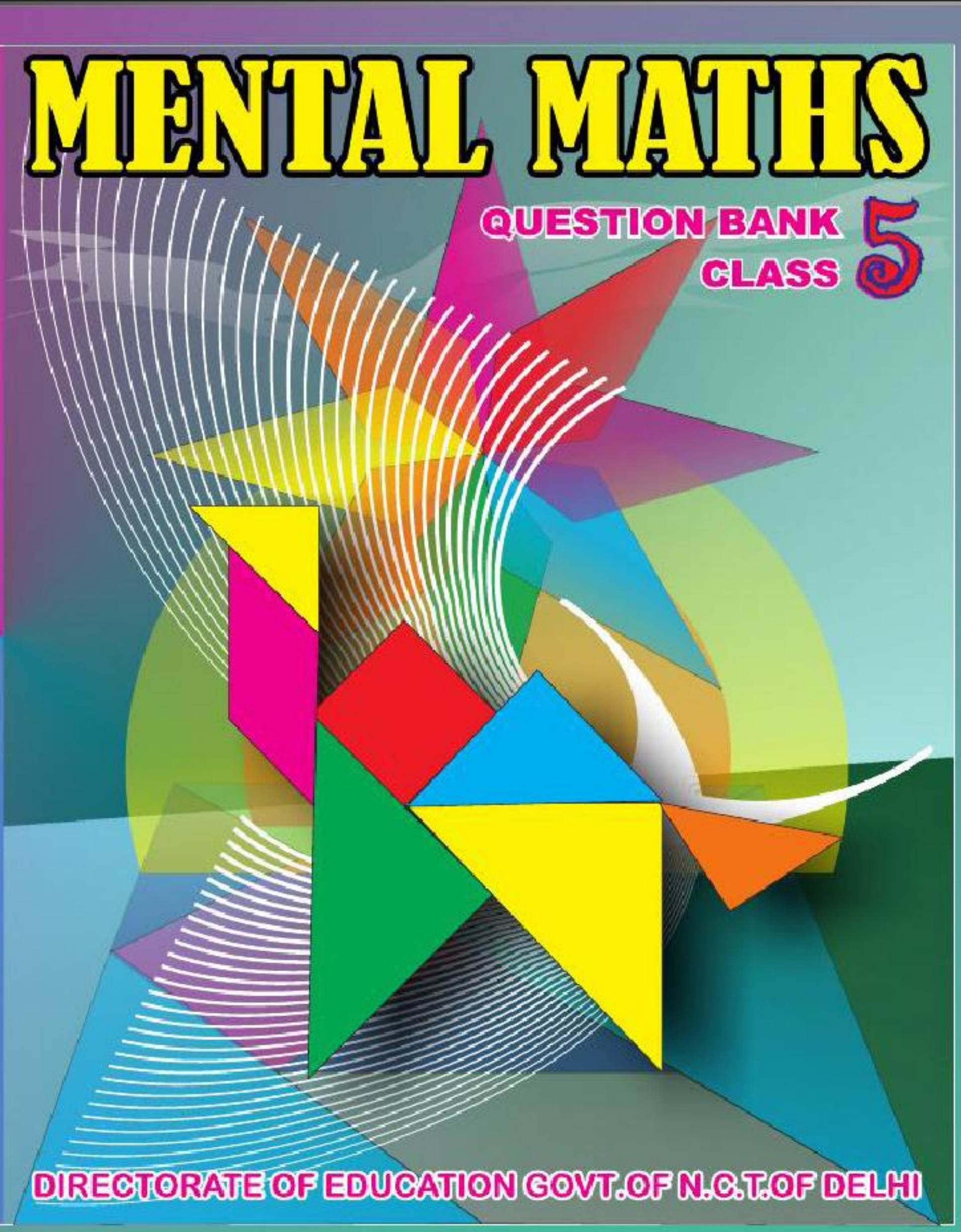
MENTAL MATHS

QUESTION BANK
CLASS 5



DIRECTORATE OF EDUCATION GOVT.OF N.C.T.OF DELHI

MENTAL MATHS

CLASS V

2024-25

DIRECTORATE OF EDUCATION

GOVT. OF NCT OF DELHI

ASHOK KUMAR
IAS

सत्यमेव जयते

सचिव (शिक्षा)
राष्ट्रीय राजधानी क्षेत्र
दिल्ली सरकार
पुराना सचिवालय, दिल्ली-110054
दूरभाष: 23890187 टेलीफैक्स : 23890119

Secretary (Education)
Government of National Capital Territory of Delhi
Old Secretariat, Delhi-110054
Phone : 23890187, Telefax : 23890119
E-mail : secyedu@nic.in

MESSAGE

The eloquent words of Galileo Galilei resonate: 'The laws of nature are written by the hand of God in the language of mathematics.' In this profound observation, the great astronomer awakened humanity to the paramount importance of mathematics. Within our school education system, mathematics holds a pivotal role, with a dedicated focus on foundational numeracy and literacy.

This year marks a significant milestone, as the project extends its reach to Government-Aided schools and introduces Level IV for classes 11th and 12th as well.

In the competitive arena, where time is of the essence, a strong command over mathematics is indispensable. These skills are not only prized in competitive exams but also wield significant influence in the realms of entrepreneurship and innovation. Mental Maths, with its transformative impact, enhances students' number sense, fosters an understanding of relationships between quantities, and cultivates logical thinking for problem-solving.

The meticulously crafted Mental Maths Question Banks recognize the diverse abilities, needs, and interests of students. As the saying goes, 'Nothing great can be achieved without consistent and persistent hard work'. Heartfelt congratulations to the State Core Team members, District Cordinators and Subject Experts for their silent and steadfast dedication to bring forth these impactful publications.

(Ashok Kumar)

BHUPESH CHAUDHARY, IAS
DIRECTOR (EDUCATION & SPORTS)

सत्यमेव जयते

Directorate of Education,
Govt. of NCT of Delhi
Room No. 12, Civil Lines,
Old Secretariat, Delhi-54
Phone: 011-23890172
Email: diredu@nic.in

MESSAGE

Beyond mere numbers and equations, Mathematics serves as a foundational language, intricately woven into the fabric of everything from the technology we rely on to the scientific principles shaping our understanding of the cosmos.

Enter Mental Maths – a captivating art of calculation sans paper or tools, a dance of numbers performed within the confines of the mind. It's not just about crunching numbers; it's about empowerment. Mental Maths nurtures the comprehension of place value, fortifies basic operations, and establishes a robust foundation for grappling with more complex mathematical concepts in the future.

Engaging in Mental Maths includes exercising multiple cognitive processes – memory, attention, and critical thinking. Studies reveal that regular Mental Maths exercises contribute to maintaining cognitive reserve, postponing the onset of age-related memory loss, and fending off other cognitive declines. In essence, Mental Maths keeps our minds agile and adaptable, akin to the benefits of physical activity for our bodies. It becomes the catalyst for swift decision-making and adept situational adaptation.

A heartfelt commendation goes to the dedicated State Core Team members and subject experts who meticulously crafted the Mental Maths Question Banks. These resources, tailored for students in Government and Government-Aided Schools of the Directorate of Education are a testament to their sincere efforts and the wise guidance of the Project Director of Mental Maths. It brings me immense pleasure to present this Mental Maths Question Bank to students, encouraging them to weave the magic of Mental Maths into the tapestry of their daily lives.

(BHUPESH CHAUDHARY)

विकास कालिया
क्षेत्रीय शिक्षा निदेशक
उत्तर एवं मध्य क्षेत्र,
पुरस्कार एवं कल्याण शाखाएँ,
पत्राचार विद्यालय एवं
रा. मुक्त विद्यालयी शिक्षा शाखाएँ
परियोजना निदेशक: मेंटल मैथ्स

सत्यमेव जयते

VIKAS KALIA
Regional Director of Education
Central & North,
Awards & Welfare Branches,
Patrachar Vidyalaya &
NIOS (Branches)
Project Director: Mental Maths

MESSAGE

At the tender age of 16, RPraggnanandhaa, the prodigious talent in Indian chess, sent waves through the global chess community by outsmarting Chess Grandmaster Magnus Carlsen in a lightning-fast game at the Airthings Masters Rapid Chess Tournament. His secret weapon was the remarkable ability for mental calculations. This young genius effortlessly combines his exceptional talent with lightning-quick numerical intuition, fortifying his strategic thinking skills.

At the age of 20, Neelakanta Bhanu Prakash of Hyderabad secures his place as the fastest human calculator on the planet, clinching India's first gold in the Mental Calculation World Championship at the Mind Sports Olympiad in London. Holding an impressive tally of 4 world records and 50 Limca records for speed calculation, his journey is even more remarkable considering a childhood setback. A skull fracture at the age of 5 kept him away from school for a year, but he turned adversity into opportunity, delving into puzzle-solving and mathematics games to hone his cognitive skills.

Mental Mathematics isn't just about acing exams; it's a cognitive superpower that equips the brain to think strategically, break down challenges into manageable steps, and devise creative solutions. This skill transcends academic boundaries, proving invaluable when estimating shopping costs, calculating expenses, or planning a trip. Imagine confidently tallying a shopping bill without reaching for any gadgets.

Recognizing that each student has a unique learning style, Mental Maths Question Banks cater to diverse needs, offering a plethora of materials. Through collaborative efforts, students engage in exhilarating Mental Maths competitions, learning from one another and building self-confidence.

A heartfelt acknowledgment goes to the Mental Maths State Core Team, District and Zonal Coordinators, and HOSs for their unwavering dedication to bringing the Mental Maths superpower to students across all Government and government-aided schools of the Directorate of Education. Gratitude extends to the esteemed Secretary Education and the Director of Education for their guidance and constructive feedback, steering the Mental Maths Project toward continuous improvement.

(VIKAS KALIA)
PROJECT DIRECTOR (MMP)

ACKNOWLEDGEMENT

SUBJECT EXPERTS & CONTENT DEVELOPMENT TEAM

SESSION 2024-2025 (Class-5)

Dr. SUNIL AGGARWAL, LECTURER

STATE COORDINATOR, MENTAL MATHS PROJECT

Govt. S. Co-ed Sr. Sec. School, Possangipur, B-1 Janak Puri (School ID - 1618003)

SAMPDA GULATI, VICE PRINCIPAL

STATE CO-COORDINATOR, MENTAL MATHS PROJECT

GSKV, C-Block, No.1, Janak Puri (School ID - 1618017)

ANJALI ARYA, TGT

GSKV, A- Block, Janak Puri (School ID - 1618018)

VANDANA RANI, TGT

GSKV, SP ROAD, NANGLOI (School ID - 1617013)

HIMANSHU KUMAR SHARMA, ASSTT TEACHER

GSBV, No.1, Bhola Nath Nagar, (School ID- 1001008)

ANKUR, ASSTT TEACHER

SBV, No.1 , Jheel Khuranja (School ID - 1003003)

PREETI, ASSTT TEACHER

Jose Marti SV, Sec -12, R K Puram (School ID - 1719001)

DEEP MALA, ASSTT TEACHER

PD SKV, Fatehpur Beri (School ID- 1923059)

DEEPIKA HINDUJA, ASSTT TEACHER

SKV, G – Block, Vikaspuri (School ID - 1618019)

COVER PAGE DESIGN & TECHNICAL SUPPORT

PREM KUMAR SHARMA, LECTURER

GBSSS, No. 1, C-Block, Janak Puri (School ID - 1618006)

NARESH KUMAR, TGT

GSBV, No. 2, C-Block, Janak Puri (School ID - 1618005)

STATE LEVEL MENTAL MATH QUIZ COMPETITION RESULT 2022-2023
LEVEL-1
REGION - WEST(1st POSITION)

S. No.	CLASS	NAME OF STUDENT	FATHER'S NAME	STUDENT ID	SCHOOL NAME	SCHOOL CODE	NAME OF GUIDE TEACHER
1	V	HARSH KUMAR SINGH	ANIL KUMAR SINGH	20170085770	SCAN SBV NO-2 B BLOCK JANAKPURI	1514008	ABHISHEK KATARIA
2	V	HARSHIKA RAJPAL	KISHAN RAJPAL	20210453934	GSKV A BLOCK VIKASPURI	1618062	NEELAM
3	V	VIRAT KUMAR	SUNIL KUMAR	20170096775	SBV A BLOCK VIKASPURI	1618002	ABHISHEK

REGION EAST(1ST RUNNER UP)

S. No.	CLASS	NAME OF STUDENT	FATHER'S NAME	STUDENT ID	SCHOOL NAME	SCHOOL CODE	NAME OF GUIDE TEACHER
1	V	ALOK MISHRA	UMA KANT MISHRA	20170087987	RSBV PREMCHAND MV PKJ	1002006	MUKHPAL SINGH
2	V	VASU JANGID	VINOD KUMAR	20170285714	SOE KHICHRIPUR	1002400	SWARNJEET
3	V	BHUMIKA	RAKESH KUMAR	20170299652	SKV MBPBM SCHOOL SHAHADARA GT RD	1105110	NEHA SHARMA

REGION -NORTH (2ND RUNNER UP)

S. No.	CLASS	NAME OF STUDENT	FATHER'S NAME	STUDENT ID	SCHOOL NAME	SCHOOL CODE	NAME OF GUIDE TEACHER
1	V	HARSH GUPTA	SUBODH KUMAR	20190206982	SKV KHERAKUND	1310041	ANJU
2	V	PAVNI	RAKESH	20170145623	SKV NO-2 SHAKURPUR	1411030	MUSKAN
3	V	DHRUV	ANUJ KUMAR	20200246181	SV MUKHERJEE NAGAR	1309003	SUKRITI GUPTA

REGION -CENTRAL (4TH POSITION)

S. No.	CLASS	NAME OF STUDENT	FATHER'S NAME	STUDENT ID	SCHOOL NAME	SCHOOL CODE	NAME OF GUIDE TEACHER
1	V	MOHD. NIZAM	MOHAMMAD SAJJAD	20180117973	SBV QUTAB ROAD	1208002	MANISH
2	V	YUG BHAI PATEL	SANJAY BHAI PATEL	20180257006	SBBM SHANKARACHARYA MARG	1207008	MUKESH SHARMA
3	V	IQRA ANSARI	MD ZAKIR ANSARI	20170157340	GSKV ZEENAT MAHAL	2127014	NEETU RANI

REGION –SOUTH (5TH POSITION)

S. No.	CLASS	NAME OF STUDENT	FATHER'S NAME	STUDENT ID	SCHOOL NAME	SCHOOL CODE	NAME OF GUIDE TEACHER
1	V	KUNAL	MAHESH KUMAR	20170202892	ATTSSBV CHATTARPUR	1923081	SONU KADYAN
2	V	MAYANK PAL	NARENDER PAL	2021000555	ASMS SKV MAHIPALPUR	1720032	BHAWNA
3	V	HIMAGHNA PRATAP SINGH	DINESH PRAKASH SINGH	20180217607	SKV DEENDARPUR	1822176	ANUJ RANA

STATE LEVEL MENTAL MATH QUIZ COMPETITION RESULT 2023-2024
LEVEL-1
REGION – WEST (1st POSITION)

S. No.	CLASS	NAME OF STUDENT	FATHER'S NAME	STUDENT ID	SCHOOL NAME	SCHOOL CODE	NAME OF GUIDE TEACHER
1	V	NAMAN	NARESH KUMAR	20190028161	SBV A-BLOCK VIKASPURI	1618002	ABHISHEK
2	V	VYOMKESH	BHOLA YADAV	20190068746	SV JAIDEV PARK	1515001	ASHOK KUMAR VERMA
3	V	EKTA CHAUHAN	SURENDER CHAUHAN	20210320784	SKV MOTI NAGAR	1516018	VAISHALI

REGION EAST (2nd POSITION)

S. No.	CLASS	NAME OF STUDENT	FATHER'S NAME	STUDENT ID	SCHOOL NAME	SCHOOL CODE	NAME OF GUIDE TEACHER
1	V	PRASHANT SHARMA	ATUL SHARMA	20210343910	GSBV YAMUNA VIHAR	1104003	NADIM SALMANI
2	V	VIRAJ KUMAR	KAUSHAL SINGH	20190109076	SBV DALLUPURA	1002013	PANKAJ KUMAR
3	V	ARANN SINGH	HARJINDER SINGH	20200203971	SBV KRISHNA NAGAR	1003013	VISHAN SINGH

REGION –SOUTH (3rd POSITION)

S. No.	CLASS	NAME OF STUDENT	FATHER'S NAME	STUDENT ID	SCHOOL NAME	SCHOOL CODE	NAME OF GUIDE TEACHER
1	V	DEVESH MOHAPATRA	DEEPAK KUMAR MOHAPATRA	20190042410	SKV RAJ NAGAR 1	1821027	HEMLATA
2	V	BHAWANA PAPNAI	HARISH CHANDRA PAPNAI	20210307907	SKV KAIR	1822262	SANTELLA TIRKEY
3	V	YOVAAN CHAKRVARTHEY	CHAKRVARTHEY SHEKHAR	20190113863	D.T.E.A. SR. SEC. SCHOOL LAXMI BAI NAGAR	1719074	R. SUCHITRAA

REGION -CENTRAL (4th POSITION)

S. No.	CLASS	NAME OF STUDENT	FATHER'S NAME	STUDENT ID	SCHOOL NAME	SCHOOL CODE	NAME OF GUIDE TEACHER
1	V	SADAN SARWAR	MOHD SAIFUL ISLAM	20210308132	THE UNION ACADEMY SR SEC SCHOOL	2026037	JAYITA PURKAYASTHA
2	V	PAWAN KUMAR	RAM NARAYAN	20230221847	RANI DUTTA ARYA VIDYALAYA, DARYAGANJ	2127103	REKHA GUPTA
3	V	POORVANSH SHARMA	VINAY KUMAR SHARMA	20200295363	SKV, SARAI ROHILLA	1208015	MOHINI SOLANKI

REGION -NORTH (5th POSITION)

S. No.	CLASS	NAME OF STUDENT	FATHER'S NAME	STUDENT ID	SCHOOL NAME	SCHOOL CODE	NAME OF GUIDE TEACHER
1	V	MD MUQTADIR	MASSOUDI	20190217636	SKV PRASHANT VIHAR	1413067	RASHMI RANI
2	V	ANUSHKA	DILIP RAI	20180097199	SKV H BLOCK, SULTAN PURI	1413029	SAT NARIAN
3	V	RISHAB	SUNIL	20190087907	GSKV ALIPUR	1310031	YASHVANTI

CONSTITUTION OF INDIA

[1][PART IV A

FUNDAMENTAL DUTIES

Article 51A. Fundamental duties. — It shall be the duty of every citizen of India—

a) to abide by the Constitution and respect its ideals and institutions, the National Flag and the National Anthem;
b) to cherish and follow the noble ideals which inspired our national struggle for freedom;
c) to uphold and protect the sovereignty, unity and integrity of India;
d) to defend the country and render national service when called upon to do so;
e) to promote harmony and the spirit of common brotherhood amongst all the people of India transcending religious, linguistic and regional or sectional diversities; to renounce practices derogatory to the dignity of women;
f) to value and preserve the rich heritage of our composite culture;
g) to protect and improve the natural environment including forests, lakes, rivers and wildlife, and to have compassion for living creatures;
h) to develop the scientific temper, humanism and the spirit of inquiry and reform;
i) to safeguard public property and to abjure violence;
j) to strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievement;]

[2][(k) who is a parent or guardian to provide opportunities for education to his child or, as the case may be, ward between the age of six and fourteen years.]

---

1. Ins. by the Constitution (Forty-second Amendment) Act, 1976, Sec. 11 (w.e.f. 3-1-1977).
2. Ins. by the Constitution (Eighty-sixth Amendment) Act, 2002, Sec. 4 (w.e.f. 1-4-2010).

THE CONSTITUTION OF INDIA

PREAMBLE

WE, THE PEOPLE OF INDIA, having solemnly resolved to constitute India into a [1]**[SOVEREIGN SOCIALIST SECULAR DEMOCRATIC REPUBLIC]** and to secure to all its citizens:

JUSTICE, social, economic and political;

LIBERTY of thought, expression, belief, faith and worship;

EQUALITY of status and of opportunity;

and to promote among them all

FRATERNITY assuring the dignity of the individual and the [2][unity and integrity of the Nation];

IN OUR CONSTITUENT ASSEMBLY this twenty- sixth day of November, 1949, do HEREBY ADOPT, ENACT AND GIVE TO OURSELVES THIS CONSTITUTION.

---

1. Subs. by the Constitution (Forty-second Amendment Act,1976, Sec. 2, for "SOVEREIGN DEMOCRATIC REPUBLIC" (w.e.f. 3.1.1977)
2. Subs. by the Constitution (Forty-second Amendment Act,1976, Sec. 2, for "Unity of the Nation" (w.e.f. 3.1.1977)

SCHEDULE OF MENTAL MATHS QUIZ COMPETITIONS

FOR THE YEAR 2024-2025

DIRECTORATE OF EDUCATION

GOVT OF NCT OF DELHI

❖ **Practice to students from Question Bank**	:	**01.04.2024 to 19.10.2024**
❖ **School Level Quiz Competitions**	:	**21.10.2024 to 30.10.2024**
❖ **Cluster Level Quiz Competition**	:	**14.11.2024 to 20.11.2024**
❖ **Zonal Level Quiz Competition**	:	**25.11.2024 to 30.11.2024**
❖ **District Level Quiz Competition**	:	**07.12.2024 to 13.12.2024**
❖ **Regional Level Quiz Competition**	:	**26.12.2024 to 31.12.2024**
❖ **State Level Quiz Competition**	:	**18.01.2025 to 31.01.2025**

INDEX

CHAPTER-1

NUMBERS

Points To Remember

- **Face Value:-**

  Face value of a digit in a numeral is the value of the digit itself, whatever place it occupies in the place value chart.

  For example:

  The face value of 6 in 34627 is 6.

  The face value of 4 in 24318 is 4

- **Place Value:-**

  Place value of a digit in a numeral depends on the place it occupies in the place value chart.

  Place value of a digit = (Face value of the digit) × (Value of the Place)

  For example:

  The place value of 3 in 438 is 30

  i.e. $3 \times 10 = 30$

  The place value of 9 in 19386 is 9000

  i.e. $9 \times 1000 = 9000$

- **The place value of Zero is always '0' irrespective of the place it occupies.**
- **Expanded form of a number is the sum of the place values of its digits.**

  For Example: $13528 = 10000 + 3000 + 500 + 20 + 8$

  Or

  $$13528 = 1 \times 10000 + 3 \times 1000 + 5 \times 100 + 2 \times 10 + 8 \times 1$$

- **Predecessor:**

  The predecessor of a number is 1 less than the number or $(Number - 1)$

- **Successor:**

  The successor of a number is 1 more than the number or $(Number + 1)$

➢ **Greater number:**

A number having more digits is always greater but if the numbers to be compared have same number of digits, always begin comparing with the left most place.

For Example:

H	T	O
9	7	5
9	7	8

In the shown example, 975 and 978 have the same digit at hundred and tens place.

The digit at ones place differ since 978 has greater digit. *i.e.* 8 at ones place or unit place.

Therefore 978>975

➢ **Ascending Order means arranging numbers from smallest to the greatest.**

➢ **Descending Order means arranging numbers from greatest to smallest.**

- **To make the greatest number with given digits, we arrange the given digits in the *Descending Order*.**
- **To make the smallest number with the given digits we arrange the given digits in the *Ascending Order*.**
- **As 0 on the extreme left of a number has no value, so smallest five digit number using digits, 6,1,2,0,8 is 10268 not 01268**
- **Greatest & Smallest Numbers**

Numbers	Smallest	Greatest
1 Digit	1	9
2 Digit	10	99
3 Digit	100	999
4 Digit	1000	9999

Total numbers in all	
Number	
1 Digit	9
2 Digit	90
3 Digit	900
4 Digit	9000
5 Digit	90000

Number of Zeroes In:-		
One	-	0
Ten	-	1
Hundred	-	2
Thousand	-	3
Ten Thousand	-	4
Lakh	-	5
Ten Lakh	-	6
Crore	-	7

QUESTIONS:

1. What is the smallest 5 digit number?
2. What is the greatest 4 digit number?
3. Find the greatest 4 digit number which is divisible by 2.
4. Find the smallest 3 digit number which is divisible by 3.
5. What will we get if we add 7 to the successor of 129 ?

[6-10] Find the value of x

6. Four tens = x Ones
7. One lakh = x Thousand
8. One crore = x Ten thousand
9. Hundred = x tens
10. Ten lakh = x hundred
11. How many numbers exactly have only 2 digits?
12. How many 3 digits numbers are there in all?
13. Find the smallest 4 digit number having 4 different digits.
14. Form the smallest 5 digit number using 4, 3, 0, 7 and 6. Each digit should be used only once.
15. Find the greatest 6 digit number formed by the digits 2, 3, 6, 9, 4, 1.
16. Using only two different digits, find the smallest four digit number.
17. Change the position of digits in 89724 to get the smallest number of 5 digits.

