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Class - V

Sub - Math (Book - Math steps) | G. Choudhary

* ROMAN NUMERALS

We usually write numbers using the Hindu-Arabic system which uses the ten digits 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9. Numbers can also be written using seven Roman numerals.

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

Note:- (1) NO Roman numeral is repeated consecutively more than three times
it is wrong to write 4 times
Such that 40 \rightarrow XXXX is wrong

(ii) V, L, D are not repeated.

Rule 1: - When a Roman numeral is placed after another of greater value, the value of the resulting numeral is equal to the sum of the numerals

for ex

$$\begin{aligned}VI &= 5 + 1 = 6 \\VII &= 5 + 1 + 1 = 7 \\XV &= 10 + 5 = 15\end{aligned}$$

ROLE 2: - When a Roman numeral is placed before another of the greater value, the value of the resulting numeral is equal to the difference of the numerals.

for ex.

$$\begin{aligned}IV &= 5 - 1 = 4 \\IX &= 10 - 1 = 9 \\XC &= 100 - 10 = 90\end{aligned}$$

RULE-3 : This symbol (—) are used thousand

$$\bar{V} = 5000 \text{ (five bar)}$$

$$\bar{X} = 10,000 \text{ (ten bar)}$$

$$\bar{L} = 50,000 \text{ (fifty bar)}$$

$$XX = 20$$

$$XXX = 30$$

* REMEMBER

(1) Roman numerals do not follow the place-value system

(2) There is ~~a~~ no Roman numeral for 0 (zero)

Exercise. 2

(1) Write in Roman notation

①	10 → X	70 → LXX
	20 → XX	80 → LXXX
	30 → XXX	90 → XC
	40 → XL	100 → C
	50 → L	
	60 → LX	

(2) Write in Roman notation

① 50 to 60

Sol: - L, LI, LII, LIII, LIV, LV, LVI, LVII, LVIII, LIX, LX.

(3) Write in Hindu-Arabic notation

①	XXVIII → 28
	XXXIX → 39
	XI → 11
	XLIII → 43
	XLIX → 49

4) fill in ~~at~~ with "<", "=", or ">"

- (a) LX > XL (b) XC < C
- (c) IX < XI (d) 25 > XV
- (f) 99 = XCIX

5) fill in with ">" "=" or "<"

- (a) XX + XXX = L
- (b) XXIV + XXX < 56
- (f) LXII - XXVI > XXVI

6) fill in the blanks in Roman notation

- (a) XX + II =
- (c) L + VIII =
- (d) XXII - XX =
- (k) LXIV - = LX
- (o) C ÷ = L

7) (a) XC, XV, XL, X, V, C in ascending order
 sol. V < X < XV < XL < XC < C

8) Arrange in descending order

- (a) IX, XIX, XLIII, XCII, LXXXII
- sol. XCII > LXXXII > XLIII > XIX > IX

9) Which numeral is correct in each pairs?

- (a) XX, (b) II, (c) XXX
- (d) XL, (e) LV, (f) XLV

* Large Numbers

The larger number which have more than four digits.

Whole Numbers:- All counting numbers together with the number 0 are called whole number. for Ex. 0, 1, 2, 3, 4, ...

place value of digit in numbers

* Indian place-value chart

CRORES		LAKHS		THOUSANDS		ONES		
C.	C.	L.	L.	T.	T.	H.	T.	O.
CRORES	CRORES	LAKHS	LAKHS	THOUSANDS	THOUSANDS	HUNDREDS	TENS	ONES

The first block from the @ Right will be three compartment and the next two compartments for Ex. 896457219 → 89, 64, 57, 219

gaps periods or 89 64 57 219

Block or period

89	64	57	219
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* INTERNATIONAL PLACE VALUE CHART

BILLIONS			MILLIONS			THOUSANDS			ONES		
B.	B.	B.	M.	M.	M.	Th.	Th.	Th.	"0."	"0."	"0."
H.B.	T.B.	BILLIONS	H.M.	T.M.	MILLIONS	H.Th.	T.Th.	THOUSANDS	HUNDREDS	TENS	ONES

