the first three places make the ones period, the next two places make the thousands period, the next two places make the lakhs period and the next two places make the crores period.

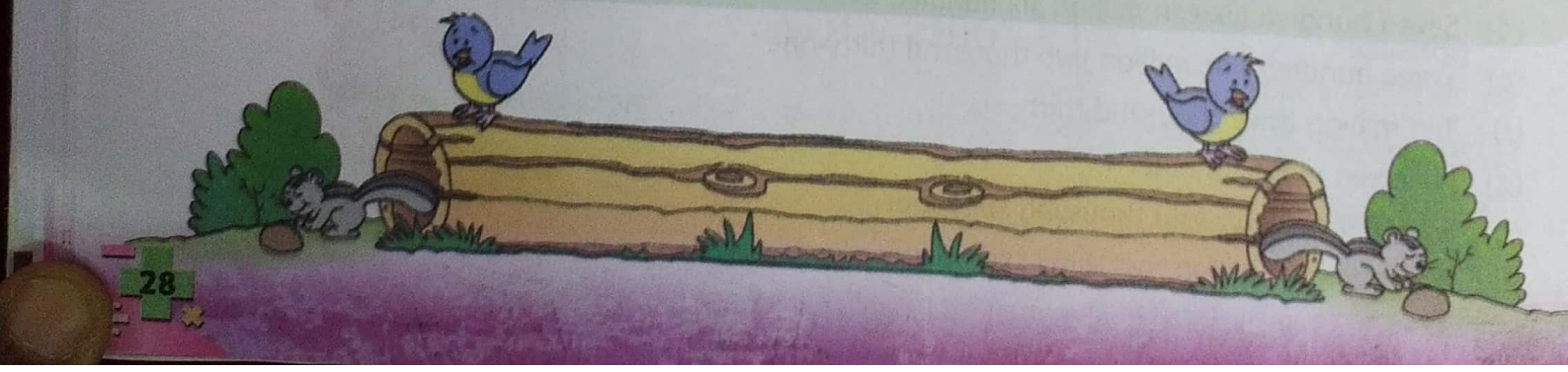
4. In a given numeral, we separate the periods by using commas.

5. In International Place Value system, we have periods of ones, thousands and millions, as shown below.

Millions			Thousands			Ones		
Hundred Millions	Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
HM	TM	M	HTh	TTh	Th	H	T	O

6. We have:

   (a) 1 lakh = 100 thousands
   (b) 10 lakhs = 1 million
   (c) 1 crore = 10 millions
   (d) 10 crores = 100 millions



QUESTION BAG 1

Tick (✓) the correct answer. *(Objective Type Questions)*

1. Commas are inserted in a number after each
   (a) digit (b) place (c) period (d) group
2. A 7-digit number starts with ..... place in the Indian system
   (a) lakhs (b) ten thousands (c) ten lakhs (d) crores
3. An 8-digit number starts with ..... place in the International system
   (a) hundred thousands (b) millions
   (c) ten millions (d) crores
4. The place value of 9 in the numeral 90521367 is
   (a) nine million (b) ninety million
   (c) ninety lakh (d) nine hundred thousand
5. The numeral 4,39,65,817 will be written in the International system as
   (a) 43,965,817 (b) 43,96,58,17 (c) 4,396,581,7 (d) 439,658,17
6. The sum of the greatest 6-digit number and the greatest 7-digit number is
   (a) 1099998 (b) 10999998 (c) 1009998 (d) 10099998
7. The place value and face value of a digit are always equal at the
   (a) ones place (b) tens place
   (c) hundreds place (d) never
8. The number of zeros in 100 millions are
   (a) 7 (b) 8 (c) 9 (d) None of these
9. The numeral for 'ninety crore nine thousand' is
   (a) 909000 (b) 90009000 (c) 900009000 (d) 90090000
10. The numeral for 'ninety million ninety thousand ninety' is
    (a) 909090 (b) 9090090 (c) 90900090 (d) 90090090

QUESTION BAG 2

1. **Fill in the blanks.**
   (a) The Indian and the International system of numeration follow the same pattern up to the ..... place.
   (b) 100 millions = ... crore
   (c) 1 million = ... lakh

(d) 1 crore = ... million.

(e) The place value of ..... is always the same as its face value.

(f) There are ..... zeros in 30 million.

(g) There are ..... zeros in 8 crore.

(h) When 1 is added to a given number, we get the ..... of the given number.

(i) The predecessor of 86,30,000 is ..... .

(j) The successor of 6,09,99,999 is ..... .

(k) The predecessor of 1,41,000 is ..... .

(l) The successor of 79,98, 999 is ..... .

(m) In 2,67,48,903; 2 is in the ..... place and 7 is in the ..... place.

(n) In 178,563,910; 7 is in the ..... place and 5 is in the ..... place.

2. State whether each of the following statements is true or false.

(a) The place value of 8 in 856,321 is 8 lakh. ☐

(b) The place value of 9 in 9,60,58,324 is 9 crore. ☐

(c) There are 2 places in the millions period. ☐

(d) There are 3 places in the lakhs period. ☐

3. Rewrite each of the following numbers in the Indian system.

(a) 636,821 (b) 6,954,128 (c) 87,198,362 (d) 10,101,010 (e) 843,034,45

4. Rewrite each of the following numbers in the Indian as well as International system numeration, in both figures and words.

(a) 846379 (b) 6309903 (c) 81818818 (d) 101036365

5. Write the period, place, face value and place value of the underlined digits.

(a) 60,187,549 (b) 84,16,25,903

6. Compare and put the correct symbol >, < or = in the placeholder.

(a) 9339393 ☐ 939993 (b) 9989889 ☐ 9989988

(c) 10101010 ☐ 10100101 (d) 609960069 ☐ 609906069

7. Arrange in ascending order.

45454545, 5454545, 45545455, 4554454, 5454554

8. Write the smallest and the greatest number, using each of the following digits only once

(a) 2, 7, 8, 5, 0, 6 (b) 9, 0, 5, 1, 3, 2, 6

9. (a) Write the smallest 6-digit number having all different digits.

(b) Write the greatest 6-digit number having all different digits.

10. (a) Write the smallest 8-digit number having three different digits.

(b) Write the greatest 8-digit number having three different digits.

11. Make the smallest possible 7-digit number using the digits.

(a) 6, 9, 3, 5, 1 (b) 4, 7, 1, 8, 0