[18-19] Complete the pattern:

18. 1367, 1377, 1387, ……
19. 4194, 4394, 4594, ……
20. Find the number 1000 less than the greatest 5 digit number.
21. Find the number 1000 less than the smallest 5 digit number.
22. Find the number 100 less than the greatest 3 digit number.
23. How many digits are there in two lakh eighty five?
24. How many zeros are there in ten thousand ten?
25. How many digits are there in one lakh seventy thousand?
26. How many digits are there in Thirty Five Lakh?
27. Find the place value of 3 in 23245.
28. Find the place value and face value of 7 in 72941.
29. Find the sum of place values of 7's in 776429.
30. Find the sum of place values of 5 in 225 and 518 respectively.
31. Find the difference of place values of 7 in 729 and 127 respectively.
32. Find the difference of place values of two 4's in 46249.
33. Find the difference of place value and face value of 7 in 67459.
34. Find the product of place value and face value of 5 in 2564.
35. What will we get, if we add 100 to place value of 6 in 3621?
36. In five thousand eight hundred twenty four, which digit is at tens place?
37. Find the product of successor of 9 and predecessor of 101.
38. Find the value of remainder when successor of 103 is divided by 5.
39. I am a three digit number between 100 and 120. I have 4 at ones place and I am divisible by 6. Tell me who am I?
40. How many hundreds are there in 8946?
41. How many thousands are there in 26729?
42. Counting by hundreds, find the number next to 2527.
43. Find the value of x :-

    3 hundreds + 8 tens + 9 ones = 300+ 70+ x

44. If 7 hundreds, 3tens and 2 ones = $700 + x + 2$, find the value of x.

45. If $70000 + x + 4 = 70504$, find the value of x.

46. I am a two digit number. I have 5 in ones place. I am less than 40 but more than 30, Tell who am I?

47. Find:- 9 thousand 7 tens and 6 ones.

48. If $2187 = 1000 \times a + 100 \times b + 10 \times c + 7$,
find a+b+c .

49. A is a successor of 99, B is a successor of 299 and C is a predecessor of 301. Find A+B-C.

50. Find the difference between greatest 3 digit number and smallest 3 digit number formed using 0, 1 and 2. Each digit should be used only once.

ANSWERS:

Q. No.	Answers	Q. No.	Answers
1.	10000	27.	3000
2.	9999	28.	Place value – 70000, Face value - 7
3.	9998		
4.	102	29.	770000
5.	137	30.	505
6.	40	31.	693
7.	100	32.	39960
8.	1000	33.	6993
9.	10	34.	2500
10.	10000	35.	700
11.	90	36.	2
12.	900	37.	1000
13.	1023	38.	4
14.	30467	39.	114
15.	964321	40.	89
16.	1000	41.	26
17.	24789	42.	2627
18.	1397	43.	19
19.	4794	44.	30
20.	98999	45.	500
21.	9000	46.	35
22.	899	47.	9076
23.	6	48.	11
24.	3	49.	100
25.	6	50.	108
26.	7		

CHAPTER-2

OPERATIONS ON NUMBERS

Points To Remember

➢ **ADDITION RULES**

- When 1 is added to a number, we get the next number called its successor.
  For example: $21 + 1 = 22$
- When 0 is added to a number, the number remains the same
  For example: $15 + 0 = 15$
- Numbers added in any order give the same sum
  For example: $16 + 3 = 3 + 16 = 19$

➢ **SUBTRACTION RULES**

- When 1 is subtracted from a number, we get the previous number called its predecessor.
  For example: $30 - 1 = 29$
- When 0 is subtracted from a number, the difference is the number itself.
  For example: $50 - 0 = 50$
- When we subtract a number from itself, the number is always 0
  For example: $25 - 25 = 0$
- Addition and Subtraction are Inverse Operations:
  Let's see $725 + 275 = 1000$
  Then $1000 - 725 = 275$
  And $1000 - 275 = 725$

➢ **MULTIPLICATION RULES**

Multiplication is "REPEATED ADDITION". It means we can write numbers in multiplicative form if same number is added many times

2 + 2 + 2 + 2 + 2 = 10

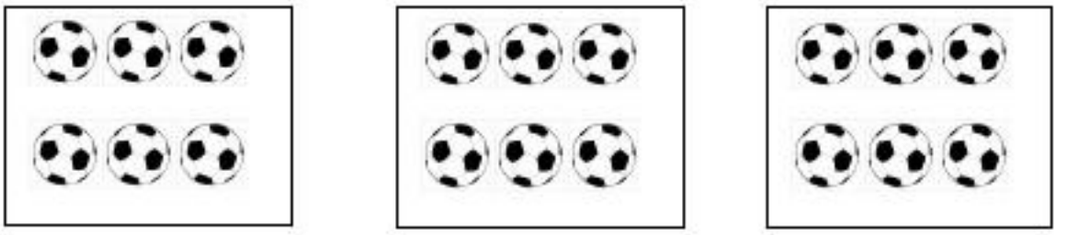
It is same as: $2 \times 5 = 10$

- When a number is multiplied by one, the product is the number itself.
  For example: $127 \times 1 = 127$
- When a number is multiplied by zero, the product is always zero.
  For example: $275 \times 0 = 0$
- Two numbers multiplied in any order, give the same product
  For example: $15 \times 8 = 8 \times 15 = 120$

➢ DIVISION RULES

- Division is "REPEATED SUBTRACTION" If 18 items are to be distributed equally among 3 children, 3 items will be taken from 18 repeatedly to know how many items each child will get.

I Child II Child III Child



Or we can divide 18 by 3 i.e., $18 \div 3 = 6$

- When a number is divided by one, the answer is the number itself.
  For example: $187 \div 1 = 187$
- When a number is divided by itself, the answer is one.
  For example: $37 \div 37 = 1$
- When zero is divided by any number the answer is zero.
  For example: $0 \div 7 = 0$

Multiplication and Division are Inverse Operations

Let's see $15 \times 3 = 45$

Then $45 \div 3 = 15$

And $45 \div 15 = 3$

Observe the Pattern:

25×25	=	625
35×35	=	1225
45×45	=	2025
65×65	=	4225
75×75	=	5625
85×85	=	7225
95×95	=	9025

- **Short method of Addition and Subtraction.**

- **Expanding the Second Addend or Subtrahend:**

  For addition $28 + 17 = 28 + 10 + 7 = 38 + 7 = 45$

  For Subtraction $28 - 17 = 28 - 10 - 7 = 18 - 7 = 11$

- **Front - End Adding:**

  For example: $65 + 26 = ?$

  Need to think $60 + 20 = 80$ and $5 + 6 = 11$, $80 + 11 = 91$

- **Compensation for 8 and 9**

  For example: $67 - 19 = 67 - 20 + 1 = 68 - 20 = 48$

  $67 - 18 = 67 - 20 + 2 = 69 - 20 = 49$

  $43 + 29 = 43 + 30 - 1 = 42 + 30 = 72$

  $43 + 28 = 43 + 30 - 2 = 41 + 30 = 71$

- **Common Zeroes:**

  For addition and subtraction operations, complete the operation leaving zero and then take the 0 back

  For example: $120 - 70 = ?$

  Think $12 - 7 = 5$

  Add the common zero, so the answer is 50

Short method of Multiplication and division

- **Multiply by 4, by doubling twice**

  e.g. to find 7×4

  $7 \times 4 = 7 \times 2 \times 2 = 14 \times 2 = 28$

- **Multiply by 8, by doubling thrice.**

  e.g. $12 \times 8 = 12 \times 2 \times 2 \times 2 = 24 \times 2 \times 2 = 48 \times 2 = 96$

- **Divided by 4, by halving twice**

  e. g. To find $84 \div 4$

  $84 \div 2 = 42$

  $42 \div 2 = 21$

  Thus $84 \div 4 = 21$

- **Divided by 8, by halving thrice.**

  e.g.

  To find $104 \div 8$

  $104 \div 2 = 52$

  $52 \div 2 = 26$

  $26 \div 2 = 13$

  Thus $104 \div 8 = 13$

- **Multiply by 5, by multiplying by 10 then halving**

  e.g. 12×5

  $12 \times 10 = 120$

  $120 \div 2 = 60$

  Thus $12 \times 5 = 60$

- **Multiply by 20, by doubling then multiplying 10**

  e.g 53×20

  $53 \times 2 = 106$

  $106 \times 10 = 1060$

  Thus $53 \times 20 = 1060$

- **Multiply by 50, by multiplying by 100 and halving**

  e.g 12×50

  $12 \times 100 = 1200$

  $1200 \div 2 = 600$

Thus $12 \times 50 = 600$

- Multiply by 25, by multiplying by 100 and halving twice.

e.g 98×25

$98 \times 100 = 9800$

$9800 \div 2 = 4900$

$4900 \div 2 = 2450$

Thus $98 \times 25 = 2450$

QUESTIONS:

[1-10] Find the value of x

1. $7310 - x = 1300$
2. $3600 \div 40 - x = 45$
3. $80 \div 4 - x = 4 \times 5$
4. $840 \div x = 8 + 2 \times 3$
5. $15625 + 150 + 75 = 15600 + 100 + 25 + x$
6. $72 \times 15 \times 18 \times 0 = x$
7. $49256 + 100 = 49256 + 50 + x$
8. $34755 + 712 + 20 = 33755 + 712 + 20 + x$
9. $625 + 175 + 200 = 700 + x$
10. $400 \times 10 \times 10 \times 10 = 400 \times x$

[11-18] Find the value of y

11. $95000 \div 19 = y$
12. $8000 - y = 7998$
13. $9345 \times 62 \times 0 \times 4 = y$
14. $5325 + y = 5375$
15. $9278 - y = 9250$
16. $275 + y = 500$
17. $650 + 950 + 250 = y$
18. $1300 + 1400 + 373 = y$
19. How many sides are there in 9 hexagons?
20. How many sides are there in 8 pentagons?
21. How many minutes are there in 1800 seconds?
22. How many oranges are there in 15 dozens?
23. How many cars are needed for 145 persons if 5 persons can sit in one car?

24. Ravi purchased 5 shirts each costing ₹ 350. What is the total cost of 5 shirts?
25. 60 flowers are needed to make a garland. How many flowers are needed to make 20 such garlands?
26. How many chocolates are there in 22 boxes, if there are 22 chocolates in each box?
27. Amit gets ₹ 200 for 1 view on his video. Find the amount he would get for 250 views on his video.
28. How many beds can be arranged in 23 rooms of a hospital if there are 23 beds in each room?
29. A cycle costs ₹ 6000. Find the cost of 10 such cycles.
30. If 75 + 35 = 110, find 750+ 350 = ?
31. There are 157 books on one shelf and 243 books on other shelf of an Almirah. How many books are there in all?
32. In a garden, there were 72 Coconut trees, 18 Neem trees and 40 Mango trees. How many trees were there in all in the garden?
33. Akash donates 15 cycles daily. How many cycles would he donate in 42 days?
34. When a number is added to 351, it becomes 431. Find the number.
35. How many times should we add 15 to 200 so that it becomes 290 ?
36.

Find the total number of apples in boxes A, B and C .

37. Madhu reads 9 pages daily from a book which has 72 pages. After 5 days, how many pages remain unread?
38. Meena bought 6 copies for ₹ 66 and a book for ₹ 35. How many rupees did she have to pay to the shopkeeper?
39. What number should be added to 961 to make it 3000?
40. There are 80 balloons in a packet. Find the number of packet needed for 2400 balloons.
41. If $x + x + x + x = 80$ then find the value of x.

42. **Find the value :**

$91 - 85 + 80 - 75 + 60$

43. **Find the value :**

$73 + 64 + 67 - 71 - 60 - 62$

44. **Find the value of x :**

$950 \div 19 + 25 - x = 25 - 31$

45. **Find the sum when successor of 120 and predecessor of 241 are added?**

46. **A tyre covers a distance of 150 cm in one rotation. How many rotation will it do in covering a distance of 1050 cm?**

47. **A toy showroom has 10 bikes and 15 cars. Find the total of all these items in the toy showroom if the cost of a bike and a car is ₹100 and ₹200 respectively.**

48. **Shubham gets pocket money of ₹ 2200. He bought two pants each costing ₹ 500. How much money does he have now?**

49. **If 5 persons can sit in a car and 2 persons can sit on a bike, then how many persons can sit in 13 cars and 16 bikes?**

50. **Find the value of x :**

Greatest 2 digit number + smallest 2 digit number – greatest 1 digit number = x

ANSWERS:

Q. No.	Answers	Q. No.	Answers
1.	6010	26.	484
2.	45	27.	₹ 50000
3.	0	28.	529
4.	60	29.	₹ 60000
5.	125	30.	1100
6.	0	31.	400
7.	50	32.	130
8.	1000	33.	630
9.	300	34.	80
10.	1000	35.	6 times
11.	5000	36.	89
12.	2	37.	27
13.	0	38.	₹ 101
14.	50	39.	2039
15.	28	40.	30
16.	225	41.	20
17.	1850	42.	71
18.	3073	43.	11
19.	54	44.	81
20.	40	45.	361
21.	30	46.	7
22.	180	47.	₹ 4000
23.	29	48.	₹ 1200
24.	₹ 1750	49.	97
25.	1200	50.	100

CHAPTER- 3

ROMAN NUMERALS

Points To Remember

- Hundred years ago, the Romans had a system of numbers with only seven symbols.
- Each symbol had a different value and there was no symbol for '0'. These symbols are I, V, X, L, C, D and M. The values of these symbols are given below:

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

Romans used different combination of symbols to write numbers using addition and subtraction.

Addition rule of ROMAN NUMBERS:

1. When a symbol is repeated in succession, we add the value of the numeral by the number of times it is repeated. A symbol cannot be repeated more than 3 times in succession.

   For example: III = 1 +1 + 1 = 3

   XX = 10 + 10 = 20

   XXX=10 +10+10=30

   BUT XXXX = 40 IS NOT CORRECT. 40 is written as XL

2. A smaller Roman numeral written to the right of a larger Roman numeral is added to the greater numeral.

   For example: VII = 5 + 1+1 = 7

   XIV =10 + 4= 14

   XXVI =10 + 10 + 6 = 26

3. Symbol V, L and D are never repeated.

SUBTRACTION RULE:

A smaller Roman numeral written on the left of a larger numeral is subtracted from the larger numeral.

For example: IV = 5 – 1 = 4

IX = 10 – 1 = 9

XL = 50 – 10 = 40

XC = 100 – 10 = 90

- I can be subtracted from V and X only.
- V and L are never subtracted and repeated.
- X can be subtracted from L and C only.
- C can be subtracted from D and M only.

CONVERSION OF INDO ARABIC NUMERALS INTO ROMAN NUMERALS:

To convert a number given in Indo- Arabic numerals into Roman numerals, convert one digit at a time and proceed as follows:

For example: 327 = 300 + 10 + 10 + 7

= CCC + X +X +VII

= CCCXXVII

CONVERSION OF ROMAN NUMERALS INTO INDO -ARABIC NUMERALS:

For example: CCLXI = 100 + 100 + 50 + 11

= 200 + 50 + 11

= 261

MDCCLVI = 1000 + 500 + 100 + 100 + 50 + 6

= 1756

- A line above a Roman numeral means "multiply by 1000"

For example: $\overline{V}$ = 5 X 1000 = 5000

$\overline{X}$ = 10 X 1000 = 10000

- The Roman numerals I does not take an overbar since the value 1000 is already represented by M.

QUESTIONS:

[1-10] What will be the Indo- Arabic numeral for each of the following Roman Numerals:

1. DX
2. XCI
3. LXI
4. XLV
5. DC
6. DCCL
7. DCXX
8. CMXL
9. DLXI
10. DXCVII

[11-15] Replace the given incorrect Roman numerals with the correct ones:

11. CCCC
12. $\overline{\text{II}}$
13. LL
14. IIII
15. XD

[16-23] Evaluate and express in Roman Numerals for each of the following:-

16. $12 + 13 - 4$
17. $20 \div 2 + 5$
18. $3 \times 7 + 2 \times 3$
19. $64 - 60 + 53 - 51 + 79 - 72$
20. $81 + 48 + 37 - 80 - 40 - 30$
21. $400 - 100 + 210$
22. $800 + 100 - 210$
23. $250 + 200 + 300 - 100$

[24-33] Find the value in Roman Numerals:-

24. IX + X
25. XL − XIV
26. XV + XIII
27. XXXV − XVIII
28. CCLX – CLX
29. XC + L
30. XXV ÷ V
31. C × L
32. L ÷ V + V × IV
33. X + C – L

[34-38] Find the value in Indo-Arabic Numerals:

34. CDL − CCCLX
35. LXXI + XXVIII
36. CIV ÷ VIII
37. MCMX − CM
38. XLIX + L + CI
39. **Which Roman numeral should be subtracted from L to get XXXV?**
40. **Which Roman numeral should be added to XLII to get LV?**
41. **Find the quotient in Roman numeral when XXVII is divided by IX.**
42. **By which Roman numeral should we divide LX to get X as quotient?**
43. **Find the value of (30×4+30) in Roman numeral.**
44. **By which Roman numeral should XII be multiplied to get the product XCVI?**
45. **Express the value ($\frac{2020}{5}$) in Roman numerals.**

[46-50] Find the value of x in Roman numerals:

46. $200 + x - 30 = 350 + 20$
47. $87 - 80 + 75 - 70 + 68 - 60 = x$
48. $50 - x + 75 - 20 = 50$
49. $18 \times 2 + 7 \times 2 - x = 10$
50. $24 \div 3 + x + 2 \times 3 = 45$

ANSWERS:

Q. No.	Answers	Q. No.	Answers
1.	510	26.	XXVIII
2.	91	27.	XVII
3.	69	28.	C
4.	45	29.	CXL
5.	600	30.	V
6.	750	31.	V
7.	620	32.	XXX
8.	940	33.	LX
9.	561	34.	90
10.	597	35.	99
11.	CD	36.	13
12.	MM	37.	1010
13.	C	38.	200
14.	IV	39.	XV
15.	CDXC	40.	XIII
16.	XXI	41.	III
17.	XV	42.	VI
18.	XXVII	43.	CL
19.	XIII	44.	VIII
20.	XVI	45.	CDIV
21.	DX	46.	CC
22.	DCXC	47.	XX
23.	DCL	48.	LV
24.	XIX	49.	XL
25.	XXVI	50.	XXXI

CHAPTER- 4

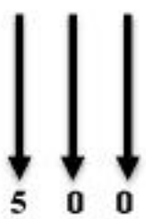
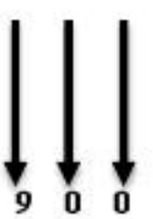
ESTIMATION

Points To Remember

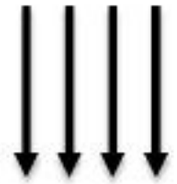
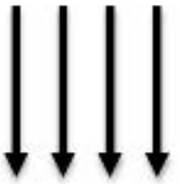
- **Estimation means not to give the exact value or number of things but the "approximate" value or number of things.**
- **This approximate value is the nearest multiple of 10 or 100 or 1000 etc.**
- **This is known as the *Rounding off the numbers* to the nearest ten or hundred or thousand etc.**
- **To round off the given number to the nearest ten, observe the digit at *units* place.**

If it is less than 5	*If it is equal to or more than 5*
For example	**For example**
7 4 4  **7 4 0**	**8 6 5**  **8 7 0**
So 744 is rounded off to 740	**So 865 is rounded off to 870**

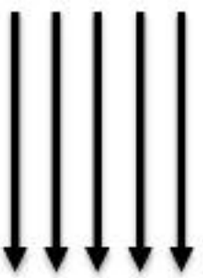
- **To round off the given number to the nearest *hundred*, observe the digit at *tens* place.**

If it is less than 5	*If it is equal to or more than 5*
For example	**For example**
5 2 9  **5 0 0**	**8 6 8**  **9 0 0**
So 529 is rounded off to 500	**So 868 is rounded off to 900**

- **To round off the given number to the nearest thousand, observe the digit at *hundreds* place.**

If it is less than 5	*If it is equal to or more than 5*
For example:	**For example**
6 3 7 5	**8 7 3 8**
	
6 0 0 0	**9 0 0 0**
So 6375 is rounded off to 6000	**So 8738 is rounded off to 9000**

- **To round off the given number to the nearest ten thousand, observe the digit at *thousands* place.**

If it is less than 5	*If it is equal to or more than 5*
For example	**For example**
2 2 6 4 5	**3 5 5 2 1**
	
2 0 0 0 0	**4 0 0 0 0**
So 22645 is rounded off to 20000	**So 35521 is rounded off to 40000**

QUESTIONS:

[1-5] Round off the following numbers to the nearest ten:

1. **63**
2. **478**
3. **8385**
4. **71256**

5. 40872

[6-10] Round off the following numbers to the nearest hundred:

6. 846
7. 782
8. 4876
9. 93725
10. 98459

[11-15]Round off the following numbers to the nearest thousand:

11. 7234
12. 5632
13. 87654
14. 88356
15. 99845

[16-20] Round off the following numbers to the nearest ten thousand:

16. 52352
17. 84345
18. 48934
19. 67302
20. 89560

[21-25] Evaluate and round off the answers to the nearest ten:

21. $30 + 21 + 15$
22. $75 - 21 + 24$
23. $300 + 25 + 41$
24. $41 - 40 + 64 - 61 + 21$
25. $60 + 65 - 54 - 50$
26. A shark is 39 m long. Find its approximate length if rounded off to nearest ten.
27. A ground is 83 m long. Find its approximate length if rounded off to the nearest ten.
28. A book contains 53729 pages. Round off the number of pages to nearest thousand.
29. Manish has ₹45423 in his bank account. Round off the amount to the nearest thousand.

30. The cost price of a refrigerator is ₹ 27850. Find its estimated value if the cost price is rounded off to the nearest ten thousand.

31. Lakshay lives in a rented flat in Delhi. He pays ₹42924 as rent per year. How much money does he pay as rent if rounded off to the nearest ten thousand?

32. Arman weighs 152 kg and Mohan weighs 118 kg. What is the difference of their weights if the weight of each is rounded off to the nearest hundred?

33. A cow gives 36 litres of milk every day. How much milk will it give in 4 days ? Round off the answer to the nearest ten.

34. Meera drinks 230 millilitre of milk every day. How much milk does she drink in 2 days? Round off your answer to the nearest hundred.

35. My height is 135 centimetres and my sister's height is 159 centimetres. Find the sum of our heights if the height of each is rounded off to the nearest ten.

36. Arjun drinks 175 millilitre of milk every day. Round off the quantity of milk to the nearest hundred and now find how much milk does he drink in a week?

37. Sumit writes 125 pages per day. How many pages will he write in 5 days? Round off the answer to the nearest ten.

38. Tanu travels 14 km, 19 km and 13 km in 3 hours respectively. Find the total approximate distance travelled by Tanu in 3 hours, if rounded off to the nearest ten.

39. Surender earns ₹5000 a month and spends ₹2560 from it. Find his savings (rounded off to the nearest hundred).

40. Rishabh climbs up 15 metres in 1 minute and slips down 3 metres in the next minute. Find the total distance covered by him in 5 minutes (rounded off to the nearest ten).