This place value chart is divided into three block or periods of three places each

for Ex. 346987503215 → 346, 987, 503, 215

gaps or 346 987 503 215

periods:-

346	987	503	215
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* SUCCESSOR AND PREDECESSOR

SUCCESSOR: - Add 1 to a number to get its successor.

for Ex. $12 \rightarrow 12 + 1 = 13$

PREDECESSOR: \rightarrow Subtract 1 from a number to get its predecessor.

for Ex. $12 \rightarrow 12 - 1 = 11$

predecessor of 20 $\rightarrow 20 - 1 = 19$

* COMPARISON OF LARGE NUMBERS

* RULE 1: - ~~of~~ of two numbers, the number having more digits is greater

for Ex. 89654 and 9348

The 1st number is of five digits and the 2nd number is four digits. So the first number is greater than 2nd number that is $89654 \boxed{>} 9348$

* RULE 2: - If two numbers have equal number of digits the number having the greater digit in the place of the highest value is greater.

8975 and 9786

for Ex. Both the numbers having equal digits. So the compare the first digits from the left consecutively.

$8 < 9$

so the digits $8975 \boxed{<} 9786$

Word problems Exercise 5

① The sum of two numbers is 67890581
 one of them is 34216789

$$\begin{aligned} \therefore \text{other number} &= \underline{33673792} \\ \therefore \text{greater NO} &= 34216789 \quad \text{Ans} \end{aligned}$$

② \rightarrow greater number \rightarrow = 8765432
 The difference of two number = -174325

$$\therefore \text{smaller number} = \underline{8591107} \quad \text{Ans}$$

③ A man bought a plot of land

for Rs 847500
 building materials for Rs + 394252
 spent

for labours \rightarrow Rs + 095846

$$\text{Total spent} = \underline{1337598}$$

④ In four candidates

1st get votes = 231598
 2nd " " = + 487642
 3rd " " = + 591124
 4th " " = + 98729

$$\text{Total votes} \rightarrow \underline{1409093} \quad \text{Ans}$$

Winner defeat his nearest = 591124

$$\begin{aligned} &- 487642 \\ &\hline &103482 \quad \text{Ans} \end{aligned}$$

Multiplication

Exercise - 6

① Find

① 4132×27

$$\begin{array}{r} 4132 \\ \times 27 \\ \hline \end{array}$$

$$28924 \rightarrow (4132 \times 7)$$

$$82640 \rightarrow (4132 \times 20)$$

$$\underline{111564} \quad \text{multiply by 2 tens}$$

② 3688×456

$$\begin{array}{r} 3688 \\ \times 456 \\ \hline \end{array}$$

$$22128$$

$$\rightarrow 3688 \times 6 \text{ multiply by 6 ones}$$

$$184400 \rightarrow 3688 \times 50 \text{ multiply by 5 tens}$$

$$1475200 \rightarrow 3688 \times 400$$

$$\underline{1681628}$$

$$\text{multiply by 4 hundreds}$$

③ 2308

$$\times 8032$$

$$4616$$

$$6924$$

$$0000$$

$$18464$$

$$\underline{18537856}$$

$$\rightarrow 2308 \times$$

$$2308 \times 30 \text{ multiply by 3 tens}$$

$$2308 \times 000 \text{ multiply by 0 hundreds}$$

$$2308 \times 8000 \text{ multiply by 8 thousands}$$

Thousands

5) Find the quotient and the remainder

6) $78669 \div 67$

$$\begin{array}{r} 67 \overline{) 78669} \quad | \quad 1174 \\ \underline{-67} \\ 116 \\ \underline{-67} \\ 496 \\ \underline{-469} \\ 279 \\ \underline{-268} \\ 11 \end{array}$$

quotient = 1174

Remainder = 11

6) 7) $87212 \div 123$

$$\begin{array}{r} 123 \overline{) 87212} \quad | \quad 709 \\ \underline{-861} \\ 112 \\ \underline{-1107} \\ 005 \end{array}$$

quotient = 709 | Ans
Remainder = 5

7) 7) $348043 \div 1324$

$$\begin{array}{r} 1324 \overline{) 348043} \quad | \quad 262 \\ \underline{-2648} \\ 8324 \\ \underline{-7944} \\ 3803 \\ \underline{-2648} \\ 1155 \end{array}$$

quotient = 262

Remainder = 1155

Ans

quotient =

Remainder

SIMPLIFICATION

Simplify Exercise 7

$$\begin{aligned} \textcircled{1} \quad & 322 \times 3773 \div 343 \\ & = 322 \times 11 \\ & = 3542 \text{ Ans} \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad & 4875 \div 195 \times 480 \\ & = 25 \times 480 \\ & = 12000 \text{ Ans} \end{aligned}$$

$$\begin{aligned} \textcircled{3} \quad & 4900 \div 350 \times 145 \\ & = 14 \times 145 \\ & = 2030 \text{ Ans} \end{aligned}$$

$$\begin{aligned} \textcircled{4} \quad & 220 + 24 \text{ of } 60 - 1089 \div 99 \\ \text{Sol} \quad & = 220 + 1440 - 1089 \div 99 \\ & = 220 + 1440 - 11 \\ & = 1660 - 11 \\ & = 1649 \text{ Ans} \end{aligned}$$

13

$$\textcircled{5} \quad 3960 \div 264 + 5742 \div 522 \times 30$$

$$\text{sol} \quad = 15 + 11 \times 30$$

$$= 15 + 330$$

$$= 345 \quad \text{Ans}$$

$$\textcircled{6} \quad 3125 \div 125 - 2055 \div 411 - 20$$

$$\text{sol:} \quad = 25 - 5 - 20$$

$$= 25 - 25$$

$$= 0 \quad \text{Ans}$$

SIMPLIFICATION

(A) O D M A S

(B) B O D M A S

Where B = Brackets

↓

1 = small bracket
or 1st bracket = ()

2 = curly bracket
or 2nd bracket = { }

3 = Big bracket
or 3rd bracket = []

O = of

D = DIVISION

M = multiplication

A = Addition

S = subtraction

————— × —————

Exercise - 8

(1) simplify

$$(a) (16 + 12) - (2 \times 6)$$

$$= 28 - 12$$

$$= 16 \text{ Ans}$$

$$(e) 24 + 15 \div 3 \times (4 - 2)$$

$$= 24 + 15 \div 3 \times 2$$

$$= 24 + 5 \times 2$$

$$= 24 + 10$$

$$= 34 \text{ Ans}$$

$$\begin{aligned}
 \textcircled{1} \textcircled{f} \quad & (15 \times 3) \div 5 \times 8 - 2 + 6 \times (8 - 2) \\
 & = 45 \div 5 \times 8 - 2 + 6 \times 6 \\
 & = 9 \times 8 - 2 + 6 \times 6 \\
 & = 72 - 2 + 36 \\
 & = 108 - 2 \\
 & = 106 \text{ Ans}
 \end{aligned}$$

② Simplify and verify they are equal

① $12 \times 6 \div 3$ and $12 \times (6 \div 3)$

$$\begin{aligned}
 & = 12 \times 2 & & = 12 \times 2 \\
 & = 24 & \text{ and } & = 24
 \end{aligned}$$

They are equal

③ simplify

① $5 \times \{19 - (15 - 6)\}$

$$\begin{aligned}
 \text{Sols: } & = 5 \times \{19 - 9\} \\
 & = 5 \times 10 \\
 & = 50 \text{ Ans}
 \end{aligned}$$