ANSWERS:

Q. No.	Answers	Q. No.	Answers
1.	60	21.	70
2.	480	22.	80
3.	8390	23.	370
4.	71260	24.	30
5.	40870	25.	20
6.	800	26.	40 metres
7.	800	27.	80 metres
8.	4900	28.	54000
9.	93700	29.	₹ 45000
10.	98500	30.	₹ 30000
11.	7000	31.	₹ 40000
12.	6000	32.	100kg
13.	88000	33.	140 litres
14.	88000	34.	500ml
15.	100000	35.	300cm
16.	50000	36.	1400ml or 1.4 litres
17.	80000	37.	630
18.	50000	38.	50 km
19.	70000	39.	₹ 2400
20.	90000	40.	40 metres

CHAPTER-5

DODGING TABLES AND SIMPLIFICATION

Points To Remember:

- **In simplifying an expression containing more than one operation, the order of performing various operations must be maintained in the following manner:**

B	O	D	M	A	S
↓	↓	↓	↓	↓	↓
Bracket	of	Division	Multiplication	Addition	Subtraction
( )	of	÷	×	+	−

First preference ⟶ Last preference

- **A numerical expression within a bracket is solved in the order ODMAS (ODMAS→ of ÷ × + −)**

  For Example:-

  $(56-36) \div 4 \times 2 + 7 - 2$

  $= 20 \div 4 \times 2 + 7 - 2$ **(Solved brackets)**

  $= 5 \times 2 + 7 - 2$ **(Performed division)**

  $= 10 + 7 - 2$ **(Performed multiplication)**

  $= 17 - 2$ **(Performed addition)**

  $= 15$ **(Performed subtraction)**

- **If there is no symbol of operation between a number and a bracket, multiply both while solving the expression**

  For Example:-

  $2 + 3(2) = 2 + 6 = 8$

- **If there is a symbol of subtraction (−) before a bracket and the bracket is removed (without simplifying the inner terms), symbol of plus and minus of inner terms are changed to minus and plus respectively.**

  For Example:

  $3-(2+3-4)$

  $=3-2-3+4$

- **A symbol of plus (+) before the bracket does not change the symbols of the inner terms.**

  For example:-

  $8+(2-3-1)$

  $=8+2-3-1$

- **Interesting Patterns:-**

- $(1\times 8)+1=9$

  $(12\times 8)+2=98$

  $(123\times 8)+3=987$

  $(1234\times 8)+4=9876$

- $(0\times 9)+1=1$

  $(1\times 9)+2=11$

  $(12\times 9)+3=111$

  $(123\times 9)+4=1111$

- **Short Method of multiplication**

35×103	6×49
Break up 103 as $100+3$	Break up 49 as $50-1$
$103 = 100+3$	$49 = 50-1$
$35\times 100 = 3500$	$6\times 50 = 300$
$35\times 3 = 105$	$6\times 1 = 6$
Thus, $35\times 103 = 3605$	$6\times 49 = 300-6 = 294$

QUESTIONS:

[1-15] Simplify the following

1. $48 \times 4 \times 5 \times 0$
2. $12 \times 3 + 6 \div 3$
3. $48 + 20 \div 10 \times 5$
4. $25 \div 5 \times 4 + 20 - 10$
5. $(84 \div 7) \times 12 + 80$
6. $250 - (20 \times 3 - 50)$
7. $30 + (50 - 65 + 75)$
8. $20 + (5 \times 14)$
9. $8 \times 4 - 5 + 3$
10. $650 \div 65 \times 74$
11. $(9000 \div 90) - 16$
12. $18 \times 4 + 16 \div 2$
13. $50 \div 5 + 20 - 6 \times 2$
14. $90 \times 4 \div 4 + 60 \div 2$
15. $42 + 8 \div 2 + 6 \times 3$

[16-20] Find the value of z :-

16. $65 - 15$ twos $= z$
17. $45 - 20$ twos $= z$
18. $25 - 8$ threes $= z$
19. $35 - 16$ twos $= z$
20. $110 - 5$ twos $= z$

[21-25] Find the value of y :-

21. One thousand $\times$ One hundred $= y$
22. One Lakh $\times$ One hundred $= y$
23. One hundred $\times$ One hundred $= y$
24. One thousand $\times$ One thousand $= y$
25. Ten thousand $\times$ One thousand $= y$

[26-35] Find the value of x

26. $17 \times x = 136$
27. $135 \div x = 15$
28. $160 \times x = 32000$

29. $68 \times 1000 = x \times 100$

30. $95 \times 10 = x \times 5 \times 2$

31. $250 \times x = 75000$

32. $18 \times 20 = x \times 10$

33. $90 \times 90 = 100 \times x$

34. $x \times 300 = 9000$

35. $180 \times 10 = 18 \times x$

36. Find :- $888888 \div 88$

37. Find :- $60000 \div 60$

38. Find :- $5050 \div 50$

39. Find 4 times $\frac{1}{4}$.

40. If $18952 \div 23 = 824$, then find $18952 \div 824$.

41. How many times will you add 17 to get 187?

42. How many times can we subtract 25 from 625?

43. What number should be added 8 times to get 104?

44. If $250 \times 15 = 3750$, then find 250×16.

45. If $550 \times 20 = 11000$, then find 550×200.

46. If $65 \times 10 = 650$, then find 65×8.

[47-50] Find the value of x

47. $25 \times 65 = (25 \times 60) + (25 \times x)$

48. $98 \times 13 = (98 \times 15) - (98 \times x)$

49. $46 \times 19 = (46 \times x) - 46$

50. $19 + 19 + 19 + 19 + 19 = x$

51. Find the value of $\square$

if $\bigcirc + \square = 5$

$\Delta + \Delta = 8$

$\bigcirc + \Delta = 7$

52. Find the value of Δ

if $\Delta + \bigcirc + \square = 12$

$\bigcirc + \bigcirc = 10$

$2 \times \square + \bigcirc = 11$

53. Find the value of ○

if $\Delta + \Delta + \Delta = 21$

$\square - \Delta = 5$

$\bigcirc \times \square = 24$

54. If $5 + 10 = \Delta + 7$

$\square + \Delta = 3 + 9$

$\square - \bigcirc = 10 - \Delta$

then, find the value of $\Delta + \bigcirc + \square$

55. If $\square \times \square \times \bigcirc = 16$

$\Delta \times \Delta \times \Delta = 27$

$\Delta \times \square = 6$

then, find the value of $\square + \bigcirc \times \Delta$

ANSWERS:

Q. No.	Answers	Q. No.	Answers
1.	0	29.	680
2.	38	30.	95
3.	58	31.	300
4.	30	32.	36
5.	224	33.	81
6.	240	34.	30
7.	90	35.	100
8.	90	36.	10101
9.	30	37.	1000
10.	740	38.	101
11.	84	39.	69
12.	80	40.	23
13.	18	41.	11
14.	120	42.	25
15.	64	43.	13
16.	35	44.	4000
17.	5	45.	110000
18.	1	46.	520
19.	3	47.	5
20.	100	48.	2
20.	One Lakh	49.	20
22.	One Crore	50.	95
23.	Ten Thousand	51.	2
24.	Ten Lakh	52.	4
25.	One Crore	53.	2
26.	8	54.	14
27.	9	55.	14
28.	200		

CHAPTER – 6

FACTORS AND MULTIPLES

Points To Remember

➢ Factors :

- A factor of a number is a number which divides the number completely leaving no remainder. For example: 3 divides 9 leaving no remainder. So 3 is a factor of 9.
- 1 is a factor of every number.
- Every number except 1, has at least two factors: 1 and the number itself.
- A number has limited number of factors.
  For example: the factors of 6 are 1, 2, 3 and 6.
- A factor of a number is either less than or equal to the number.

➢ Multiples

- Multiples of a given number are those numbers which when divided by the given number leave no remainder.
- Multiple of a number is obtained by multiplying the number by another number.
  For example: multiples of 4 are obtained by multiplying 4 with 1,2,3,4 and so on.
- Every number is a multiple of 1 and itself.
- Every multiple of a number is either greater than or equal to the number.
- A number can have unlimited number of multiples.
  For example: the multiples of 5 are 5, 10, 15 …… so on.

➢ Classification of factors and multiples :

On the basis of divisibility, factors and multiples of a number can be classified into various types.

a) Even number: A number exactly divisible by 2 is called an even number.
For example : 2, 4, 18, 56, 462 etc.

b) Odd number: A number when divided by 2 leaves remainder 1, is called an odd number.
For example : 1, 3, 5, 7, 9, 11, 13, 19, 151 etc.

c) Prime number: A number which has exactly two factors, 1 and the number itself, is called a prime number.
For example: 2, 3, 5, 7, 11, 13 etc.
9 is not a prime number because it has three factors 1, 3 and 9.

d) Composite number: A number which has three or more factors is called a composite number.
For example: 4, 6, 10, 12 etc.

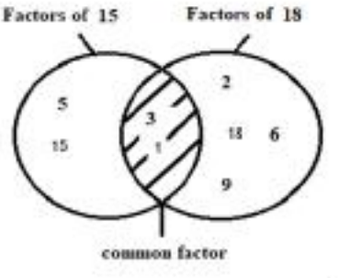
- **1 is neither prime nor composite number.**
- **2 is the only even number which is a prime number also.**

➢ Prime Factors :

- **A factor of a given number is called a prime factor if it is a prime number.**
- **For example: 3 and 6 are the factors of 18. 3 is a prime factor but 6 is not a prime factor of 18.**

➢ Common factors and multiples :

- **By comparing the factors and multiples of two or three numbers, we can find the common factors and common multiples.**
- **Common factors of 15 and 18 :-**
  Factors of 15 = 1, 3, 5, 15
  Factors of 18 = 1,2, 3, 6, 9,18
  1,3 are the common factor of 15 and 18

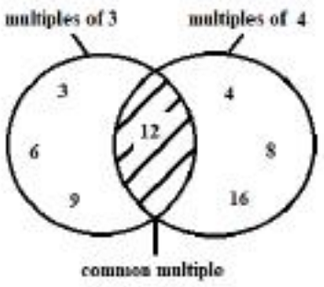


- **Common multiples of 3 and 4 :-**

  Multiples of 3 = 3, 6, 9, 12 ……..

  Multiples of 4 = 4, 8, 12, 16 ……..

  12 is the common multiple of 3 and 4



QUESTIONS:

[01-08] Fill in the blanks:

1. **_____ is a factor of every number.**
2. **_____numbers are multiples of 2.**
3. **_____numbers are not multiples of 2.**
4. **Numbers which have only two factors are called_____.**
5. **Numbers which have more than two factors are called_____.**
6. **_____is the only even prime number.**
7. **_____number is neither composite not prime number.**
8. **Every number is a multiple of _____ and itself.**
9. **Find all the factors of 24.**
10. **Find the sum of all the factors of 9.**
11. **What is the greatest factor of 20?**
12. **Find the smallest factor of greatest 3 digit number.**
13. **Find the least factor of 98.**
14. **How many prime numbers are there between 10 and 20?**
15. **Find the sum of least multiples of 40 and 25.**
16. **Find the sum of least multiples of 46 and smallest factor of 98.**
17. **How many composite numbers are there between 40 and 50?**
18. **Find the multiples of 7 which lies between 30 and 40.**
19. **Find the multiple of 5 and 2 which is 2 more than the third multiple of 6.**
20. **How many prime numbers are there which are less than 30 ?**
21. **Which is the least prime number which is greater than 32?**
22. **How much will be the quotient when greatest factor of 72 is divided by 8?**
23. **What are the prime factors of 56?**
24. **What least number should be added to 8367 to make it divisible by 10?**

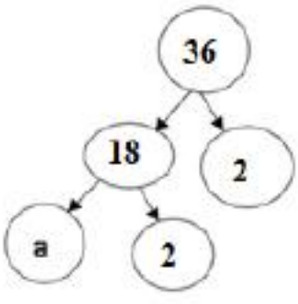
25. Fill in the box with the least possible digit greater than zero so that the number is divisible by 2.

5 ☐ 12

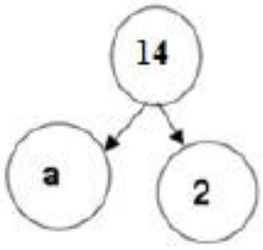
26. What is the product of the prime factor of 4 and prime factor of 9?
27. Find the least common multiple of 2, 8 and 12.
28. Find the product of second multiple of 5 and third multiple of 4.
29. Find the least multiple of 5 which is divisible by 4.
30. Find all the common factors of 6 and 24.
31. Find the product of all common prime factors of 18 and 24.
32. Find the greatest common factor of 16, 24 and 48.
33. Find the greatest number which exactly divides 15 and 25.
34. Find the sum of common factors of 15 and 20.
35. Akash's age is factor of 14. Next year his age will be a multiple of 5. How old will he be in 6 years' time ?
36. 15 and 30 are common multiples of 5 and X. X is a one digit number other than 1, what is X?
37. Given that (P+3) is the highest common factor of 81 and 108. Find the value of P.
38. Two ropes 18m long and 24m long are cut into small pieces of same length. What can be the maximum length of each piece?
39. Himanshu visits the library every 4^{th} day and Ashish every 6^{th} day. Find out the days on which both meet in the library in the month of April.
40. P is the largest factor of 24 and Q is its smallest multiple. Find the value of 2P + 3Q.
41. If P is the prime factor of 4 and Q is the second multiple of 8. Find the value of 5P + Q.

[42-43] Find the value of a.

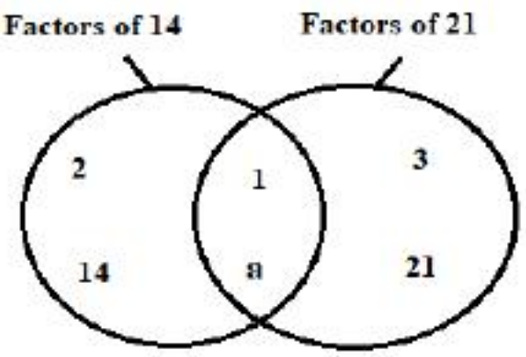
42. a)



b)



43.



[44-50] Identify the number from the riddles.

44. **I am a two digit prime number less than 47. The product of my digits is 21. Who am I?**

45. **I am a multiple of 3 but not of 6 and 9.**
    - **I am greater than 22 but less than 37.**
    - **Who am I?**

46. **I am a two digit odd composite number. Sum of my digits is 12 and I am greater than 89. Who am I?**

47. **I am a composite number.**
    - **I am a multiple of 4 but not a multiple of 10.**
    - **I am a factor of 100**
    - **I am a single digit number.**
    - **Who am I?**

48. **I am a factor of 120.**
    - **I am a multiple of 2 and 3.**
    - **I am 1 away from a multiple of 5 and sum of my digits is 6.**
    - **Who am I?**

49. **I am not a prime number and less than 10**
    - **One of my factors is 3.**
    - **I am an even number.**
    - **Who am I?**

50. **I am less than square of 5 and greater than 10.**
    - **I am a factor of 30 .**
    - **I am a multiple of 5 .**
    - **I am an odd number.**
    - **Who am I?**

ANSWERS:

Q.No.	Answer	Q.No.	Answer
1.	1	26.	6
2.	Even	27.	24
3.	Odd	28.	120
4.	Prime	29.	20
5.	Composite	30.	1,2,3,6
6.	2	31.	6
7.	1	32.	8
8.	1	33.	5
9.	1,2,3,4,6,8,12,24	34.	6
10.	13	35.	20 years
11.	20	36.	3
12.	1	37.	24
13.	1	38.	6 m
14.	4	39.	12^{th} day and 24^{th} day
15.	65	40.	120
16.	47	41.	26
17.	6	42.	a. 9 b. 7
18.	35	43.	7
19.	20	44.	37
20.	10	45.	33
21.	37	46.	93
22.	9	47.	4
23.	2,7	48.	24
24.	3	49.	6
25.	1	50.	15

CHAPTER - 7

FRACTIONS

Points To Remember

- Whole thing is represented as 1.
- A fraction indicates one or more equal parts of a whole.

One		This is a whole. It is written as 1.
One half		If we divide the whole into 2 equal parts. Each part is called one-half. It is written as $\frac{1}{1}$.
One-third		If we divide the whole into 3 equal parts, each part is called one-third. It is written as $\frac{1}{3}$.
One-fourth		If we divide the whole into 4 equal parts, each part is called one-fourth or quarter. It is written as $\frac{1}{4}$.

- The numbers such as quarter, one-fifth, two-third are called Fractional Numbers and their values $\frac{1}{4}, \frac{1}{5}, \frac{1}{3}$ are called Fractions.

  A fraction has two parts Numerator and Denominator.

  For example: In $\frac{4}{7}$,

  4 is numerator

  7 is denominator

- The form $5 \div 2$ can be written as $\frac{5}{1}$.
- Every whole number is written as a fraction by putting 1 in place of denominator

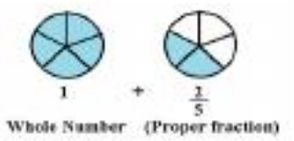
  e.g. $5 = \frac{5}{1}$

- **Types of fractions :**
  - **Proper Fraction : A fraction whose numerator (N) is smaller than its denominator (D), N<D.**

    e.g. $\frac{3}{4}, \frac{1}{5}, \frac{11}{13}$
  - **Improper Fraction: A fraction whose numerator (N) is greater than its denominator (D), N >D.**

    e.g. $\frac{7}{4}, \frac{9}{8}, \frac{15}{13}$
  - **Mixed Fraction/Mixed number: When an improper fraction is expressed as a combination of a whole number and a proper fraction.**

    e.g. $1\frac{1}{5}$

  - **Like Fractions: Fractions with the same denominator.**

    e.g. $\frac{3}{7}, \frac{4}{7}, \frac{5}{7}$
  - **Unlike Fractions: Fractions with the different denominators.**

    e.g. $\frac{1}{3}, \frac{4}{7}, \frac{8}{9}$
  - **Unit Fractions: Fractions with numerator 1.**

    e.g. $\frac{1}{5}, \frac{1}{7}, \frac{1}{15}$
  - **Equivalent Fractions: Two or more fractions which represent the same part of the whole.**

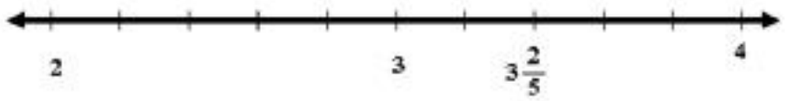
    e.g. $\frac{1}{1}, \frac{6}{11}, \frac{7}{14}$
  - **Complex or Compound Fractions: It is a fraction that contains other fractions in its numerator or denominator or both.**

    e.g. $\frac{\frac{2}{3}}{\frac{5}{7}}$
- **Reciprocal Fraction: Reciprocal of a fraction can be obtained by interchanging the numerator and denominator of the fraction.**

  e.g. Reciprocal of $\frac{4}{5}$ **is** $\frac{5}{4}$

- **Fractions on a number line: Every fraction has a point associated with it on the number line.**

  e.g. Represent $3\frac{1}{5}$ on the number line.



- **Multiplicative inverse of a Fraction: Two numbers are the multiplicative inverse (M.I.) of each other when their product is 1.**

  e.g. M.I. of $\frac{1}{3}$ is $\frac{3}{1}$ because product of $\frac{1}{3}$ and $\frac{3}{1}$ is 1.

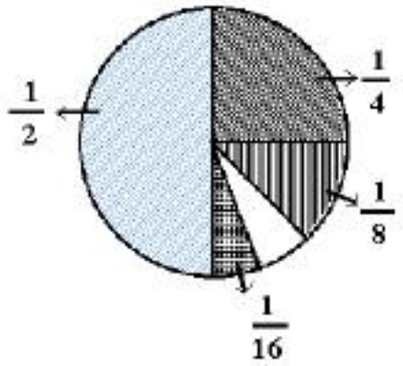
- **Simplification of a Fraction: Simplifying the fraction means reducing the fraction to its lowest form i.e. Divide numerator and denominator of fraction by common factors till the fraction is in lowest form.**

  e.g. $\frac{11}{63}$

  $\frac{11\div3}{63\div3}=\frac{7}{11}$ **(Dividing N and D by common factor 3)**

  $\frac{7\div7}{11\div7}=\frac{1}{3}$ **(Dividing N and D by common factor 7)**

- **Relation between whole and its parts**



- **Addition and Subtraction of Fractions:-**
  - **In case of like fractions, simply add/subtract the numerators as the denominators remains the same.**

  e.g . $\frac{7}{45}+\frac{8}{45}=\frac{15}{45}=\frac{1}{3}$ **(Reducing the fraction to its simplest form).**

  $\frac{17}{33}-\frac{6}{33}=\frac{11}{33}=\frac{1}{3}$

  - **While adding/ subtracting unlike fractions, firstly convert them into like fraction by taking LCM of denominators then make equivalent fractions of denominators.**

e.g. (1). $\frac{1}{3} + \frac{1}{5}$

LCM of 3 and 5 is $3 \times 5 = 15$

Now make equivalent fractions of denominator 15

$\frac{1}{3} = \frac{1\times5}{3\times5} = \frac{5}{15}$

$\frac{1}{5} = \frac{1\times3}{5\times3} = \frac{3}{15}$

Thus $\frac{5}{15} + \frac{3}{15} = \frac{5+3}{15} = \frac{8}{15}$

e.g. (2). $\frac{16}{5} - \frac{7}{10}$

LCM of 5 and 10 is 10

Now make equivalent fractions of denominator 10

$\frac{16}{5} = \frac{16\times1}{5\times1} = \frac{31}{10}$

Thus $\frac{31}{10} - \frac{7}{10} = \frac{31-7}{10} = \frac{15}{10} = \frac{5}{1}$

- **Multiplication of Fractions: Multiply numerator with numerator and denominator with denominator and then simplify to its lowest form.**

e.g. (1). $\frac{5}{6} \times \frac{9}{10} = \frac{45}{60} = \frac{3}{4}$ **(Fraction of a Fraction)**

(2). $\frac{1}{1} \times 4 = 2$

- **Division of Fractions:**

e.g. (1). $\frac{7}{14} \div \frac{5}{11}$

$= \frac{7}{14} \times \frac{11}{5}$

$= \frac{84}{110} = \frac{7}{10}$

e.g. (2). How many $\frac{1}{4}$ **are there in** $\frac{1}{1}$ **?**

$= \frac{1}{1} \div \frac{1}{4}$

$= \frac{1}{1} \times \frac{4}{1}$

$= 2$

QUESTIONS:

1. **Find the numerical value for the following fractional numbers :**

   (a) Two- third

   (b) Three – fifth

   (c) A quarter

2. **Identify the proper and improper fractions :**

   $\frac{5}{6}$, $\frac{7}{1}$, $\frac{1}{1}$, $\frac{3}{4}$, $\frac{11}{5}$, $\frac{6}{5}$, $\frac{11}{15}$, $\frac{37}{11}$

3. **Compare the following fractions by putting >, < or = sign.**

   a) $\frac{4}{5} \square \frac{3}{5}$

   b) $\frac{6513}{6513} \square 1$

   c) $1 \square \frac{7}{8}$

   d) $\frac{4}{4} \square 1$

   e) $\frac{3}{5} \square 1$

   f) $\frac{1}{11} \square \frac{1}{10}$

   g) $\frac{13}{11} \square \frac{16}{11}$

4. **Which fraction is odd one out?**

   a) $\frac{1}{1}$, $\frac{1}{3}$, $\frac{1}{10}$, $\frac{4}{3}$

   b) $\frac{3}{6}$, $\frac{1}{4}$, $\frac{3}{5}$, $\frac{5}{10}$

   c) $\frac{1}{11}$, $\frac{3}{7}$, $\frac{1}{8}$, $\frac{3}{9}$

5. **Convert the following to mixed fraction :**

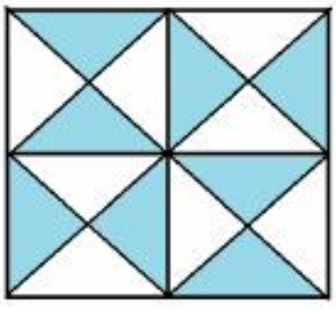
   a) $\frac{18}{5}$ b) $\frac{11}{4}$ c) $\frac{114}{11}$

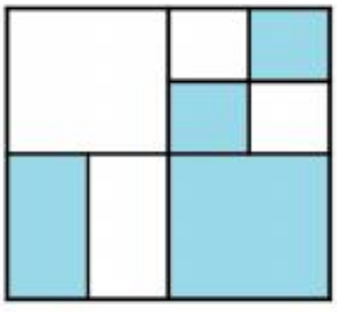
6. **Find the fractional form of :**

   a) $4 \div 15$ b) $5 \div 9$

7. **For shaded portion, find the fraction in lowest form.**

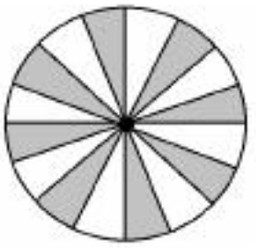
   a) b)



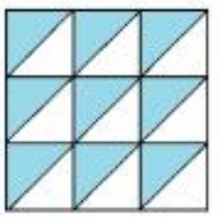


8. In the given figure how much part is unshaded?

(a)



(b)



9. Express the following in simplest form.

a) $\frac{45}{110}$ b) $\frac{48}{96}$

10. Express the following in improper fraction :

a) $5\frac{1}{7}$ b) $6\frac{7}{9}$

11. Find the fraction of prime numbers between 1 and 12.

12. Express the shaded part of following in mixed fraction.

[13-15] Arrange the following fractions in descending order.

13. $\frac{7}{12}, \frac{5}{12}, \frac{9}{12}, \frac{1}{12}, \frac{2}{12}$

14. $\frac{6}{15}, \frac{9}{15}, \frac{12}{15}, \frac{4}{15}, \frac{11}{15}$

15. $\frac{7}{12}, \frac{7}{15}, \frac{7}{16}, \frac{7}{10}$

[16-18] Arrange the following fractions in ascending order.

16. $\frac{4}{7}, \frac{3}{7}, \frac{2}{7}, \frac{5}{7}, \frac{6}{7}$

17. $\frac{5}{13}, \frac{7}{13}, \frac{1}{13}, \frac{4}{13}, \frac{6}{13}$

18. $\frac{10}{2}, \frac{10}{7}, \frac{10}{6}, \frac{10}{3}, \frac{10}{5}$

19. Find the value of:

a) $\frac{1}{6}$ of 96.

b) $\frac{1}{4}$ of 120.

20. Convert :

a) $\frac{5}{7}$ in the form of a fraction having 45 as a numerator.

b) $\frac{1}{7}$ in the form of a fraction whose denominator will be 28.

21. Find multiplicative inverse of $\frac{7}{8}$.

22. Find $\frac{3}{5}$ of a kilogram.

23. How much will be $\frac{1}{5}$ of a rupee?

24. Find $\frac{1}{1}$ of a metre.

25. Express $\frac{1}{5}$ m as centimetre.

26. What is the product of $\frac{5}{119}$ and it's reciprocal?

27. Find the sum of $\frac{1}{3}$, $\frac{4}{3}$ and $\frac{3}{4}$.

28. Subtract $\frac{4}{7}$ from $\frac{6}{7}$.

29. Solve:

a) $5\frac{1}{5} + 4\frac{1}{1} + 4\frac{1}{3}$

b) $8 - 2\frac{1}{1}$.

c) $\frac{4}{5} + \frac{6}{10}$

d) $\frac{8}{15} - \frac{5}{30}$

30. What is the difference between $\frac{3}{5}$ of 800 and $\frac{1}{1}$ of 300?

31. An $8\frac{1}{3}$ m long rope is divided into 5 small pieces of equal length. Find the length of each piece.

32. Yashika studied $4\frac{1}{4}$ hours on Monday and $3\frac{3}{4}$ hours on Tuesday. For how many total hours did she study?

33. How much will be $\frac{3}{11}^{th}$ of 5 dozen oranges?

34. Neha reads a book for $1\frac{3}{4}$ hour every day. She reads the entire book in 6 days. How many hours in all were required by her to read the book?

35. Capacity of a parking area is for 84 cars. $\frac{3}{4}$ of the parking area is occupied. How many more cars can be parked?

36. How many $\frac{1}{4}$ are there in $9\frac{1}{4}$?

37. 8 months is how much part of a year?

38. 5 days are how much part of a week?

39. How many hours are there in $\frac{1}{3}^{rd}$ of a week?

40. $\frac{1}{4}$ of a number is 16. Find the number.

41. One metre cloth costs ₹ 80. Find the cost of $5\frac{1}{4}$ m cloth.

42. How many minutes are there in $\frac{1}{4}$ of an hour?

43. Product of two numbers is $\frac{12}{8}$. If one of them is $\frac{3}{8}$, find the other.

44. Sum of two numbers is $\frac{7}{15}$. If one of them is $\frac{3}{15}$, find the other.

45. Find the value of :

(a) $\frac{3}{4} \times \frac{3}{4} \times \frac{3}{4}$

(b) $\frac{11}{2} \times \frac{3}{10}$

(c). $\frac{1}{4\frac{1}{7}}$

(d). $3\frac{1}{2} \div 4$

46. How many $\frac{1}{6}$ are there in $\frac{5}{13}$?

47. What should be added to $\frac{3}{8}$ to make it 1?

48. Riya drank $\frac{1}{7}$ of the water from the jug and Asha drank the rest of the water. How much water did Asha drink?

49. A film show lasted for $3\frac{2}{3}$ hours. Out of this $1\frac{1}{3}$ hours were spent on advertisements. What was the actual duration of the film?

50. What should be subtracted from $11\frac{4}{5}$ to get $8\frac{2}{5}$?

51. Add:

(a) $\frac{4}{5} + \frac{6}{5} + \frac{7}{5}$

(b). $\frac{4}{6} + \frac{8}{3} + \frac{7}{6}$

(c). $\frac{4}{5} + \frac{6}{5} + \frac{6}{10}$

(d). $\frac{7}{10} + \frac{8}{10} + \frac{7}{5}$

52. Subtract :

(a) $\frac{9}{10} - \frac{1}{10}$

(b) $\frac{19}{10} - \frac{5}{10}$

(c) $\frac{5}{4} - \frac{1}{1}$

(d) $\frac{7}{11} - \frac{3}{6}$

53. A vessel contains $1\frac{1}{1}$ litre of milk. Khushi drinks $\frac{1}{4}$ litre of milk and Divya drinks $\frac{1}{1}$ litre of milk. How much of milk is left in the vessel?

54. Anushka reads three-fifth of 75 pages of her lesson. How many more pages she need to read to complete the lesson?

55. Seema have 25 books. She gave $\frac{4}{10}$ to Meena. How many books do Meena and Seema now have with them respectively?

ANSWERS:

Q. No.	Answers	Q. No.	Answers
1.	(a) $\frac{2}{3}$ (b) $\frac{3}{5}$ (c) $\frac{1}{4}$	18.	$\frac{10}{7}, \frac{10}{6}, \frac{10}{5}, \frac{10}{3}, \frac{10}{2}$
2.	Proper fraction = $\frac{5}{6}, \frac{1}{2}, \frac{3}{4}, \frac{21}{25}$ Improper fraction = $\frac{7}{2}, \frac{11}{5}, \frac{6}{5}, \frac{37}{12}$	19.	a) 16 b) 30
		20.	(a) $\frac{45}{63}$ (b) $\frac{8}{18}$
3.	(a) $\frac{4}{5} > \frac{3}{5}$ (b) $\frac{6513}{6513} = 1$ (c) $1 > \frac{7}{8}$ (d) $\frac{4}{4} = 1$ (e) $\frac{3}{5} < 1$ (f) $\frac{1}{11} < \frac{1}{10}$ (g) $\frac{13}{11} < \frac{16}{11}$	21.	$\frac{8}{7}$
		22.	600 g
		23.	40 paise
		24.	50 cm
4.	(a) $\frac{4}{3}$ (b) $\frac{3}{5}$ (c) $\frac{3}{7}$	25.	20 cm
5.	(a) $3\frac{3}{5}$ (b) $5\frac{1}{4}$ (c) $12\frac{3}{11}$	26.	1
6.	(a) $\frac{4}{15}$ (b) $\frac{5}{9}$	27.	$\frac{19}{11}$
7.	(a) $\frac{1}{2}$ (b) $\frac{1}{1}$	28.	$\frac{2}{7}$
8.	(a) $\frac{1}{2}$ (b) $\frac{1}{1}$	29.	(a) $13\frac{7}{30}$ (b) $5\frac{1}{1}$ (c) $1\frac{4}{10}$ (d) $\frac{11}{30}$
9.	(a) $\frac{3}{8}$ (b) $\frac{1}{1}$		
10.	(a) $\frac{37}{7}$ (b) $\frac{61}{9}$		
11.	$\frac{1}{2}$	30.	330
12.	$2\frac{3}{4}$	31.	$1\frac{1}{3}$ m
13.	$\frac{9}{12}, \frac{7}{12}, \frac{5}{12}, \frac{2}{12}, \frac{1}{12}$	32.	8 hours
14.	$\frac{12}{15}, \frac{11}{15}, \frac{9}{15}, \frac{6}{15}, \frac{4}{15}$	33.	15
15.	$\frac{7}{10}, \frac{7}{12}, \frac{7}{15}, \frac{7}{16}$	34.	$10\frac{1}{1}$
16.	$\frac{2}{7}, \frac{3}{7}, \frac{4}{7}, \frac{5}{7}, \frac{6}{7}$	35.	21cars
17.	$\frac{1}{13}, \frac{4}{13}, \frac{5}{13}, \frac{6}{13}, \frac{7}{13}$	36.	37

Q. No.	Answers	Q. No.	Answers
37.	$\frac{2}{3}$	48.	$\frac{5}{7}$
38.	$\frac{5}{7}$	49.	$2\frac{1}{3}$ Hours
39.	56 hours	50.	$3\frac{2}{5}$
40.	64	51.	(a) $3\frac{1}{5}$ (b) $4\frac{1}{1}$ (c) $2\frac{3}{5}$ (d) $2\frac{9}{10}$
41.	₹ 420		
42.	15 Minutes	52.	(a) $\frac{7}{10}$ (b) $\frac{9}{10}$ (c) $\frac{3}{4}$ (d) $\frac{1}{11}$
43.	4		
44.	$\frac{4}{15}$		
45.	(a) $\frac{27}{64}$ (b) $\frac{33}{10}$ (c) $\frac{7}{30}$ (d) $\frac{7}{8}$	53.	$\frac{3}{4}$ litres
		54.	30 pages
46.	$2\frac{4}{13}$	55.	Meena : 10 books Seema : 15 books
47.	$\frac{5}{8}$		

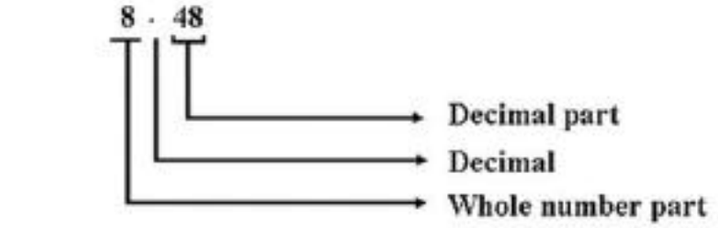
CHAPTER - 8

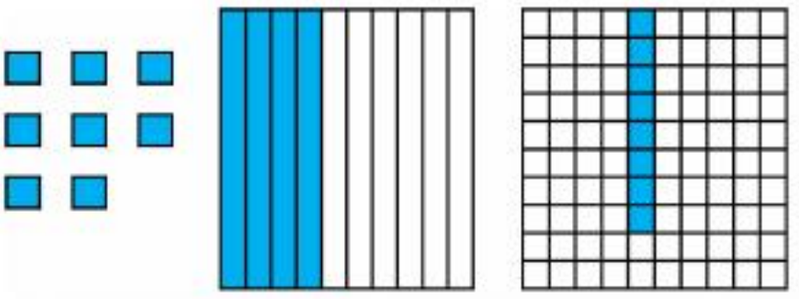
DECIMALS

Points To Remember

- A decimal is a number that consists of a whole and a fractional part.

  e.g. 8.48





8 whole | 4 out of 10 (4 tenths) | 8 out of 100 (8 hundredths)

- Decimal numbers: Like fractions, decimal numbers represents a number between two numbers or decimals.
- The fraction in which the denominator is a multiple of 10 (e.g. 10, 100, 1000…..) are called Decimals/decimal fraction.

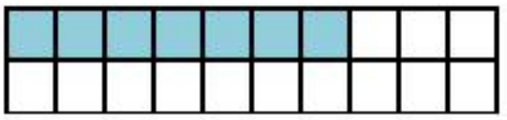
  e.g. $\frac{8}{10}$, $\frac{19}{100}$ are Decimal Fractions

  0.8, 0.19 are Decimals
- When we change the decimal fraction into its decimal form, the number of digits on the right side of the decimal is equal to the number of zeroes in the denominator of the fraction.

  e.g. $\frac{8}{100}$ $\longrightarrow$ 0.08

  (Two zeroes in denominator) (Two digits after decimal point)

- **Every fraction can be written as a decimal number and vice-versa.**



$= \frac{7}{10} = 0.35$

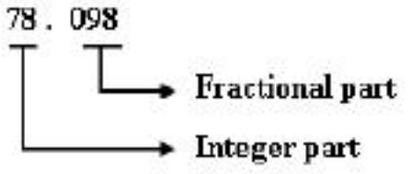
- **The digits after the decimal are always read one by one, e.g 36.897 is read as 'thirty six decimal eight nine seven'.**
- **Mixed fraction : A mixed fraction is a combination of a whole number and a decimal number. If integer part of a decimal is > 0 then it can be represented as mixed fraction.**

  e.g.

  $1.5 = 1\frac{1}{1}$ = 1 + 0.5

  (Mixed fraction] = (whole number) + (decimal number)

- **Decimal number has two components and they are separated by a . (dot) which is called 'decimal'. Integer part is on left of decimal and fractional part is towards right of decimal.**

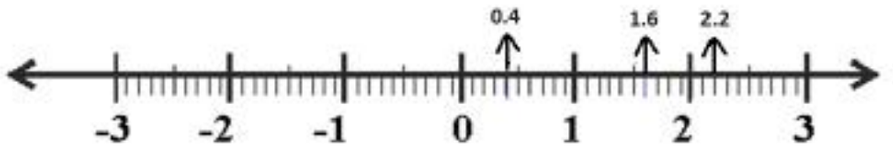


- **Decimal places: Value of numbers increases 10 times when moving towards left of decimal and while moving right of decimal, value of numbers decrease to one tenth.**

Decimal numbers	Hundreds	Tens	Ones	Decimal	Tenths	Hundredths	Thousandths
123.45	1	2	3	.	4	5	0
9.211	0	0	9	.	2	1	1

One out of ten equal parts are called tenths and one out of hundred equal parts are called hundredths.

- **Decimals on number line: On a number line, decimals are a set of numbers that lie between integers.**



- **Equivalent decimals: In decimal numbers, any number of zeroes to the extreme right of the 'decimal part' do not change the value of the decimal e.g. 0.76, 0.760, 0.7600 are equivalent decimals.**

- **Like decimals: Decimals having the same number of decimal places are called like decimals.**
  Example: 2.04, 0.04, 1.40

- **Unlike decimals: Decimals having different number of decimal places are called unlike decimals. e.g. 0.0008, 1.6 , 24.3**

- **We can change the unlike decimals into like decimals by adding zero/zeroes to the decimal part, thus making the decimal places equal.**
  Example:

Unlike decimals	Like decimal
3.02	3.020
8.001	8.001
6	6.000

- **Addition and Subtraction: Convert all numbers to like decimal before performing the operation of addition and subtraction.**

  e.g. 2.693 + 8 + 123.96

$$\begin{array}{r} 002.693 \\ 008.000 \\ +123.960 \\ \hline 134.653 \end{array}$$

  e.g. 27.3926 – 0.0256

$$\begin{array}{r} 27.3926 \\ -\ 00.0256 \\ \hline 27.3670 \end{array}$$

- **Multiplying decimals with 10, 100 and 1000: We move the decimal to the right according to the number of zeroes.**

  For example: 3.694 × 10 (10 has one zero so the decimal moves/jumps one digit to the right side)

  Thus $3.694 \times 10 = 36.94$

  Example: 3.694×100

(100 has two zeroes so the decimal moves/jumps two digit to the right side)

  Thus $3.694 \times 100 = 369.4$

  Example: $3.694 \times 1000 = 3694.0$ *or* 3694

- **Dividing decimals by 10, 100 and 1000: We move the decimal to the left according to the number of zeroes.**

  For example: 496.5 ÷ 100 (100 has two zeroes so the decimal moves/jumps two digit to the left side)

  Thus $496.5 \div 100 = 4.965$

QUESTIONS:

1. **Find the decimal form of following:**

   (a) $\frac{18}{100}$ (b) $\frac{48}{110}$ (c) $\frac{4}{100}$ (d) $12\frac{1}{4}$

2. Find the simplest fractional form of following :

(a) 0.008 (b) 0.75 (c) 0.625

3. Add the whole number part of 64.462 and 26.02.

4. Find the place value of 9 in 378.09.

5. Arrange the following numbers in decreasing order:

(a) 0.04 , 0.004 , 0.4 , 4.00

(b) 1.02, 1.20, 1.26, 1.206

6. Arrange the following numbers in increasing order:

(a) 154.45 , 0.47 , 8.7 , 25.47

(b) 97.06, 9.706, 97.66, 0.97

7. Express the following in decimal form:

(a) ₹ 78 and 45 paise

(b) 6 m and 75 cm

8. Complete the sequence :

(a) 15.8, 15.1, 14.4, 13.7, _____, _____,

(b) 0.0142, 0.142, 1.42, _____, _____,

9. Find the missing number:

(a) $8.41 + \square = 25$

(b) $17.27 - \square = 1.89$

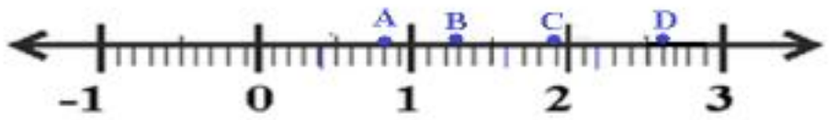
(c) $\frac{\square}{1000} = 9.02$

(d) $\frac{1333}{\square} = 13.33$

10. Write the decimal numbers shown in the following place value table.

	Thousands	Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths
(a)	0	3	0	7	1	2	0
(b)	9	5	4	3	0	2	0
(c)	0	0	1	2	5	0	3

11. Find the decimal number represented by the points A,B,C,D on the given number line .



12. Insert the decimal point at the right place in the product:

    (a) $3.7 \times 1.7 = 629$

    (b) $48.63 \times 7 = 34041$

[13-22] Find the value of following:-

13. $0.45 + 3.3$
14. $10 - 2.22$
15. 36.7×10
16. 1.2×0.6
17. $14 + 0.4 \times 10$
18. $15.4 - 1.32 \times 10$
19. $\frac{845}{100} - 3.25$
20. $3.5 + \frac{7}{10}$
21. 2.5×0.4
22. 0.783×100
23. Find the decimal form of the following:

    (a) Five tenths + Five hundredths

    (b) Three tens and eight tenths

    (c) Thirty and one tenth
24. Express 575 cm into metre.
25. How much should be added to 44.15 to get 50?
26. How much should be subtracted from 28 to get 23.65?
27. How many times is 527.8 of 5.278?
28. Find the product of 0.5×0.05.
29. Find the value of $3.37 \div 1000$.
30. Find the value of $77.77 \div 100$.
31. If $21 \times 21 = 441$, then find the value of 0.21×2.1.
32. Find the sum of place values of 4 and 2 in 153.452.

33. Solve:

(a) $7 + \frac{3}{10} + \frac{9}{100}$

(b) $800 + 4 + \frac{1}{10}$

(c) $0.89 + 0.89 \times 100 - 10$

(d) $137 + \frac{5}{100}$

(e) $11.01 + 1.101 + 111.11$

(f) $\frac{389}{100} - \frac{44}{10}$

34. Choose the decimal(s) from the brackets which is (are) not equivalent to the given decimals:

(a) 0.8 (0.80, 0.85, 0.800, 0.08)

(b) 25.1 (25.01, 25.10, 25.100, 25.001)

(c) 45.05 (45.050, 45.005, 45.500, 45.0500)

35. Fill in the blanks by using > or < to complete the following:

(a) 25.35 ____ 8.47

(b) 20.695 ____ 20.93

(c) 0.109 _____ 0.83

(d) 0.236 _____ 0.201

(e) 0.93 _____ 0.99

36. Express in kilometre (km) using decimals:

(a) 5 m (b) 555 m (c) 5555 m (d) 15 km 35 m

37. The sum of two numbers is 100. If one of them is 78.01, then find the other.

38. What should be added to 0.87 to get the smallest even prime number?

39. By how much should 1.25 be divided to get 2.5?

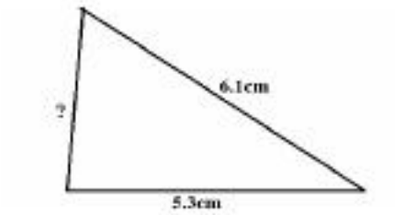
40. By how much should 1.4 be multiplied to get 0.084?

41. Siya scored 452.65 marks out of 600 in the examination. How many marks did she loose?

42. If 4 metres of cloth costs ₹ 70.50, then find the cost of 12 metre of cloth.

43. If cost of 3 dozen bananas is ₹ 50.20, then find the cost of 15 dozen bananas.

44. The perimeter of the triangle is 16.1 cm. Find length of the missing side.



45. Jug A has 2.17 litres of water and Jug B has 0.79 litres less water than jug A. Find the total volume of water in the two Jugs.

46. Length of rectangle is 25.78cm and the breadth is 7.16 cm less than its length. Find its perimeter.

47. A 8.25m long wire is divided into 11 equal parts. How long is each piece?

48. At a cinema, an adult ticket costs ₹ 7.75 and a child ticket costs ₹ 5.49. Find the total cost of tickets of 5 adults and 3 children.

49. If $\frac{1}{10}$ of a stick is 180 cm long, then how long is the stick?

50. If $\frac{1}{1000}$ of a number is 7.5, then find the number.

ANSWERS:

Q. No.	Answers	Q. No.	Answers
1.	(a) 0.18 (b) 0.4 (c) 0.02 (d) 12.25	26.	4.35
2.	(a) $\frac{1}{115}$ (b) $\frac{3}{4}$ (c) $\frac{5}{8}$	27.	100 times
3.	90	28.	0.025
4.	Nine hundredths	29.	0.00337
5.	(a) 4.00,0.4,0.04,0.004 (b) 1.26,1.206,1.20,1.02	30.	0.7777
6.	(a) 0.47,8.7,25.47,154.45 (b) 0.97,9.706,97.06,97.66	31.	0.441
7.	(a) ₹78.45 (b) 6.75m	32.	0.402
8.	(a) 13,12.3 (b) 14.2,142	33.	(a) 7.39 (b) 804.2 (c) 79.89 d) 137.05 (e) 123.221 (f) 3.45
9.	(a) 16.59 (b) 15.38 (c) 9020 (d) 100	34.	(a) 0.85,0.08 (b) 25.01, 25.001 (c) 45.005, 45.500
10.	(a) 307.12 (b) 9543.02 (c) 12.503	35.	(a) 25.35 > 8.47 , (b) 20.695 < 20.93 , (c) 0.109 < 0.83 , (d) 0.236 >0.201 , (e) 0.93 < 0.99
11.	A : 0.8 B : 1.3 C : 1.9 D : 2.6	36.	(a) 0.005 km (b) 0.555 km (c) 5.555 km (d) 15.035 km
12.	(a) 6.29 (b) 340.41	37.	21.99
13.	3.75	38.	1.13
14.	7.78	39.	0.5
15.	367	40.	0.06
16.	0.72	41.	147.35
17.	18	42.	₹ 211.50
18.	2.2	43.	₹ 251
19.	5.2	44.	4.7 cm
20.	4.2	45.	3.55 litres
21.	1.00=1	46.	88.8 cm
22.	78.3	47.	0.75 cm
23.	(a) 0.55 (b) 30.8 (c) 30.1	48.	55.22
24.	5.75 m	49.	1800 cm = 18 m
25.	5.85	50.	7500

CHAPTER – 9

UNIT CONVERSION

Points To Remember

- **Time related Conversions**

1 year	=	52 weeks
1 year	=	12 months
1 year	=	365 days
1 leap year	=	366 days
1 week	=	7 days
1 Day	=	24 hours
1 hour	=	60 minutes
1 minute	=	60 seconds
1 hour	=	$60 \times 60 = 3600$ seconds
1 second	=	$\frac{1}{3600}$ hour
1 second	=	$\frac{1}{60}$ minute

- **Length related conversions :**

1 metre	=	100 centimetres
1 cm	=	$\frac{1}{100}$ metre
1 km	=	1000 metre
1 metre	=	$\frac{1}{1000}$ km
1 foot	=	30 cm [approx.]
1 cm	=	$\frac{1}{30}$ feet [approx.]

- **Mass related conversions :**

1 kilogram	=	1000 grams
1 g	=	$\frac{1}{1000}$ kg

➢ **Capacity related conversions :**

1 litre	=	1000 millilitre
1 ml	=	$\frac{1}{1000}$ litre

➢ **Other conversions :**

1 dozen	:	12 objects
1 score	:	20 objects

QUESTIONS:

1. How many centimetres are there in 5 metres?
2. How many minutes are there in 3 hours?
3. How many grams are there in 2 kilograms?
4. How many bananas are there in 4 dozens of bananas?
5. How many millilitres are there in one litre?
6. Convert 5 feet 20 cm into centimetres.
7. How many months are there in $1\frac{1}{1}$ years?
8. Convert 2 minutes 15 seconds into seconds?
9. How many weeks are there in 2 years?
10. How many hours are there in $2\frac{1}{4}$ days?
11. How many seconds are there in 3 hours?
12. Count the total minutes in :
    i) 5 hours 35 minutes
    ii) 120 minutes + 2 hours
13. How many hours are there in 360 minutes?
14. Change 13 km 50 m into metres.
15. Convert 10 metre 8 centimetre into centimetres.
16. What will be the sum of :-
    i) 25 min 45 sec and 15 min 45 sec
    ii) 16 hours 35 min and 15 hours 25 min

17. Convert 2508 centimetres into metres and centimetres.

18. How many metres are there in 7.515 km?

19. Find the values of x and y

    i) 7009 g = x kg y g

    ii) 5245 ml = x l y ml

    iii) 8945 m = x km y m

    iv) 302 cm = x m y cm

20. Find the sum of 8 litre 600 ml and 900 ml.

21. Add 11 km 35 metre and 27 km 55 m.

22. Convert 7050 metre into kilometres.

23. Find the value of A and B

    87 kg 520 g – 62 kg 470 g = A kg B g

24. What will be the sum of :-

    i) 2 m 30 cm and 70 cm

    ii) 3 kg 75 g and 25 g

25. Express 9.3 kg + 50 g +250 g in kilograms.

26. How many grams are there in $\frac{3}{4}$ kilograms?

27. A man purchased $2\frac{3}{4}$ dozen apples. How many apples did he purchase?

28. Add: - 5.5 kg and 6320 g.

29. How many centimetres are there in 2 kilometers?

30. How many millilitres are there in 0.03 litre?

31. What is the sum of 6 litre 200 millilitres and 500 millilitres?

32. Add

    i) $9\frac{1}{2}$ kilogram + $7\frac{1}{2}$ kilogram + 500 g

    ii) $5\frac{1}{4}$ kilogram + $1\frac{1}{8}$ kilogram

33. How many millimetres are there in 3 metres?

34. Convert 3 litre and 1560 millilitres into litres.

35. Convert 4404 millilitres into litres.

36. 475 cm is how much less than 6.5 metres?

37. 800 m is how much less than 1.2 km?

38. How many years are there in 208 weeks?

39. What should be added to 650g to make it 2 kg?

40. How many notebooks shall I have, if I buy $1\frac{3}{4}$ scores of notebooks?

41. How many ml of water does the bucket have, if it contains 3 litre 75 ml of water?

42. A container contains 2 litre 50 ml of milk. How many litres of milk does the container have?

43. What will be the total number of days in the first four months of a leap year?

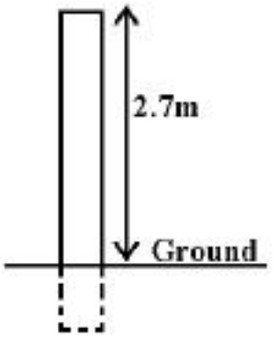
44. I have 3 pieces of cloth whose lengths are 5 metre 25 centimetre, 3 metre 75 centimetre and 6 metre 30 centimetre respectively. Find the total length of all pieces.

45. 3 m 80 cm long cloth is used to make a dress. How much cloth will be used to stitch 4 such dresses of same size?

46. Veena bought 4m of ribbon. She gave away 2.53 m of it and cut the remaining ribbon into 3 pieces of equal length. Find the length of each piece of ribbon.

47. A container has a capacity of 5 litres and it contains 2 litres 78 ml of water. How much more water is needed to fill the container completely?

48. The figure shows a vertical pole on the ground. What is the total length of the pole if 50 cm of it is buried in the ground?



49. Ritu drinks 2 litres 85 ml of water daily and kushal drinks 2315 ml of water daily. Who drinks more water and by how much?