② $20 + \{5 \times (72 - 42)\}$

$$\begin{aligned}
 & = 20 + \{5 \times 30\} \\
 & = 20 + 150 \\
 & = 170 \text{ Ans}
 \end{aligned}$$

$$\begin{aligned}
 \textcircled{3} \textcircled{c} \quad & 40 - \{(17 - 3) \div (20 - 13)\} \\
 & = 40 - \{14 \div 7\} \\
 & = 40 - 2 \\
 & = 38 \text{ Ans}
 \end{aligned}$$

$$\begin{aligned}
 \textcircled{4} \quad & (30 \div 10) + \{(6 \times 12) \div 8\} \\
 & = 3 + \{72 \div 8\} \\
 & = 3 + 9 \\
 & = 12 \text{ Ans}
 \end{aligned}$$

$$\begin{aligned}
 \textcircled{e} \quad & \{7 + (5 \times 3)\} - 12 + 6 \div 3 \\
 & = \{7 + 15\} - 12 + 6 \div 3 \\
 & = 22 - 12 + 6 \div 3 \\
 & = 22 - 12 + 18 \\
 & = 40 - 12 \\
 & = \underline{28 \text{ Ans}}
 \end{aligned}$$

Exercise - 9

Word problems

① A factory produced
 every day → 13 780 bulbs
 In 278 days → what

Sol:

$$\begin{array}{r}
 13\ 780 \\
 \times 278 \\
 \hline
 110\ 240 \\
 + 964\ 60 \\
 + 27560 \\
 \hline
 38,30,840 \text{ bulbs in 278 days} \\
 \text{Ans}
 \end{array}$$

② 125 apple trees in an orchard
 Each tree has 40 branches.
 Each branch has 20 apples

Sol:-

$$\begin{array}{r}
 125 \\
 \times 40 \\
 \hline
 5000 \text{ branches} \\
 \times 20 \\
 \hline
 100000 \rightarrow \text{apples} \\
 \text{Ans}
 \end{array}$$

- ③ A building has 24 flats
 each flat has 4 rooms
 each room has 132 floor tiles
 Total tiles = what

Sol: - $24 \times 4 = 96$ rooms

$96 \times 132 = 12\ 672$ tiles Ans

- ④ A poultry farm produced 12 70 080 eggs
 packs 144 eggs in a box
 Total boxes = what

Sol: - $12\ 70\ 080 \div 144$

$$\begin{array}{r}
 144 \overline{) 12\ 70\ 080} \quad (88\ 20 \\
 \underline{-11\ 52} \\
 11\ 80 \\
 \underline{-11\ 52} \\
 288 \\
 \underline{-288} \\
 0000 \\
 0
 \end{array}$$

= 8820 boxes Ans

⑥ The product of two numbers = 127008
 one of them = 882
 other numbers = what

Sol: other Nos = $127008 \div 882$

$$\begin{array}{r}
 882 \overline{) 127008} \quad 144 \\
 \underline{- 882} \\
 3880 \\
 \underline{- 3528} \\
 3528 \\
 \underline{- 3528} \\
 xxx \\
 = 144 \text{ Ans}
 \end{array}$$

⑦ find the product of the least number and the greatest number of three digits the digits 9, 3 and 5

Sol: least number = 359
 greatest number = 953

the product of two numbers

$$\begin{array}{r}
 = 359 \\
 \times 953 \\
 \hline
 1077 \\
 1795 \\
 3231 \\
 \hline
 342127 \text{ Ans}
 \end{array}$$

⑧ find the dividend = what
 divisor = 241
 quotient = 135
 Remainder = 30

Sol:- dividend = divisor \times quotient + Remainder
 $= 241 \times 135 + 30$
 $= 32535 + 30$
 $= 32565$ Ans

⑨ Two books contain 1395 and 2232 pages.
 Each chapter of the first book = 93 pages

\therefore chapter of the first book = $1395 \div 93$
 $= 15$ chapters

and chapter of the 2nd book = $2232 \div 124$
 $= 18$ chapters.

\therefore 2nd book has more chapters

$= 18 - 15$

$= 3$ chapters

Ans