50. Ashish walks for 2.5 km daily. How many metres does he walk in a week?

ANSWERS:

Q.No.	Answer	Q.No.	Answer
1.	500	24.	i) 3 m ii) 3 Kg 100 g or 3.1 Kg
2.	180		
3.	2000 g	25.	9.6 Kg
4.	48 bananas	26.	750 g
5.	1000 ml	27.	33 apples
6.	170 cm	28.	11.82 Kg or 11 kg 820 g
7.	18 months	29.	200000 cm
8.	135 seconds	30.	30 ml
9.	104 weeks	31.	6 *l* 700ml or 6.7 *l*
10.	54 hours	32.	i) $17\frac{1}{2}$ kg ii) $6\frac{3}{8}$ kg
11.	10,800 seconds	33.	300
12.	335 minutes 240minutes	34.	4.56 litre
		35.	4.404 litre
13.	6 hours	36.	1.75 m or 1m 75 cm
14.	13050 m	37.	400 m
15.	1008 cm	38.	4 years
16.	i) 41 min 30 seconds ii) 32 hours	39.	1350 g
		40.	35 notebooks
17.	25m 8cm	41.	3075 ml
18.	7515 m	42.	2.050 litres
19.	i) x = 7 , y = 9 ii) x = 5, y = 245 iii) x = 8, y = 945 iv) x = 3 , y = 2	43.	121 days
		44.	15.30 m or 15 m 30cm
		45.	15.20 m or 15 m 20cm
		46.	49 cm
20.	9 litre 500 ml or 9.5 litre	47.	2 litre 922 ml or 2.922 litre
21.	38 km 90 m or 38.090 km	48.	3 m 20 cm or 3.2 m
22.	7.05 km	49.	Kushal , 230 ml
23.	A = 25 B = 50	50.	17, 500 m

CHAPTER – 10

MONEY

Points To Remember

- **Money is a medium of exchange that is accepted by people for the payment of goods and services.**
- **Money is also called currency. Indian currency is 'Rupee' (₹)**

  ₹ 1 = 100 paise

  1 paisa = $₹\frac{1}{100} = ₹ 0.01$

- **Decimal notation for money :**

- **Any given amount of money can be written in the decimal form as rupees. For example: ₹ 85 = ₹ 85.00**
- **Rupees are written as whole numbers on the left side of the decimal and paise are written as a two-digit number on the right side of the decimal.**

For example:

₹ 64 and 25 paise	**=**	**₹ 64.25**
₹ 96 and 50 paise	**=**	**₹ 96.50**

- **Conversion of paise into rupees :**

- **To change paise into rupees, divide the given amount of paise by 100.**

For example:

650 paise $= \frac{650}{100} = ₹ 6.50$

700 paise $= \frac{700}{100} = ₹ 7.00$

Note: For doing the above process of conversion, use a simple trick. The decimal in the given digit moves/jumps two digits towards left side.

For example:

950 paise	=	₹ 9.50
60 paise	=	₹ 0.60

- **To change rupees into paise, we multiply the given amount (in ₹) by 100.**

  For example:

₹ 90	= 90 × 100	=	9000 paise
₹75.45	= 75.45 × 100	=	7545 paise

Note: For doing the above process of conversion, use a simple trick. The decimal in the given digit moves/jumps two digits towards right side.

For example:

₹ 45.45	= 45.45 × 100	=	4545 paise
₹ 80.00	= 80.00 × 100	=	8000 paise

- **We could simply remove the decimal to get paise from rupees.**
  ₹ 45.75 = 4575 paise

How many 50 paise can 6245 paise have?

6245 paise can have 62 × 2 = 124 coins of 50 paise.

QUESTIONS:

[1 - 3] Convert the following amounts into decimal form:

1. **₹ 870 paise 20**
2. **₹ 620 paise 50**
3. **₹ 480**

[4-6] Convert the following rupees into paise:

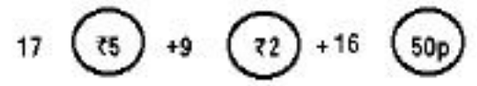
4. **₹ 75.75**
5. **₹ 150**
6. **₹ 100 paise 5**

[7-8] Convert the following paise into rupees:

7. **Paise 90**
8. **Paise 280**
9. **How many 20 paise coins are there in ₹ 12?**
10. **How many 25 paise coins make ₹ 30?**
11. **How many 50 paise coins make ₹ 50.50?**
12. **How many 10 rupee notes can be there in ₹ 568?**
13. **How many 20 rupee notes can be there in ₹ 994?**
14. **How many 2 rupee coins can be there in ₹ 539?**
15. **How many ₹ 200 notes can be there in ₹ 1530?**
16. **How many ₹ 500 notes can be there in ₹ 9125?**
17. **How many ₹ 2000 notes can be there in ₹ 9999?**
18. **How many 5 rupees coins can be there in ₹ 799?**

[19 – 20] How much will be the total amount ?

19. 

20. 

21. **Mohit bought a lamp for ₹ 500 and spends ₹ 100 on transportation. How much does the lamp cost Mohit?**
22. **A shopkeeper purchased a bat for ₹ 800 and sold it for ₹ 1200. How much money did he earn?**
23. **The cost of one book is ₹ 50. Raju wants to buy 20 such books. He has only ₹ 800. How much more money does he need to buy all 20 books?**
24. **A sum of ₹ 8400 needs to be distributed among 7 workers. How much money will each worker get?**
25. **Rohan has ₹ 220 but he needs ₹ 500. His friend Gaurav gives him ₹ 180. How much more money does Rohan need?**
26. **If the rate of potatoes is ₹ 12 per kg, then find the cost of 18 kg potatoes?**
27. **If the cost of 15 metre cloth is ₹ 180. What is the cost of one metre cloth?**
28. **A man buys 10 pens for ₹ 23 each and sells each one at ₹ 30. How much money did he earn?**

29. If the worth of one fountain pen is equal to ₹ 100, find the worth of 5 fountain pens.
30. Pocket money of Sita is thrice that of Geeta. If the pocket money of Sita is ₹ 1200. What is the pocket money of Geeta?
31. A notebook costs ₹ 25.50 and a pen costs ₹ 18. By what amount does the notebook costs more than the pen?
32. Gaurav received ₹ 510 whereas Deepti received ₹ 605.50 from their father. How much more money was received by Deepti as compared to Gaurav?
33. Akash bought two chocolates each costing ₹65. He gave ₹ 200 to the shopkeeper, how much money did he get back?
34. Shivani has ₹ 1200. She spent half of it on cinema, half of the remaining on snacks, half of the remaining (after spending on snacks) on travelling to home. How much money is left with her?
35. If a table lamp costs ₹ 215.50, what will be the cost of 2 such table lamps?
36. Rakhi purchased candles for ₹65.50, balloons for ₹15.50 and a cap for ₹12. How much money is spent by Rakhi?
37. Chavvi had ₹200. She bought a toy for ₹55, a notebook for ₹25.50 and a greeting card for ₹22.50. How much money is now left with Chavvi?
38. Rahul bought a pencil for ₹5.50, a sharpener for ₹ 7 and a scale for ₹ 4.75. How much money did Rahul pay?
39. Maninder purchased pizza base for ₹25, bread for ₹21.75 and biscuits for ₹12. She gave a 100 rupee note to the shopkeeper. What amount will she get back?
40. Ravi has monthly salary of ₹ 25000. He spends ₹ 15000 on household chores. How much money does he save?
41. If Nandini's income is ₹ 3000 more than the income of Rohan and income of Nandini is ₹ 28000. What is the income of Rohan?
42. If the cost of a movie ticket for an adult is ₹ 200 and for a child is ₹ 100. What is the total cost of tickets for 2 adults and 1 child?
43. The cost of 3 pen stands is ₹ 105. What will be the cost of 1 pen stand?
44. Reena spends ₹ 300 in the market. Now she is left with ₹ 200. How much money does she had in the beginning?

45. Garima received ₹500 as her pocket money. If she spends ₹ 288, how much money did she save?

46. Cost of 30 toffees is ₹ 90, find the cost of 20 toffees.

47. Shivi has 20 notes of ₹ 500. How much money she possess?

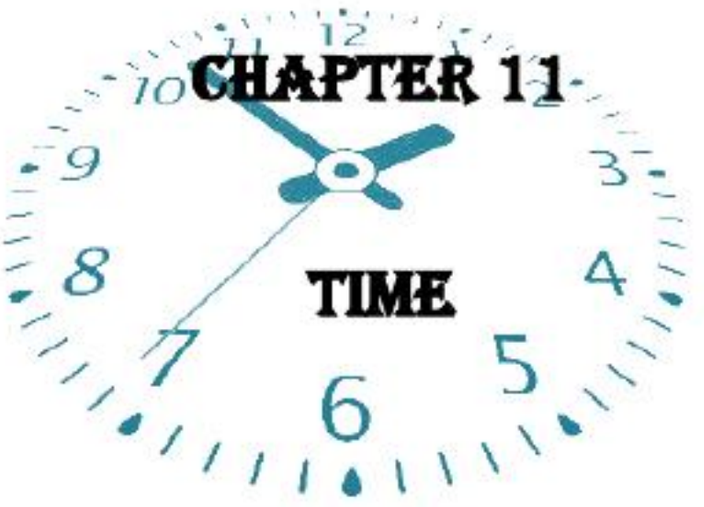
48. The cost of a notebook is ₹ 15.75. Find the cost of 4 such note books.

49. Anita saves ₹ 11 daily. How much money will she save in 11 days?

50. The cost of 5 dozen bananas is ₹ 250. Find the cost of $1\frac{1}{1}$ dozen bananas.

ANSWERS:

Q. No.	Answers	Q. No.	Answers
1.	₹ 870.20	26.	₹ 216
2.	₹ 620.50	27.	₹ 12
3.	₹ 480.00	28.	₹ 70
4.	7575 paise	29.	₹ 500
5.	15000 paise	30.	₹ 400
6.	10005 paise	31.	₹ 7.50
7.	₹ 0.9	32.	₹ 95.50
8.	₹ 2.80	33.	₹ 70
9.	60 coins	34.	₹ 150
10.	120 coins	35.	₹ 431
11.	101 coins	36.	₹ 93
12.	56 notes	37.	₹ 97
13.	48 notes	38.	₹ 17.25
14.	269 coins	39.	₹ 41.25
15.	7 notes	40.	₹ 10000
16.	18 notes	41.	₹ 25000
17.	4 notes	42.	₹ 500
18.	159 coins	43.	₹ 35
19.	₹ 48	44.	₹ 500
20.	₹ 111	45.	₹ 212
21.	₹ 600	46.	₹ 60
22.	₹ 400	47.	₹ 10000
23.	₹ 200	48.	₹ 63
24.	₹ 1200	49.	₹ 121
25.	₹ 100	50.	₹ 75



CHAPTER 11

TIME

Points To Remember

- **Time is a period which is measured in hours, minutes, seconds, days, years etc.**

  60 minutes = 1 hour

  60 seconds = 1 minute

  24 hours = 1 day

- 12-HOUR CLOCK:

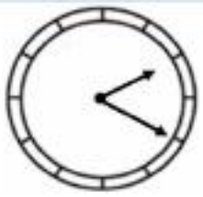
A day is divided into two periods of 12 hours each.

A.M. [Ante Meridiem]	P.M. [Post Meridiem]
• 12 midnight to 12 noon • Before 12 noon	• 12 noon to 12 midnight • After 12 noon

We prefer to write '12 midnight' instead of '12 a.m.' and '12 noon' instead of '12 p.m.' to avoid confusion.

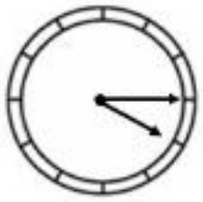
➢ READING TIME:

10 minutes to 4



20 minutes past 2

Half past 8



Quarter past 4

Quarter to 11

➢ ADDING HOURS AND MINUTES:

$$\begin{array}{r} 6 \text{ hours } 50 \text{ minutes} \\ +\ 4 \text{ hours } 30 \text{ minutes} \\ \hline 10 \text{ hours } 80 \text{ minutes} \\ \hline \end{array}$$

Whenever total of minutes becomes 60 or greater than 60, carry forward 60 minutes as 1 hour.

For example: 10 hours 80 minutes should be
11 hours 20 minutes

- **Leap year: - A year that contains 29 days in the month of February. A leap year has 366 days instead of 365 and it occurs almost every four years.**
- **Trick to find a leap year:-**
  (a) Last two digits of the year should be divisible by 4.

For example: 1896 is a leap year since 96 is completely divisible by 4.

(b) Whole digits of the year should be divisible by 400.

For example: 1600 is a leap year since 1600 is completely divisible by 400.

QUESTIONS:

[1-4] Convert the following:

1. **120 minutes into seconds.**
2. **300 minutes into seconds.**
3. **180 seconds into minutes.**
4. **600 seconds into minutes.**
5. **How many days are there in a leap year?**

[6-11] Tell the time using a.m. or p.m.:

6. **Half past ten in the night.**
7. **Quarter to 12 in the afternoon.**
8. **11:25 before noon.**
9. **Quarter past 6 in the evening.**
10. **12 midnight.**
11. **3:30 after noon.**

[12-15] How many minutes are there in?

12. **A quarter of an hour.**
13. **10:20 p.m. to 11:05 p.m.**
14. **Half past 3 to quarter past 4**
15. **7:35 am to 8:10 a.m.**

[16-19] What is the time?

16. **4 hours before 2:20 p.m.**
17. **2 hours 30 minutes after 9:30 a.m.**
18. **$6\frac{1}{1}$ hours after 6:00 a.m.**
19. **3 hours 15 minutes after 10:35 p.m.**

[20-22] Identify which date is it:

20. 18 days before May 18
21. 15 days before Feb 15
22. 21 days after Dec. 13

[23-25] How many days will be there in?

23. February 2023
24. July 2022
25. February 2032
26. Anupama started reading a book at 4:20 pm and finished at 5:45 pm. For how much time does Anupama read the book?
27. A live concert of music starts at 9:30 am and finishes at 2:45 pm. How long did the concert last?
28. A movie starts at 8:40 pm and lasts for 2 hours 30 minutes. At what time does it end ?
29. Which hand of the clock completes one round in 60 minutes ?
30. How many times does the hour hand goes round the clock face in one day?
31. If in this year, 26th December falls on Sunday, then which day will be the last day of this year ?
32. Seema spends 2 hours 30 minutes in a temple each day. How much time does she spend in temple in one week?
33. The duration of a movie was 1 hour 35 minutes. It was played non-stop without any break and it finished at 11:15 p.m. At what time would it have started?
34. Arjun left for Rishikesh on 25 July 2022 and came back on 7 August 2022. How long did he remain out of town?
35. Summer camp started on 15 May 2023 and ended on 10 June 2023. For how many days did the summer camp last ?
36. Rajdhani express reaches Mumbai at 2:30 p.m. On Monday, it reached Mumbai 45 minutes late. At what time did it reach there?

37. A truck carrying vegetables reaches New Delhi at 10:30 p.m. Today it reached 55 minutes before time. At what time did the truck reach New Delhi?

38. A bus carrying school students was expected to reach the picnic spot at 11:30 a.m., but the bus reached 40 minutes earlier. At what time did the bus reach?

39. Duration of a function was 3 hours 40 minutes. If the function finished at 9:45 p.m., at what time did it start?

40. Anil participated in a marathon and finished it in 75 minutes. If he started at 6:45 a.m., at what time did he finish?

41. Convert 8 hours 5 minutes 9 seconds in terms of minutes and seconds.

42. Convert 4 hours 15 minutes 12 seconds in terms of minutes and seconds.

43. If 2020 is a leap year, which year will be next leap year?

44. Rohit had 3 hours to complete the task. His teacher gave him 60 minutes extra. How many hours does Rohit have now to complete the task?

45. Ajay covers a distance in 1 hour 5 minutes and Rahul covers the same distance in 75 minutes. How much extra time is taken by Rahul for covering the distance?

46. Shiela reached the library at 12:05 p.m. by bus. The bus ride to the library lasted for 45 minutes. At what time must have Shiela boarded the bus?

47. Meena takes 7 minutes 20 seconds to stitch 8 buttons. How long does she take to stitch one button?

48. Kanav left for school at 6:25 a.m. He returned home 8 hours 15 minutes later. At what time did he reach home?

ANSWERS:

Q. No.	Answers	Q. No.	Answers
1.	7200 seconds	25.	29
2.	1800 seconds	26.	1 hour 25 minutes
3.	3 minutes	27.	5 hours 15 minutes
4.	10 minutes	28.	11:10 p.m.
5.	366 days	29.	Minute hand
6.	10:30 p.m.	30.	Two times
7.	11:45 a.m.	31.	Friday
8.	11:25 a.m.	32.	17 hours 30 minutes
9.	6:15 p.m.	33.	9:40 p.m.
10.	12 a.m.	34.	14 days
11.	3:30 p.m.	35.	27 days
12.	15	36.	3:15 p.m.
13.	45	37.	9:35 p.m.
14.	45	38.	10:50 a.m.
15.	35	39.	6:05 p.m.
16.	10:20 a.m.	40.	8:00 a.m.
17.	12 noon	41.	485 minutes 9 seconds
18.	12:30 p.m.	42.	255 minutes 12 seconds
19.	1:50 a.m.	43.	2024
20.	30th April	44.	4 hours
21.	31st January	45.	10 minutes
22.	3rd January	46.	11:20 a.m.
23.	28	47.	55 seconds
24.	31	48.	2:40 p.m.

CHAPTER – 12

Points To Remember

- If a man walks 12 km in 1 hour, it is said that his rate of walking or speed is 12 km per hour.
- The distance travelled by a vehicle or a person in a unit of time is called its SPEED. We divide the travelled distance by the time taken.

$$\text{SPEED} = \frac{\text{DISTANCE}}{\text{TIME}}$$

- $\frac{\text{Kilometre}}{\text{Hour}}$ is written as km per hour or km / hour.
- The unit of speed is km per hour. We also measure it in metre per minute or metre per second.

- $\text{DISTANCE} = \text{SPEED} \times \text{TIME}$

- $\text{TIME} = \frac{\text{DISTANCE}}{\text{SPEED}}$

- $\text{Average SPEED} = \frac{\text{Total Distance}}{\text{Total Time}}$

- If a man walks 32 km in 2 hours or 8 km in 30 minutes, his speed is 16 km per hour (That means even if the distance covered and time taken are doubled or halved, speed remains the same.)

- **Conversion of km/hr into m/sec**
- 1 km = 1000 m, 1 hour = 3600 sec
- $1 \text{ km/hr} = \frac{1000}{3600} \text{ m/sec} = \frac{5}{18} \text{ m/sec}$
- To convert km/ hr into m/sec, multiply the given speed by 5 and then divide it by 18.

  Convert 72 km/ hr into m/sec.

$$\frac{\overset{4}{\cancel{72}}X5}{\underset{1}{\cancel{18}}} = 20 \text{ m/sec}$$

- **Conversion of m/s into km/hr.**

$$1\text{m} = \frac{1}{1000} \text{ km}, 1 \text{ sec} = \frac{1}{3600} \text{ hr}$$

$$1\text{m/sec} = \frac{\frac{1}{1000}}{\frac{1}{3600}} \text{ km/hr}$$

$$= \frac{3600}{1000} \text{ km/hr} = \frac{18}{5} \text{ km/hr}$$

To convert m/sec into km/hr, multiply the given speed by 18 and then divide it by 5.

Convert 20m/sec into km/ hr

$$\frac{\overset{4}{\cancel{20}}X18}{\underset{1}{\cancel{5}}} = 72 \text{ km/hr}$$

QUESTIONS:

[1-7] Find the speed, when:

1.	Distance = 320 m	Time = 40 sec
2.	Distance = 720 m	Time = 80 sec
3.	Distance = 40 km	Time = 20 Minutes

4. Distance = 90 km Time = 3 hours

5. Distance = 140 km Time = 7 hours

6. Distance = 25 km Time = 30 Minutes

7. Distance = 6 km Time = 10 Minutes

[8-11] Find the distance, when:

8. Speed = 600 km per hour Time = 3 hours

9. Speed = 40 km per hour Time = $3\frac{1}{1}$ hours

10. Speed = 90 km per hour Time = 20 minutes

11. Speed = 45 km per hour Time = 30 minutes

[12-15) What is the time taken, when?

12. Distance = 200 km Speed = 20 km per hour

13. Distance = 800 km Speed = 100 km per hour

14. Distance = 50 km Speed = 20 km per hour

15. Distance = 90 km Speed = 20 km per hour

16. Find the speed of a car that covers 75 km in 30 minutes.

17. Find the speed of a bus that covers 200 km in 2 hours.

18. Doremon flies a distance of 480 km in 6 hours. What is the flying speed of Doremon?

19. What is the speed of a car that covers the distance of 650 km in 13 hours?

20. Amit jogs $6\frac{1}{1}$ km in 15 minutes. Find his speed.

21. Ravi walks 10 km in one hour. Find the distance he would cover in $3\frac{1}{1}$ hours.

22. Find the distance covered by a car in 3 hours, if the speed of a car is 24 km per hour.

23. Speed of Rocket is 20000 km/ hour. What distance will it cover in 17 hours?

24. A bus goes with a speed of 16 km per hour. How much distance will it cover in 4 hours 30 minutes?

25. The speed of a car going to Statue of Unity is 80 km/hour. Find the distance covered by it in 4 hours.

26. Arpita drives her car for 4 hours 30 minutes at a speed of 60 km per hour. How much distance does she travel?

27. Speed of Kavita while travelling to school by bicycle is 4 km/hour. How much distance will she cover in $\frac{1}{1}$ hour?

28. A bus travels at a speed of 120 km per hour. How many kilometres does it travel from 6 a.m. to 7:30 a.m.?

29. Speed of the helicopter is 260 km/hour. If it travels $1\frac{1}{1}$ hour, how much distance will it cover?

30. During a journey, a car travels at a speed of 70 km per hour. If the time taken in journey is $2\frac{1}{1}$ hour, find the distance covered during the journey.

31. Find the distance covered in a minute if a cyclist covers 6000 m in 20 minutes.

32. Uber cab travels with a speed of 30km/hour. How much time will it take to travel 480 km?

33. A boat travels with a speed of 6 km/ hour. How long will it take to cover a distance of 15 km ?

34. Long boats can travel at the speed of 12 km/hour. If a long boat has to travel 66 km, how much time will it take?

35. A train covers a distance of 1000 km. Find the time taken by the train to cover 180 km, if it covers 50 km in an hour?

36. Ajay walks 8 km in 1 hour. How long will he take to walk a distance of 52 km?

37. Speed of a rocket is 3600 km per hour. Find the speed in metre per second.

38. If the speed of the car is 90 km per hour. Find the speed in metre per second.

39. A cyclist travels 16 km/hour for 2 hours and then 10 km/hour for next 1 hour. Find his average speed.

40. Raman covers a distance of 120 km by car in 4 hours and 80 km by train in 1 hour. Find his average speed.

41. A train runs for one hour at a speed of 45km/hour and next hour at a speed of 55 km/hour. What is its average speed?

ANSWERS:

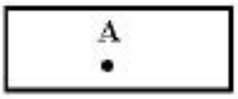
Q. No.	Answers	Q. No.	Answers
1.	8 m/sec	22.	72 km
2.	9 m/sec	23.	3,40,000 km
3.	120 km/hour	24.	72 km
4.	30 km/hour	25.	320 km
5.	20 km/hour	26.	270 km
6.	50 km/hour	27.	2 km
7.	36 km/hour	28.	180 km
8.	1800 km	29.	390 km
9.	140 km	30.	175 km
10.	30 km	31.	300 m
11.	22.5 km or $22\frac{1}{1}$ km	32.	16 hours
12.	10 hours	33.	2 hours 30 minutes
13.	8 hours	34.	5 hours 30 minutes
14.	$2\frac{1}{1}$ hours	35.	3 hours
15.	$4\frac{1}{1}$ hours	36.	$6\frac{1}{1}$ hours
16.	150 km/hour	37.	1000 m/sec
17.	100 km/hour	38.	25 m/sec
18.	80 km/hour	39.	14 km/hour
19.	50 km/hour	40.	40 km/hour
20.	26 km/hour	41.	50 km/hour
21.	35 km		

CHAPTER – 13

GEOMETRICAL FIGURES

Points To Remember

- A Point is a mark of position. It has no length, breadth or thickness.



- A line has no end points and it can be extended indefinitely in both directions.

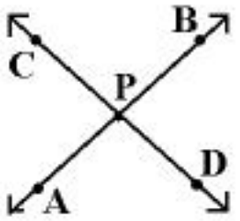
- A line – segment is a part of a line and has two end-points.

- A line-segment extended endlessly in one direction is called a ray.

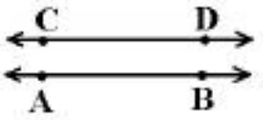
- Difference between a Line, a Line segment and a Ray:

S. No.	Line	Line Segment	Ray
1.	A line has no end point.	A line segment has two end points.	A ray has only one end point.
2.	A line does not have a definite length.	A line segment has a definite length.	A ray does not have a definite length.
3.	Line $\overleftrightarrow{AB}$ is represented by 	Line segment AB is represented by 	Ray $\overrightarrow{AB}$ is represented by 

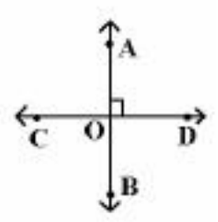
- **Intersecting Lines** :When two lines meet at one point, they are called intersecting lines.
  - Line AB and CD intersect at point P



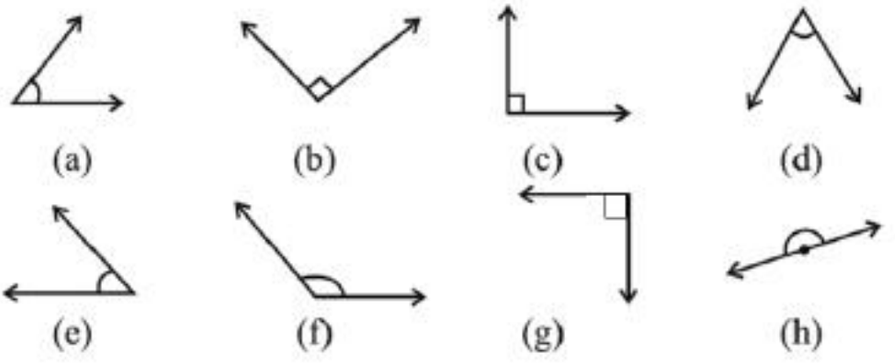
- **Parallel Lines**: Two lines that are at a same distance and do not meet are called parallel lines. $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$



- **Perpendicular Lines**: When two lines intersect and make an angle of 90°, they are perpendicular to each other. $\overleftrightarrow{AB} \perp \overleftrightarrow{CD}$



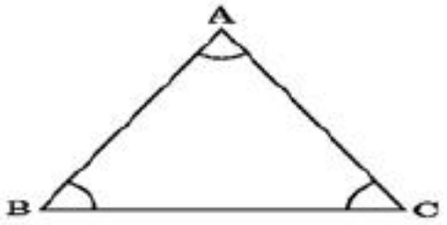
- An angle is made by two rays with a common initial point.



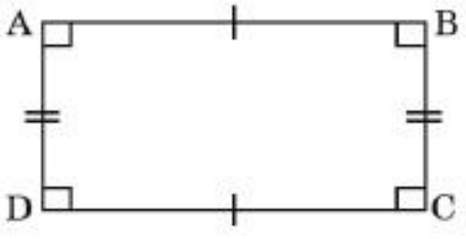
- An angle is measured in Degrees e.g. 60°.

- **Right Angle**: - An angle of shape L is a right angle. Its measure is 90°. Figures (b), (c), (g) are right angles.
- **Acute Angle:** – An acute angle measures more than 0° but less than 90°. Figures (a), (d), (e) are acute angles.
- **Obtuse Angle:** -An obtuse angle measures more than 90° but less than 180°. Figure (f) is an obtuse angle.
- **Straight Angle:** -Figure (h) is a straight angle. Its measure is 180°.
- Two angles are **Complementary Angles** if sum of measures of their angles is 90° .
- Two angles are **Supplementary Angles** if sum of measures of their angles is 180° .

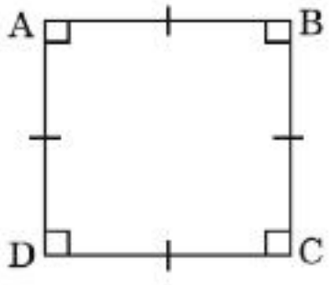
- **TRIANGLE**: A simple closed figure having three sides is a triangle.



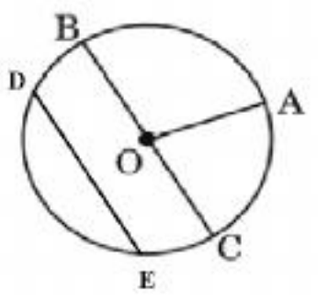
- A triangle has three angles, whose sum is 180^0.
- **RECTANGLE**: A rectangle is a four-sided closed figure having four right angles. Its opposite sides are equal.



- **SQUARE**: A square is a special type of rectangle in which all the four sides are equal.



- **CIRCLE: A circle is a simple closed curve all of whose points are at the same distance from the centre.**



- **Distance between the Centre O of a circle and any point on the circle is called its radius (OA, OB, OC are radii)**

- **A line segment passing through the center and having its end- points on the circle is called its diameter. BC is a diameter.**

- **Diameter is double the radius, or radius is half of the diameter.**

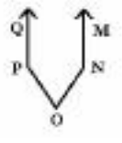
  - **Diameter = 2 × Radius**
  - **Radius = $\frac{1}{1}$ × Diameter.**

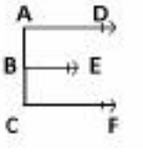
- **Chord is a straight line segment whose both the end points lie on the circle. Example: DE is a chord. Diameter of the circle is the largest chord of the circle.**

QUESTIONS:

1. **Name the line segments and rays in the following figures :-**

(i) **(ii)**





2. **Which of the following are closed shapes?**

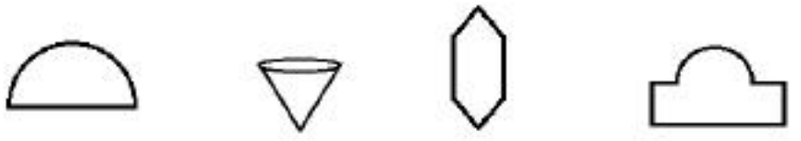
(i) **(ii)** **(iii)** **(iv)**

3. **Which of the following are open shapes?**

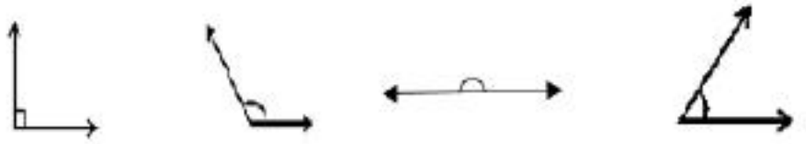
(i) (ii) (iii) (iV)

4. **Which of the following figures are made up of line segments only?**

(i) (ii) (iii) (iv)



5. **Identify the type of angle:**



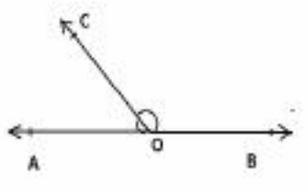
(i) (ii) (iii) (iv)

6. **How many right angles are there in the word** 'NEHA'?

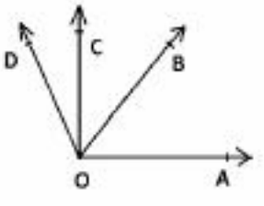
7. **In the word 'MATHS' how many angles measure:**

(i) Less than 90°? (ii) More than 90°?

[8-9] How many angles are there in each of the following figures?

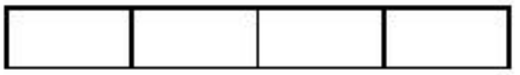


8.



9.

10. How many Rectangles are there in the figure?



11. Name each of the following angles:-

(i) 46°

(ii) 90°

(iii) 128°

(iv) 10°

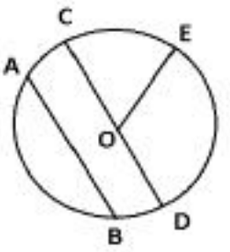
(v) 102°

12. In the given figure, name all

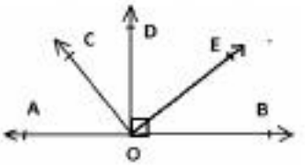
(i) Radii

(ii) Chords

(iv) Diameters



13. Look at the following figure and answer:-



(i) How many right angles are there?

(ii) How many acute angles are there?

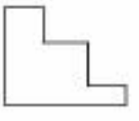
(iii) How many obtuse angles are there?

(iv) What is the total number of angles?

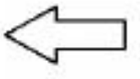
[14-16] How many angles are there in each of the following figures?

14.

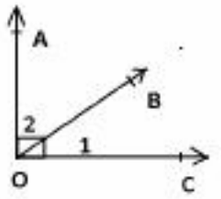
15.



16.



17. In the given figure.

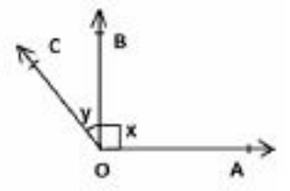


(i) What type of angle is ∠BOC ?

(ii) What type of angle is ∠AOB ?

(iii) What type of angle will you get if both ∠ BOC and ∠AOB are added?

18. In the given figure.

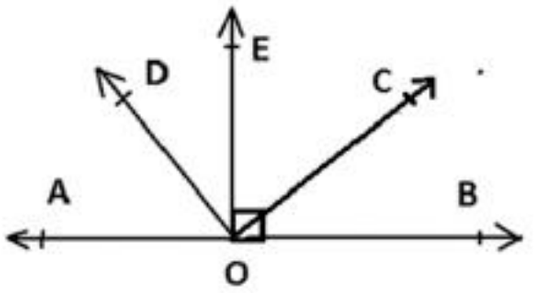


(i) What type of angle is ∠BOA

(ii) What type of angle is ∠BOC ?

(iii) What type of angle will you get if both ∠ BOA and ∠BOC are added?

19. Look at the given figure and name the angles:



(i) ∠BOC

(ii) ∠EOB

(iii) ∠BOA

(iv) ∠BOD

(v) Pair of ∠BOC and ∠COE

(vi) Pair of ∠AOD and ∠DOB

20. What will be the complementary angle of:

(i) 73^0 (ii) 18^0

21. What is the measure of supplementary angle of :-

(i) 112^0 (ii) 60^0

22. What is the measure of an angle at the corner of a room?

23. At 6:15 a.m., what is the measure of the angle between the minute and the hour hands of a clock?

24. What is the measure of the angle between the minute and the hour hand of a clock when it strikes six?

25. What figure is obtained, if a square sheet is folded into half from the middle?

26. What figure is obtained, if a square sheet is folded into half by joining its opposite corner?

[27-28] What will be the radius of a circle, whose diameter is:

27. 28 cm?

28. 13 cm?

[29-30] What will be the diameter of a circle, whose radius is:

29. 13.5 cm?

30. 10.2 cm?

31. Name the type of angle formed by the minute and hour hands of a clock when it is:-

(i) Five minutes to three.

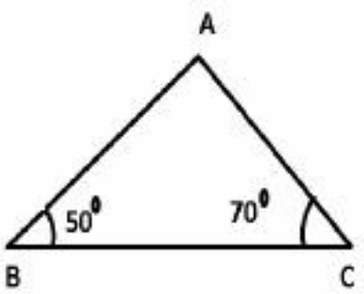
(ii) Twenty minutes past six.

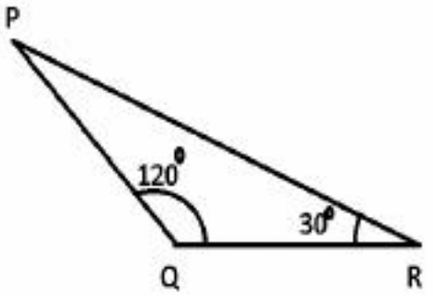
(iii) Half past twelve.

(iv) Quarter to twelve.

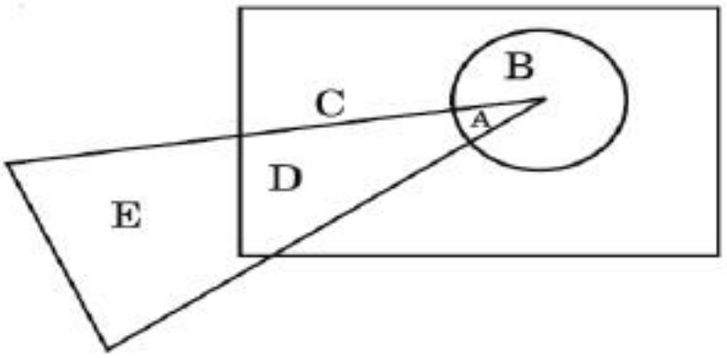
(v) Ten minutes to eleven

32. What will be the measure of the third angle of the given triangle?





33. Look at the given figure carefully and answer:



(i) Which alphabet is in the rectangle only?

(ii) Which alphabet occupies place in all the three shapes ?

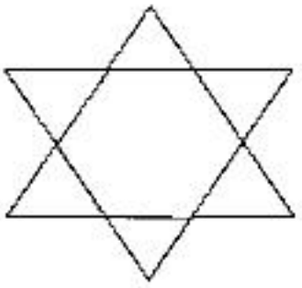
(iii) Which alphabets are placed in two shapes ?

(iv) Which alphabets are placed in only one shape ?

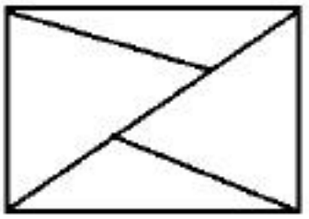
34. Find the number of triangles in each of the following figures

(i)

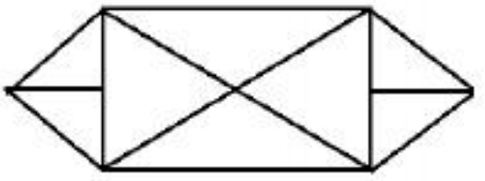
(ii)



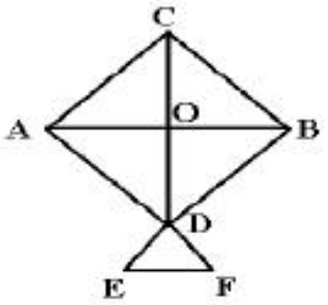
(iii)



(iv)



[35-36] In the given figure, name:



35. the pair of perpendicular line segments.

36. pair of parallel line segments.

[37-39] In a triangle, how many:

37. Maximum acute angles are possible?

38. Maximum obtuse angles are possible?

39. Maximum right angles are possible?

[40-43] What is the measure of an angle which is:

40. Half of right angle.

41. $\frac{1}{3}$ of right angle

42. Two times of right angle

43. $\frac{1}{3}$ of straight angle

44. Which of the following pair of angles are complementary?

(i) 55° , 45°

(ii) 50° , 130°

(iii) 42° , 48°

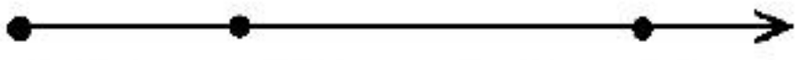
45. Which of the following pair of angles are supplementary?

(i) 54° , 36°

(ii) 62° , 118°

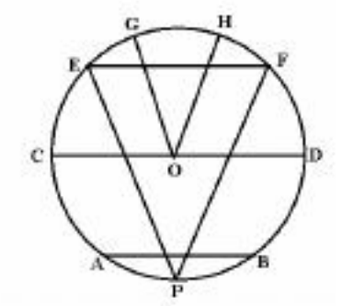
(iii) 140° , 60°

46. Which of the following is not found in the given figure:



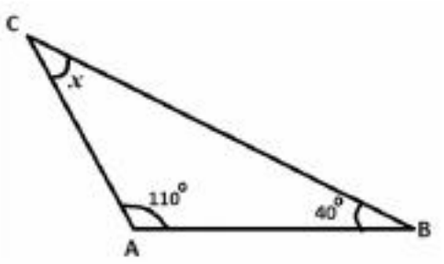
(i) Point (ii) Ray (iii) Line (iv) Line segment

47. In the given figure, 'O' is the centre of the circle. How many chords are there in the figure?

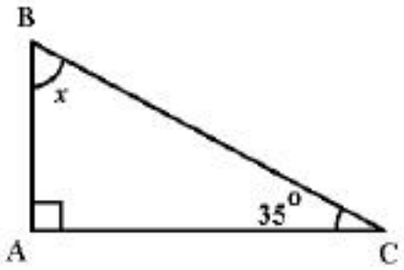


[48-50] Find the value of x

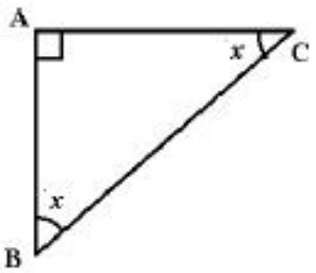
48.



49.



50.



ANSWERS:

Q. No.	Answers	Q. No.	Answers
1.	(i) Line Segments : PQ, ON Rays : PQ, NM (ii) Line Segments : AB, BC, AC , Rays : AD, BF, CF	22. 23. 24.	90° 90° 180°
2.	(i), (iii)	25.	Rectangle
3.	(ii), (iii)	26.	Triangle
4.	(iii)	27.	14 cm
5.	(i) Right Angle (ii) Obtuse Angle (iii) Straight Angle (iv) Acute Angle	28.	6.5 cm
6.	8	29.	27 cm
7.	(i) 6 (ii) 2	30.	20.4 cm
8. 9. 10.	3 6 10	31.	(i) Obtuse Angle (ii) Acute Angle (iii) Straight Angle (iv) Right Angle (v) Acute Angle
11.	(i) Acute Angle (ii) Right Angle (iii) Obtuse Angle (iv) Acute Angle (v) Obtuse Angle	32.	(i) 60° (ii) 30°
12.	(i) OC, OE, OD (ii) AB, CD (iii) CD	33.	a. C b. A c. B, D d. C, E
13.	(i) 2 (ii) 4 (iii) 3 (iv) 10		
14.	5	34.	(i) 6 (ii) 8 (iii) 6 (iv) 14
15.	8	35.	AB and CD
16.	7	36.	(i) AB and CD (ii)AD and CB (iii) AC and BD
17.	(i) Acute Angle (ii) Acute Angle (iii) Right Angle	37.	3
18.	(i) Right Angle (ii) Acute Angle (iii) Obtuse Angle	38.	1
19.	(i) Acute Angle (ii) Right Angle (iii) Straight Angle (iv) Obtuse Angle (v) Complementary Angles or Right Angle (vi) Supplementary Angles or Straight Angle	39. 40.	1 45°
20.	(i) 17° (ii) 72°	41.	30°
21.	(i) 68° (ii)120°	42.	180°

43.	**60°**
44.	**(iii)**
45.	**(ii)**
46.	**(iii) Line**
47.	**5**
48.	**30°**
49.	**55°**
50.	**45°**

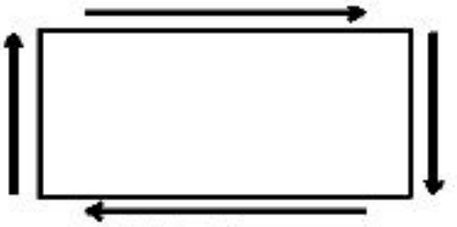
CHAPTER – 14

PERIMETER AND AREA

Points To Remember:

- Area is the surface covered while Perimeter is the boundary that encloses area.

AREA



PERIMETER

- Perimeter is measured in the same units as that of length i.e. cm, m, km
- Perimeter of a rectangle or a square = Sum of measure of its 4 sides.
  - Perimeter of a Rectangle = $(2 \times length) + (2 \times breadth)$.
  - Perimeter of a Square = $(4 \times length\ of\ a\ side)$.
- Area is measured in square units i.e., sq. cm, sq. m, sq. km
- Area of a rectangle = Product of its length and breadth

  $= Length \times breadth$
- Area of a square = $Side \times side$
- Difference between Area and Perimeter

Area	Perimeter
Area is the region occupied by a figure. Area is measured in square units (sq. m, sq. cm, sq. km etc.) e.g. Area of a rectangular ground is equal to product of its length and breadth.	The perimeter of a shape is determined by adding the length of all the sides and edges enclosing the shape. Perimeter can be measured in millimetres (mm), centimetres (cm), metres (m) and kilometres(km) e.g. Perimeter of a rectangular ground is equal to sum of all its four sides i.e. 2(length + breadth).

- **Cost of painting or tiling is equal to the product of area of that figure and cost per sq. unit.**
- **Number of bricks or tiles** $= \frac{\text{Area of wall or Floor}}{\text{Area of a brick or a tile}}$

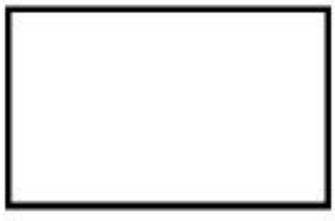
QUESTIONS:

1. **Which figure has the greatest area ?**

(a)  **(b)**  **(c)**  **(d)** 

2. **Fill in the blanks :**
   - **(a) The area of a square whose side is 1 cm is _____ .**
   - **(b) The third side of a triangle, if the perimeter of the triangle is 20m and length of other two sides is 5 m and 4 m respectively, is_____.**
   - **(c) The perimeter of two squares is 12 cm and 24 cm respectively. The area of the bigger square is _____ times the area of smaller square.**
3. **Find the breadth of the rectangle in the following figures:**

(a) Perimeter = 26 cm **(b) Perimeter = 20 cm**



9 cm

8 cm

4. **Fill in the blanks:**

S. No.	Shape	Length	Breadth	Perimeter	Area
i.	Rectangle	_____	16 m	_____	320 sq. m
ii.	Square	_____	_____	84 m	_____
iii.	Rectangle	28 cm	_____	70 cm	_____
iv.	Rectangle	50 mm	20 mm	_____	1000 sq. mm
v.	Square	4 mm	_____	_____	16 sq. mm

5. What is the perimeter of a triangle whose sides are 6cm, 8cm and 11cm respectively?

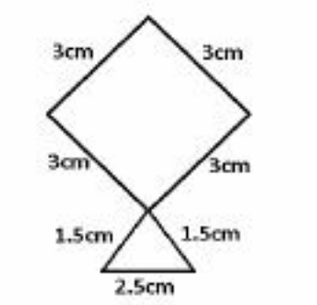
6. Find the perimeter of a square whose one side is 8 cm long.

7. Find the perimeter of a rectangle whose sides are 8 cm and 6 cm long.

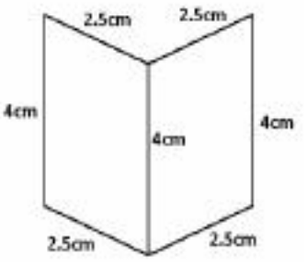
8. What be the perimeter of a triangle whose all sides are 4.5cm long?

9. Find the perimeter of the figures given below :-

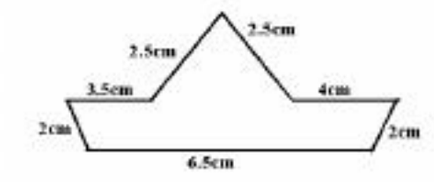
(a)



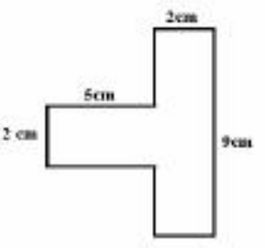
(b)



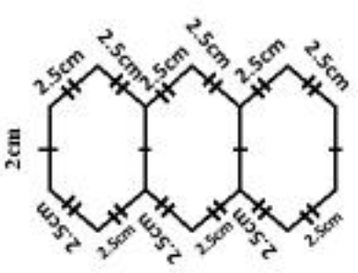
(c)



(d)

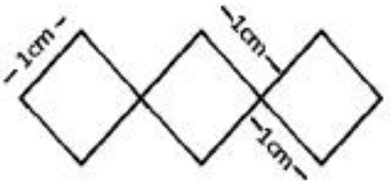


(e)

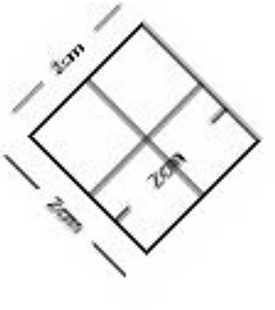


[10-12] Find the perimeter of each figure.

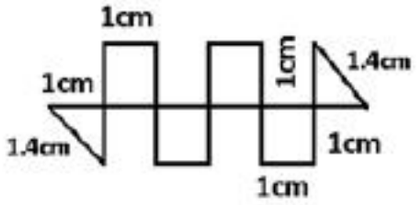
10.



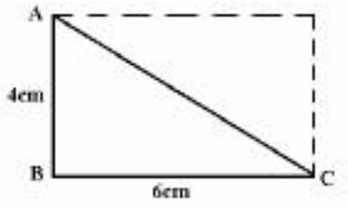
11.



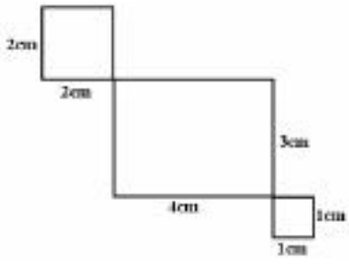
12.



13. **What is the area of triangle ABC?**

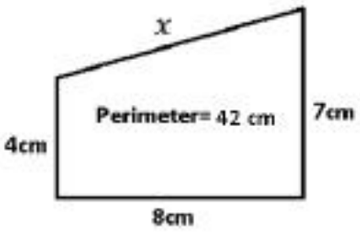


14. **Find the area of the given figure:**

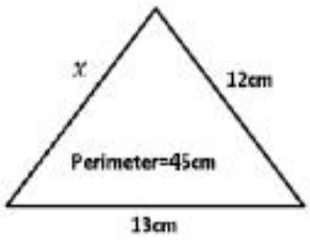


[15-17] Find the length of x.

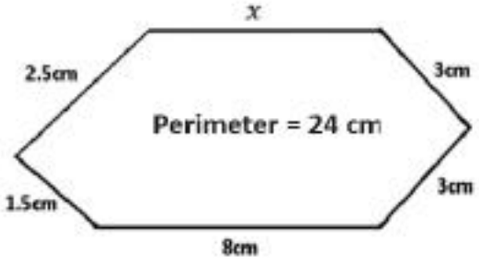
15.



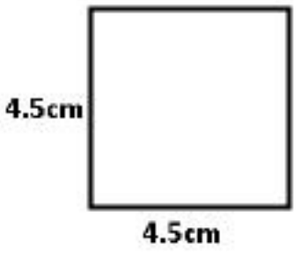
16.



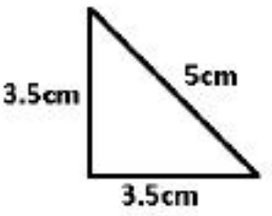
17.



18. Which of the following figures has greater perimeter and by how much?

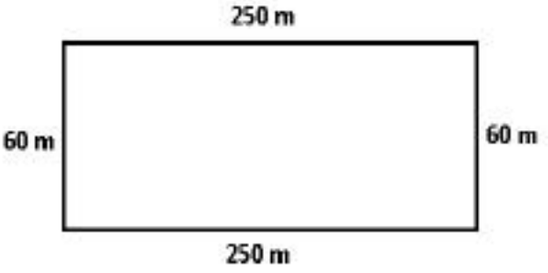


(i)



(ii)

[19-20] What will be the distance covered by Sonu, if he runs around the given playground



19. Once?
20. Three times?
21. A field is 27 m long and 23 m wide. How many metres of wire is required for fencing the field twice?
22. The side of a square park is 30 m. What distance is covered by a boy who goes round it five times?

[23-24] Find the perimeter of a rectangle whose:-

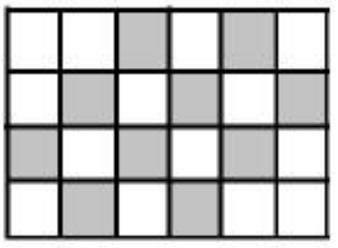
23. Length is 25cm and breadth is 20cm.
24. Length is 54cm and breadth is 36cm.
25. Find the perimeter of a square whose side is:-
    (a) 35 cm (b) 96 cm
26. Find the area of a square whose side is:-
    (a) 45 cm (b) 32 cm
27. The area of a square field is 100 sq. m. Find its perimeter.
28. Find the perimeter of a square whose area is 625 sq. cm.

[29-30] Find the area of a rectangle whose:

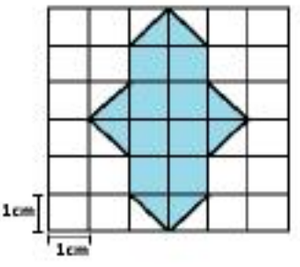
29. **Length =14cm, Breadth=9cm**
30. **Length =25cm, Breadth=12cm**
31. **The area of a rectangle is 208 sq.cm and its length is 16cm, find its breadth.**
32. **Find the length of a rectangular park whose area is 475 sq. m and breadth is 19m.**
33. **What is the area of a square whose perimeter is 84 cm?**
34. **If the area of square A and rectangle B is same, find the side of square A.**

[35-37] Find the area of the shaded region if side of each square is 1cm.

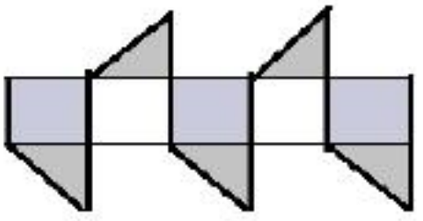
35.



36.

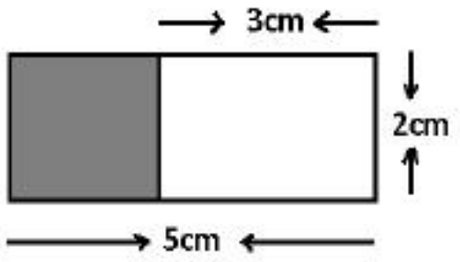


37.

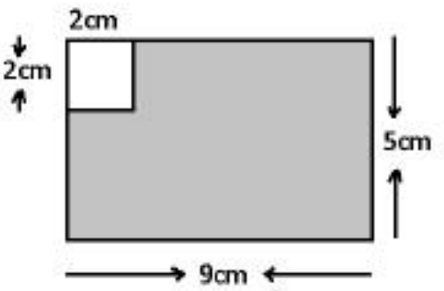


[38-41] Find area of the shaded region:

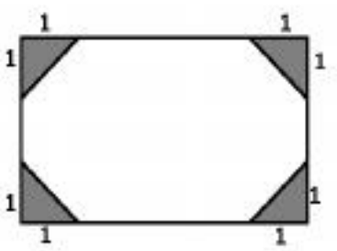
38.



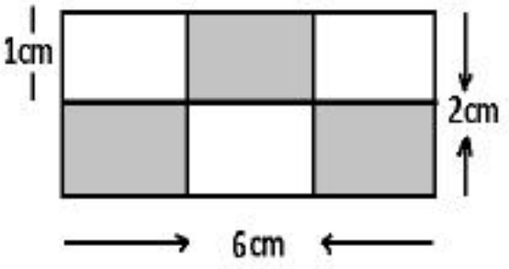
39.



40.

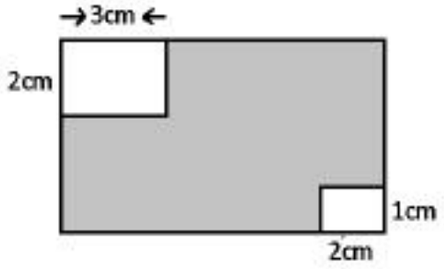


41.

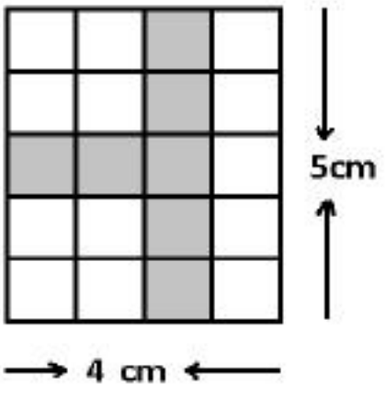


[42-43] Find area of the unshaded region:

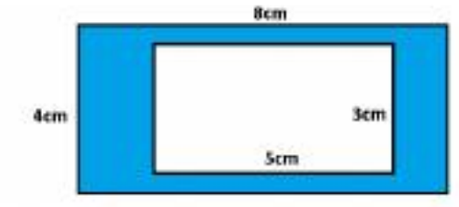
42.



43.



44. In the given figure :



(a) What is the area of the larger rectangle?

(b) What is the area of the smaller rectangle?

(c) What is the area of the shaded portion?

45. Find the cost of fencing a square park of side 150m at the rate of ₹ 9 per metre.

46. The floor of a hall is completely covered by 40 carpets each measuring 2 m by 1.5m. What is the area of the floor of the hall?

47. A floor is 5m long and 3m wide. A square carpet of side 3m is laid on the floor. Find the area of the floor which is not carpeted.

48. The side of a square tile is 12cm. How many such tiles would be required to cover the floor of a square bathroom of side 120cm?

49. A rectangular park is 40 m long and 20 m wide. Find the cost of :

(i) Levelling the park at ₹ 9.50 per sq. m.

(ii) Fencing the park at ₹ 8 per m.

50. (i) The length of a rectangular park is thrice its breadth. If the breadth is 10m, what would be the perimeter of the park?

(ii) A man covers 136m while going round a square park twice. What is the length of the side of this park?

ANSWERS:

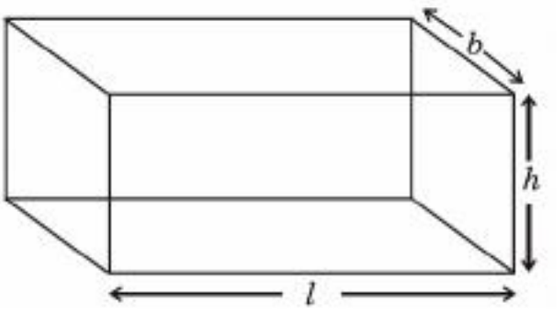
Q. No.	Answers	Q. No.	Answers
1.	d	26.	(a) 2025 sq. cm
2.	(a) 1 sq. cm (b) 11 cm (c) 4		(b) 1024 sq. cm
3.	(a) 4 cm (b) 2 cm	27.	40 m
4.	(i) l=20 m, P = 72 m	28.	100 cm
	(ii) l= b=21m, A= 441 sq. m	29.	126 sq. cm
	(iii) b=7 cm, A= 196 sq. cm	30.	300 sq. cm
	(iv) P= 140 mm	31.	13 cm
	(v) b= 4mm, P = 16mm	32.	25 m
5.	25 cm	33.	441 sq. cm
6.	32 cm	34.	3 cm
7.	28 cm	35.	10 sq. cm
8.	13.5 cm	36.	12 sq. cm
9.	(a)17.5 cm (b) 18 cm (c)23 cm	37.	5.5 sq. cm
	(d) 32 cm (e) 34 cm	38.	4 sq. cm
10.	12 cm	39.	41 sq. cm
11.	8 cm	40.	2 sq. units
12.	22.8 cm	41.	6 sq. cm
13.	12 sq. cm	42.	8 sq. cm
14.	17 sq. cm	43.	13 sq. cm
15.	23 cm	44.	(a) 32 sq. cm
16.	20 cm		(b) 15 sq. cm
17.	6 cm		(c) 17 sq. cm
18.	(i) figure, 6 cm	45.	₹ 5400
19.	620 m	46.	120 sq. m
20.	1860 m	47.	6 sq. m
21.	200 m	48.	100
22.	600 m	49.	(i) ₹ 7600
23.	90 cm		(ii) ₹ 960
24.	180 cm	50.	(i) 80 m
25.	(a) 140 cm, (b) 384 cm		(ii) 17 m

CHAPTER – 15

VOLUME

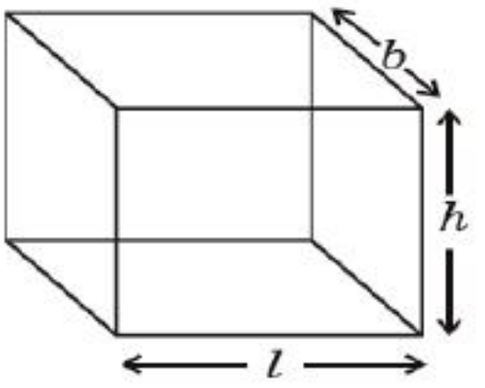
Points To Remember:

➢ **CUBOID:**



- **Figure made by using six faces as shown above is called a CUBOID.**
- **The length, breadth and height of a cuboid are called its three dimensions.**
- **Faces of a cuboid may be rectangles or squares.**

➢ **CUBE:**



- **A cuboid whose length, breadth and height are equal is called a CUBE.**
- **All the faces of a cube are squares.**

➢ **Figures having three dimensions are called Solids or 3-dimensional objects or Deep drawings. The space occupied by these objects is called their volume and the space inside these objects is called their capacity.**

➢ **Volume is measured in cubic units like cubic metre, cubic centimetre etc.**

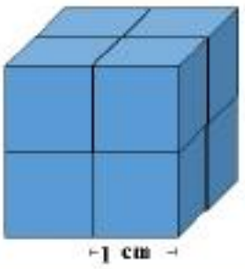
Volume of cuboid = $Length \times breadth \times height$

Volume of cube = $Length \times length \times length$

➢ **Volume of figure by counting cubes**

Hint :- Calculate the number of unit cubes that form the solid or fill the entire space occupied by the given solid.

For e.g.:-



Total unit cubes = 4

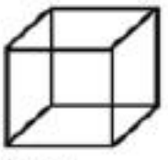
Volume = 4 cubic cm

QUESTIONS:

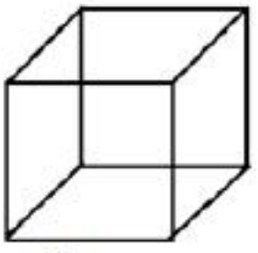
[1-3] Fill in the blanks:

1. **The amount of space occupied by a solid is _____.**
2. **Volume of cuboid= _____×_____×_____.**
3. **Volume of cube = _____×_____×_____.**
4. **Find the volume of cube of side 3 cm.**
5. **Find the volume of the given cubes:**

A. **B.**



2 cm

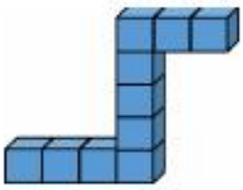


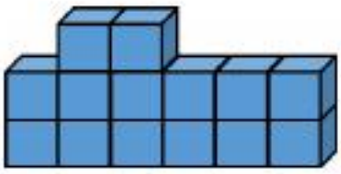
4 cm

6. **A cube has _____ length, breadth and height.**
7. **The volume of cube is 125 cubic metre, so each side of cube is _____.**
8. **Find the capacity of the cube with edge 0.2 m?**

9. Find the volume of the given figures. Take the volume of each small cube as 1 cubic cm.

(a) (b)

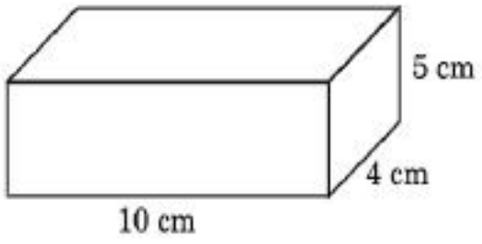




10. Find the volume of cube whose side is an even prime number.

11. 24 boxes of volume 1 cubic metre each can be placed in a container. What is the capacity of the container?

12. Find the volume of the given solid :



13. A wooden block is of length 12 cm, breadth 10 cm and height 5 cm. Find its volume.

14. How many cubical boxes of side 3 cm be kept in cubical box of size 12 cm?

15. Find the volume of a cuboid with length 9 m, breadth 6 m and height 1 m.

16. Find the volume of cuboid of dimensions 15 cm × 12 cm ×3 cm.

17. A box is of length 10 cm, breadth 6 cm and height 2 cm. Find the volume of two such boxes.

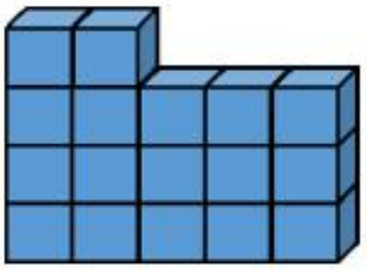
18. Complete the given table :-

S.No.	Shape	Length	Breadth	Height	Volume
(i)	Cuboid	8 cm	4 cm	5 cm	_____
(ii)	Cube	3 cm	_____	_____	27 cubic cm
(iii)	Cuboid	9 cm	_____	10 cm	990 cubic cm
(iv)	Cuboid	3 cm	_____	4 cm	144 cubic cm

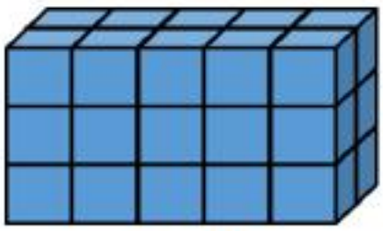
19. A chalk box is of length 10 cm, breadth 4 cm and height 5 cm. What is the volume of 4 such chalk boxes?

20. Find the volume of oil that can be poured into a container of dimensions 13 cm × 8 cm × 11 cm.
21. A chocolate box is a cube of side 10 cm. If the volume of one chocolate is 8 cubic cm. How many chocolates are there in the box?
22. Volume of a cuboidal box is 720 cubic metre. If its length is 9 m and breadth is 8 m, what is its height?
23. A pond is 50 m long, 30 m wide and 2 m deep. Find the capacity of the pond in cubic metre.
24. Volume of a box is 160 cubic metre. If its length is 8 m and breadth is 5 m, how much is its height?
25. A cuboid is 6 cm long, 4 cm broad and 5 cm high. A cube has an edge of 5 cm. Which one has the greater volume and by how much?
26. How many cubical boxes of side 2 cm can be kept in a cubical box of side 6 cm?
27. A box is of length 8 cm, breadth 6 cm and height 4 cm. How many cubical boxes of side 2 cm can be kept in it?
28. The volume of a cube is 8 cubic cm. Find the volume if it's each side is doubled.
29. The volume of a cube is 64 cubic cm. Find the volume if its each side is halved.
30. How many cubical boxes of side 25cm can be kept in a cubical box of side 125cm?
31. How many cubes of 5 cm are equivalent in volume to a 15 cm cube?
32. A cubical of wood was cut into 8 equal cubes of sides 4 cm. What is the volume of the cubical block of wood?
33. A cuboid is of length 15 m, breadth 6 m and height 10 m. Find the volume of four such cuboids.
34. A box is of length 80 cm, breadth 60 cm and height 40 cm. How many cubical boxes of side 10 cm can be kept in the box?
35. Volume of a cuboidal box is 990 cubic metre. If its length is 9 m and breadth is 10 m, how much is its height?
36. Volume of a cube is 729 cubic cm, if length of one of its side is 9 cm, how much is the length of remaining each side?

37. **How many more same cubes are required to make volume of object A and object B equal?**

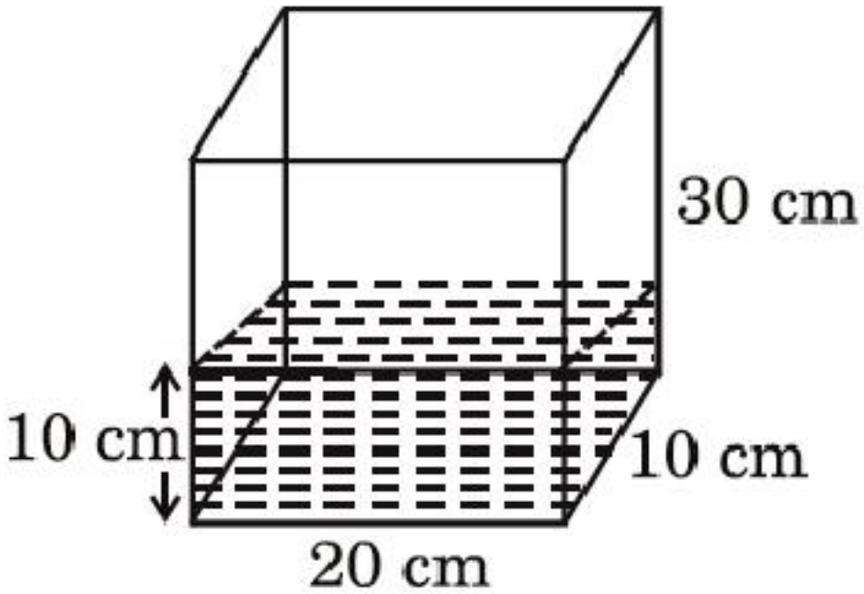


Object 'A'



Object 'B'

38. **The capacity of a tin is 6000 cubic cm. Its length, breadth and height are 20 cm, 10 cm and 30 cm respectively. It contains oil up to the height of 10 cm. How much more oil can be poured in it?**



[39-40] Identify the figure from the riddles:

39. I am not a cube.

I am less than 5 cm high.

My volume is more than 14 cubic cm.

My length and breadth are not the same.

Who am I ?

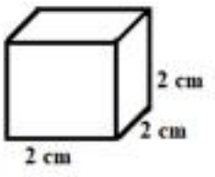
40. I am more than 1 cm high.

My volume is more than 10 cubic cm.

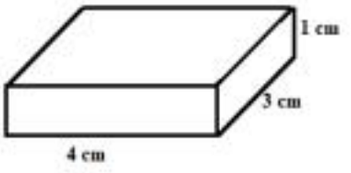
I have at least one square face.

If you flip me over my dimensions stay the same.

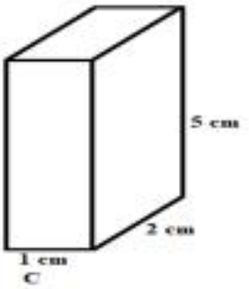
Who am I ?



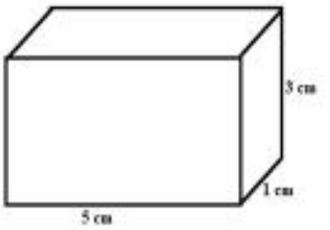
A



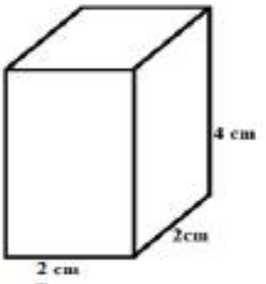
B



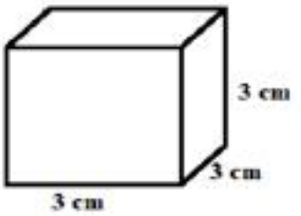
C



D



E



F

ANSWERS:

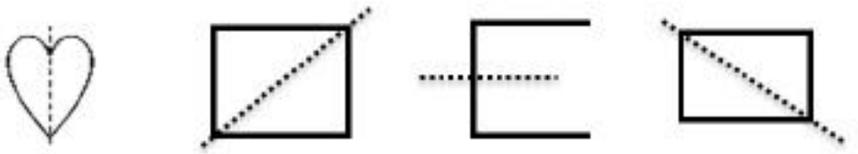
Que. No.	Answers	Que. No.	Answers
1.	Volume	21.	125 chocolates
2.	Length, Breadth, Height	22.	10 m
3.	Length, Length, Length	23.	3000 cubic m
4.	27 cubic cm	24.	4 m
5.	(A) 8 cubic cm (B) 64 cubic cm	25.	Cube, 5 cubic cm
6.	Equal	26.	27
7.	5 m	27.	24
8.	0.008 cubic m	28.	64 cubic cm
9.	(A) 10 cubic cm (B) 14 cubic cm	29.	8 cubic cm
10.	8 cubic cm	30.	125 boxes
11.	24 cubic cm	31.	27
12.	200 cubic cm	32.	512 cubic cm
13.	600 cubic cm	33.	3600 cubic m
14.	64	34.	192 boxes
15.	54 cubic m	35.	11 m
16.	540 cubic cm	36.	9 cm each
17.	240 cubic cm	37.	13
18.	i) 160 cubic cm ii) 3 cm , 3 cm iii) 11 cm iv) 12 cm	38.	4000 cubic cm
		39.	D
19.	800 cubic cm	40.	F
20.	1144 cubic cm		

Chapter-16

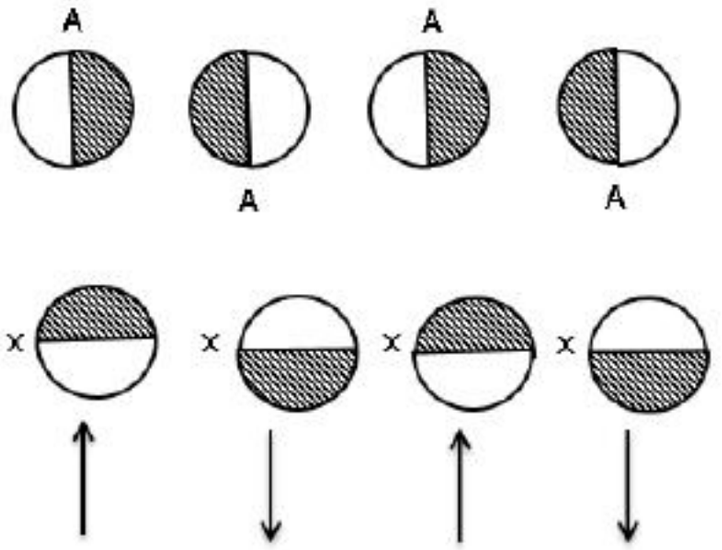
Patterns

Points To Remember

- Pattern is a sequence of repeating objects, shapes or numbers. Every pattern have a rule.
- Symmetrical Figures are those figures which overlap each other completely.
  Also symmetrical figures can be divided into two equal halves.

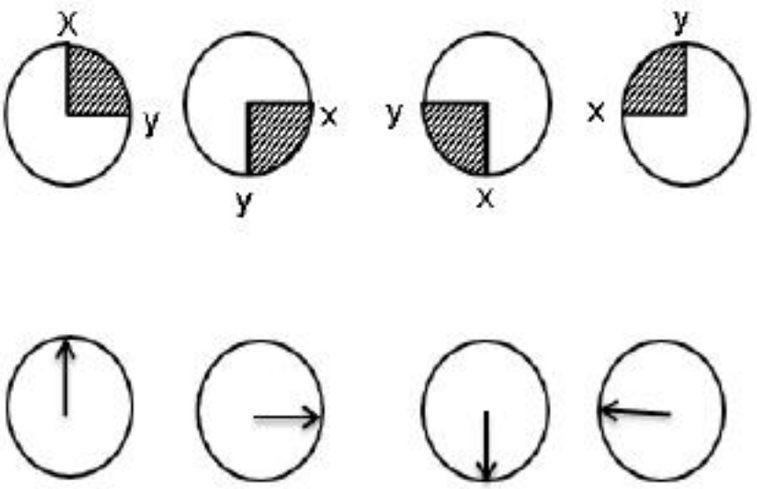


- An object and its mirror images are symmetrical.
- Half turn [½ turn] : Examples :



- The object comes to its original position after 2 half turns

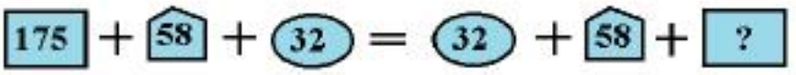
- **One-fourth turn [1/4 turn] : For example :**

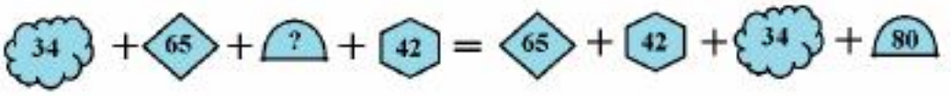


- **The object comes to its original position after 4 one-fourth turns.**
- **Remember, turns are always, made clockwise unless specified.**

QUESTIONS:

[1-2] Find the value of?

1. 

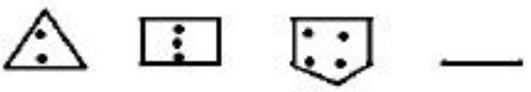
2. 

[3-6] Complete the pattern:

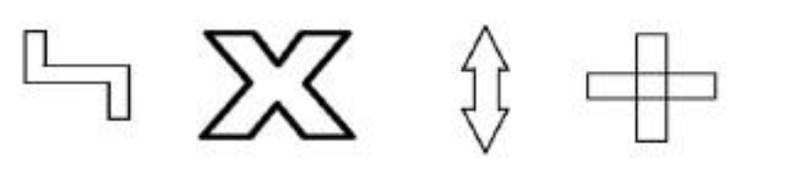
3. 

4. 

5. 

6. 

7. Which of these shapes look same as in the original position after ¼ turn ?

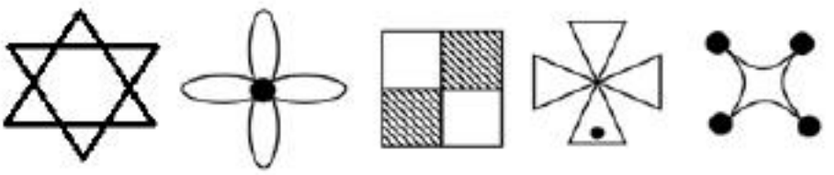


(a) (b) (c) (d)

8. Which of these figures will look same after ½ turn?

(a) (b) (c) (d)

[9-10] Look at the figures given below and answer.



(a) (b) (c) (d) (e)

9. Which figures need ½ turn to come to their original position?
10. Which figures need ¼ turn to come to their original position?
11. Change the shape so that the new shape looks the same on a ½ turn.

(i) (ii)

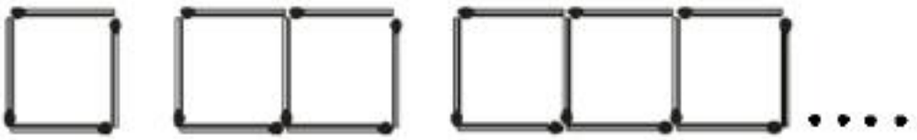
12. After how many one- fourth turns shall we get the object in its original position?
13. How many $\frac{1}{3}$ turns are needed to bring the object back to its original position?
14. How many $\frac{1}{4}$ turns are needed to bring this back to its original position?

15. How many $\frac{1}{3}$ turns are needed to bring this back to its original position?

16. What is the sum of numbers in pattern 4?

(i)

(ii)



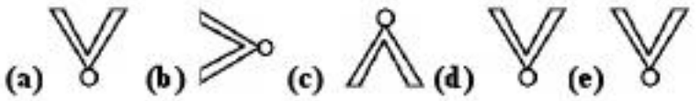
17. What will come next if the patterns are moving anti-clockwise?

(i)

(ii)

18. Which design is breaking the pattern?

(i).



(ii).

19. Which of the following alphabets have mirror image same as the alphabet itself?

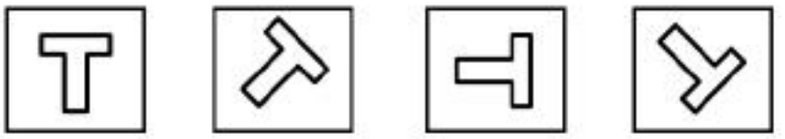
A, B, M, X, P, T, V

20. Which digits from 1 to 9 have the mirror image same as the digit itself?

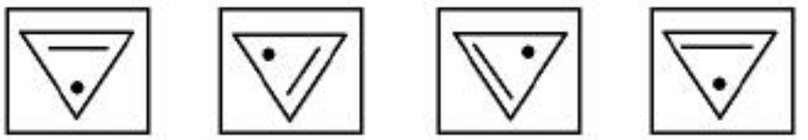
21. Write the largest and the smallest 3 digit number that will look the same on $\frac{1}{1}$ turn.

[22-23] What is the rule in following patterns?

22.



23.



[24-31] Find the next number in the given series of numeric pattern.

24. 13, 18, 23, 28

25. 6, 12, 18, 24

26. 1, 12, 123

27. 9456, 9556, 9656

28. 121, 232, 343

29. 130, 125, 120

30. $\frac{1}{3}, \frac{3}{4}, \frac{4}{5}$

31. 1, 2, 4, 8

[32-33] Find the next term of series:

32. A2B3, C4D5, E6F7

33. AZ, BY, CX

[34-35] If $\begin{matrix} AB\ C\ D \\ \downarrow\downarrow\ \downarrow\downarrow \\ 1\,2\ 3\ 4 \end{matrix}$ ..... **then how will you write the following words.**

34. LOVE

35. GOD

[36-37] Complete the pattern:

36. ORANGE ➡ RANG ⟶

37 LEOPARD ➡ EOPAR ⟶

38. How will "SWIMS" be read after $\frac{1}{1}$ a turn?

[39-48] Find the missing number.

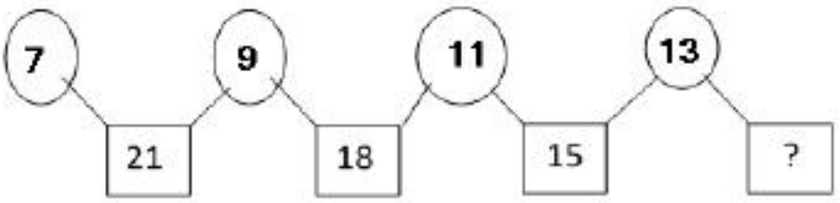
39. (i)

2	7	3
4	0	8
6	?	1

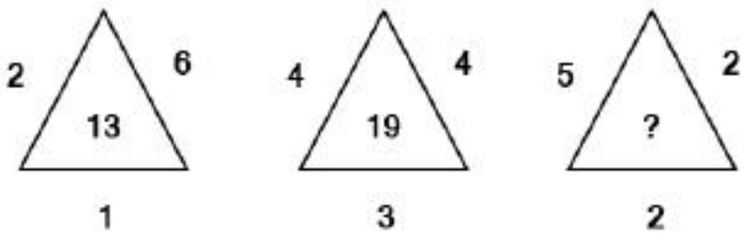
(ii)

?	3	4
1	5	9
6	7	2

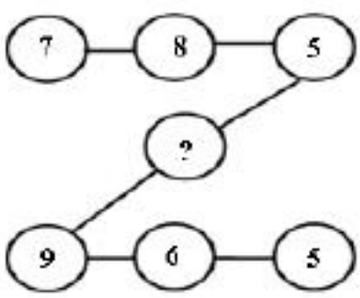
40.



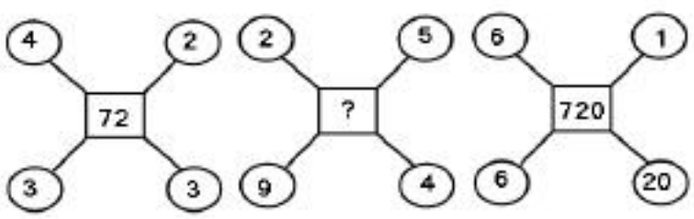
41.



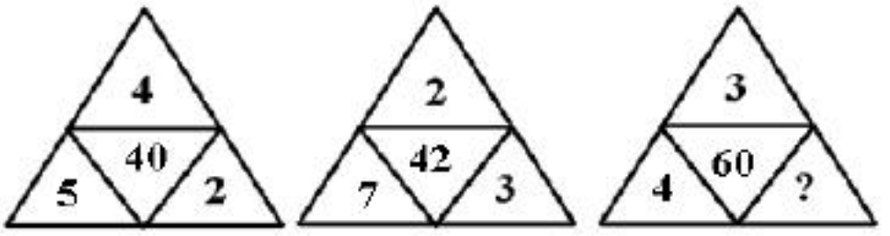
42.



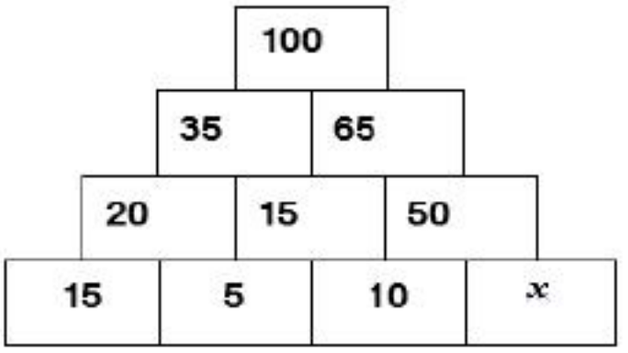
43.



44.


4
40
5
2
2
42
7
3
3
60
4
?

45.

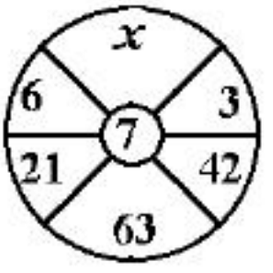

100
35
65
20
15
50
15
5
10
x

46.

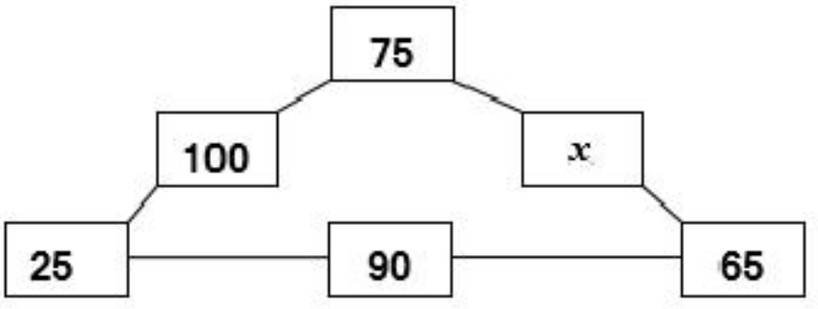
A.


2
8
20
6
12
10
x
4

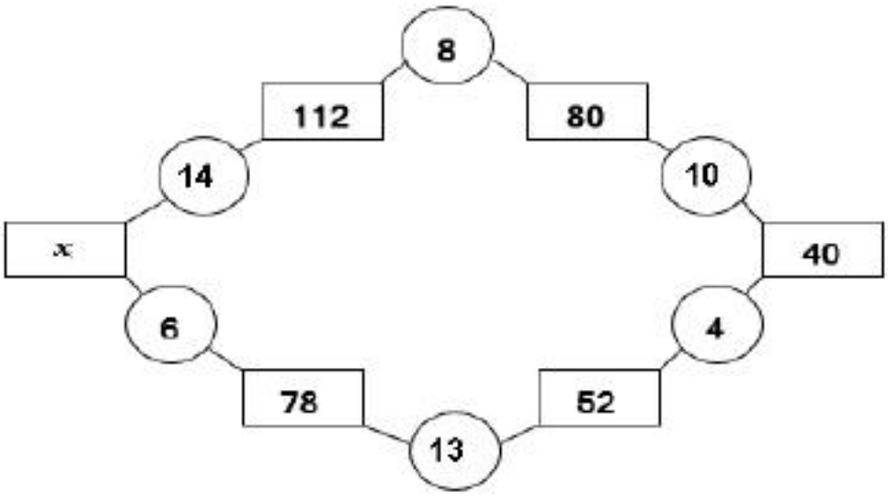
B.


x
6
3
7
21
42
63

47.


75
100
x
25
90
65

48.



49. If 1+2+3+……..+10 = 55

11+12+13+……+20= 155

21+22+23+……+30= 255

Then 51+52+53+……+60= ?

50. If $1 \times 1 = 1$

$11 \times 11 = 121$

$111 \times 111 = 12321$

Then $1111 \times 1111 =$?

ANSWERS:

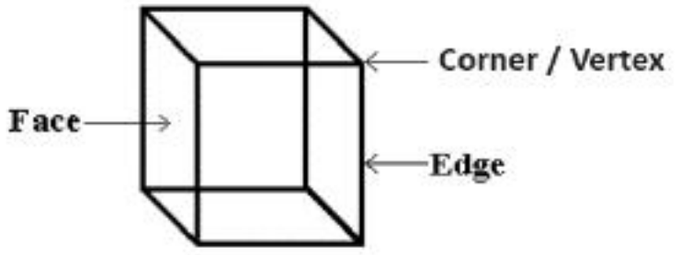
Q. No.	Answers	Q. No.	Answers
1.	175	25.	30
2.	80	26.	1234
3.		27.	9756
4.		28.	454
5.		29.	115
6.		30.	$\frac{5}{6}$
7.	(b) and (d)	31.	16
8.	a	32.	G8H9
9.	a, b, c, e	33.	DW
10.	a, b, e	34.	1215225
11.		35.	7154
		36.	AN
12.	4	37.	OPA
13.	3	38.	SWIMS
14.	4	39.	(i) 5 (ii) 8
15.	3	40.	12
16.	34	41.	12
17.		42.	6
		43.	360
18.	(i)- (d), (ii)- (b)	44.	5
19.	A, M, X, T, V	45.	40
20.	1 and 8	46.	(A) 16, (B) 9
21.	Largest 888, smallest 101	47.	140
22.	45° turn clockwise	48.	84
23.	$\frac{1}{3}$ turn clockwise	49.	555
24.	33	50.	1234321

Chapter – 17

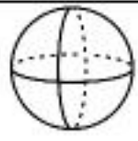
Boxes and Sketches

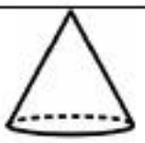
Points To Remember:

- **A minimum of the three views are needed to describe a Deep Drawing of a Solid Object/ 3-Dimensional object.**
- **Using the side, front and top views, one can draw or build a solid object.**
- **Sum of numbers on the opposite faces of a dice is always 7.**
- **A flat shape can be folded to make a solid shape is called a NET.**
- **Faces, Edges and Vertices of a solid shape can be described as :**
  - **The surface of a solid is called its Face.**
  - **The Edge is a line segment where two faces meet.**
  - **A Corner or a Vertex is a point where the edges meet.**



- **Faces, edges and Vertices in 3D shapes**

S. No.	3D Shape	Faces	Edges	Vertices/ Corners
1.	Cube 	6	12	8
2.	Cuboid 	6	12	8
3.	Sphere 	1	0	0

4.	Cylinder 	3	2	0
5.	Cone 	2	1	1
6.	Triangular Prism 	5	9	6
7.	Square Pyramid 	5	8	5
8.	Triangular Pyramid 	4	6	4

- **Difference between 2D and 3D Shapes:**

S. No.	2D Shapes	3D Shapes
1.	2D shape is a flat shape	3D shapes are real objects
2.	It has length and width, but no height	It has length, width and height
3.	These shapes only occupy an area	These shapes occupy Area and Volume both
4.	These shapes are basic and easy to draw	These shapes are complex and difficult to draw
5.	Example: Square, circle	Example: Cube, Sphere

SUGGESTIONS FOR TEACHERS:

- **For solid objects/ deep drawings, give students practice using actual colourful blocks in the class-room.**
- **Use proper cutout to give the concept of nets & sketches for open and closed boxes. You can also try open box from a confectionary shop.**

QUESTIONS:

1. **Which of the following figures is a solid figure?**

   (a)  **(b)**  **(c)**  **(d)** 

2. **Which solid figure does not have any square face?**

   (a)  **(b)**  **(c)**  **(d)** 

3. **Which of the following figure will you get when you open the curved face of a cylinder?**

   (a)  **(b)**  **(c)**  **(d)** 

4. **If two cubes of equal side are put together, which new shape will be formed?**

5. **Which of the following solid has greatest number of faces?**

   (a) Cube (b) Cone (c) Cylinder (d) Triangular Pyramid

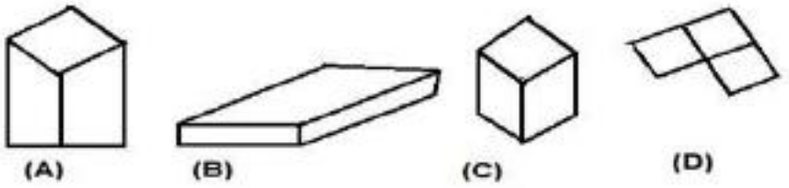
6. **Which of the following figure could be the face of a cube?**

(a) (b) (c) (d)

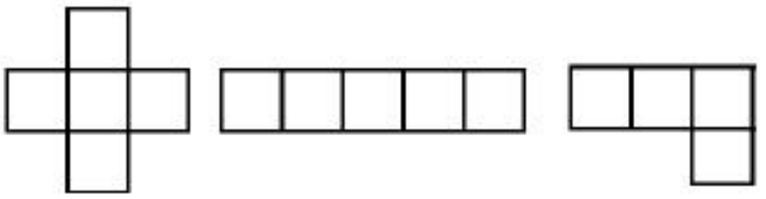
7. **Which of the following figures could be a face of a cuboid?**

(a) (b) (c) (d)

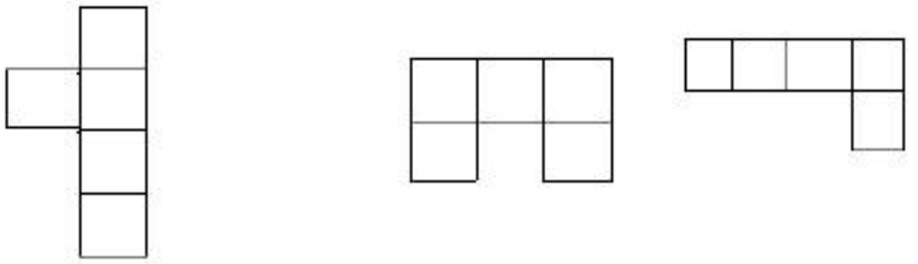
8. Which of the following is the drawing of a cubical box?



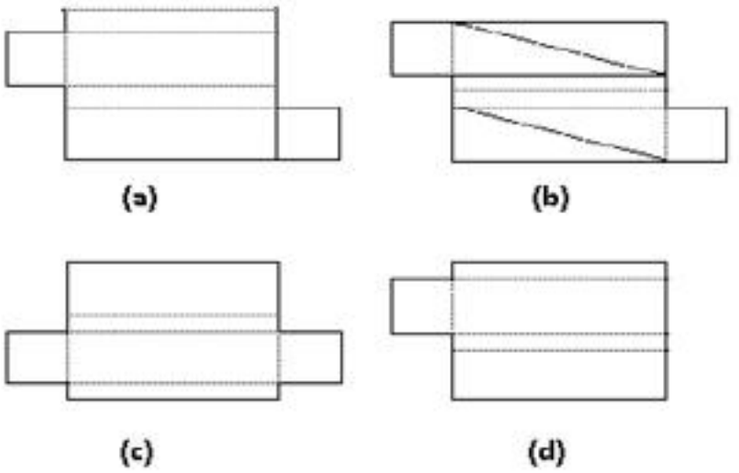
9. Which of the following figures could be used to make an open box?



10. To form an open box, which one of the following nets can be used?

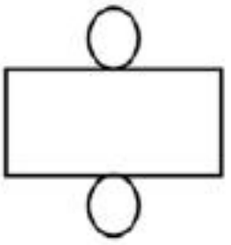


11. Which of the following nets can be used to make a closed box?

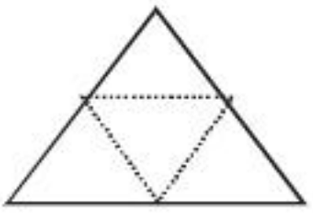


12. Name the figures obtained by folding the following nets.

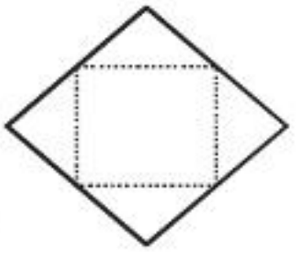
a. 

b. 

13. Following nets can be folded into which figure?



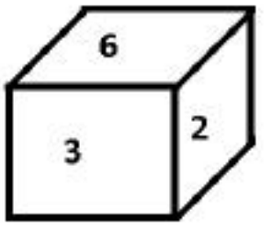
(a)



(b)

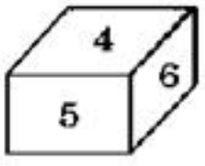
(c)

14. In the dice shown below , what number will be marked on the face opposite to the front face (on which 2 is marked) ?

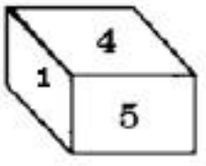


[15-16] Which of the following figures are figures of the same dice?

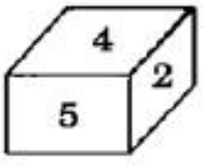
15.



(a)

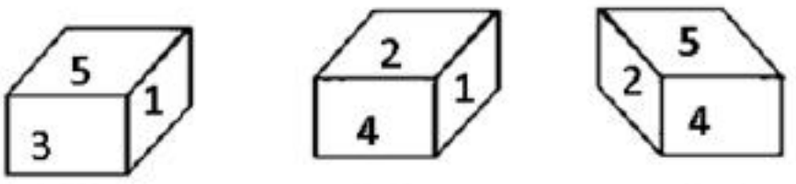


(b)



(c)

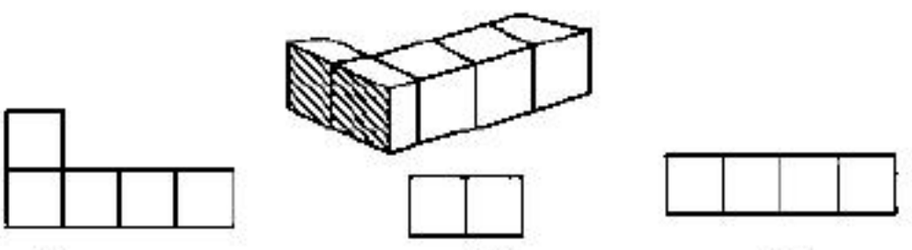
16.



(a) (b) (c)

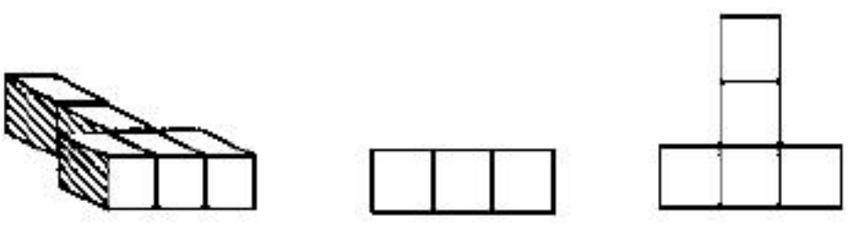
[17-21] For each of the given solid figures, two dimensional views are also given. Categorise the given views as 'Top view' , 'Front view' , 'Right hand side view' , 'Left hand side view' .

17.



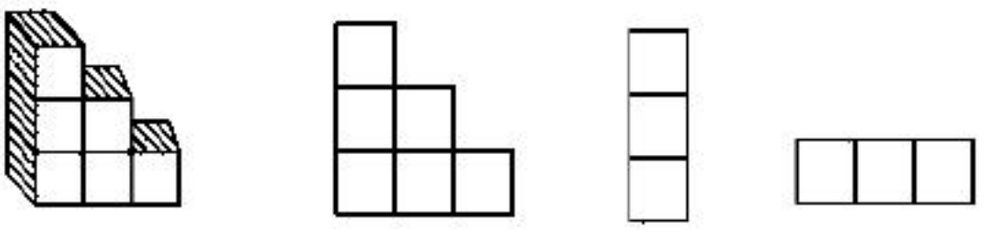
(a) (b) (c)

18.



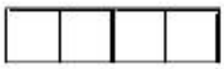
(a) (b)

19.

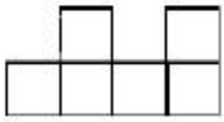


(a) (b) (c)

20.



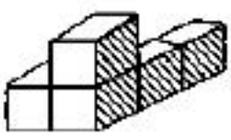
(a)

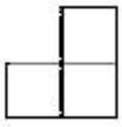


(b)

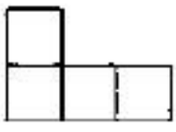
(c)

21.

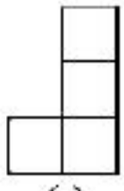




(a)

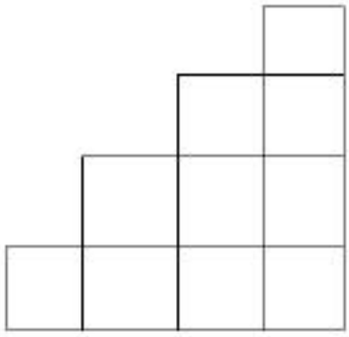


(b)



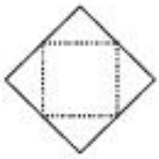
(c)

22. A staircase with four steps is made using ten blocks. How many more blocks are required to make a staircase of seven steps?

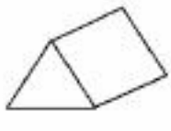


23. Match the 'Nets' with their 'Boxes'

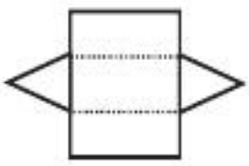
i)



(a)

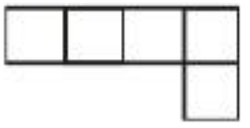


ii)

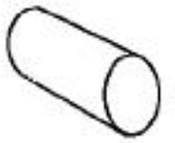


(b)

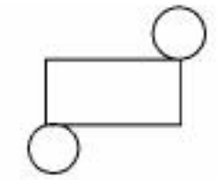
iii)



(c)

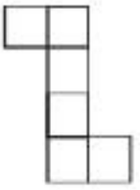


iv)

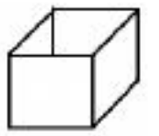


(d)

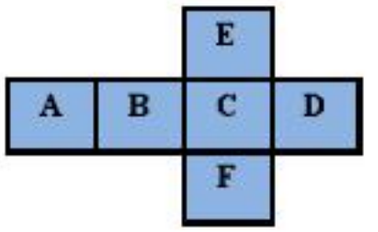
v)



(e)

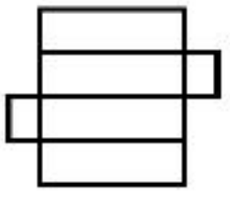


24. Which face is opposite face of A, when the following net is folded to form a cube?

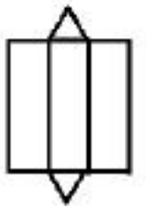


[25-30] For each net, name 3d shape:

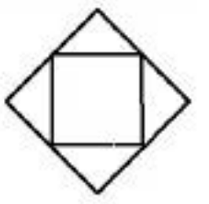
25.



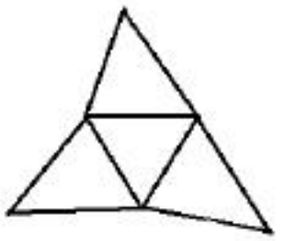
26.



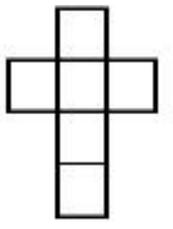
27.



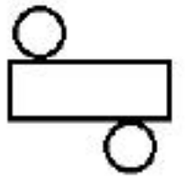
28.



29.



30.



[31-36] Who am I (Name the shape)?

31. **My all faces are Square**
32. **I have two faces and one corner.**
33. **My all faces are rectangle.**
34. **I have two circular faces and one curved face.**
35. **I have no edge and no corner.**
36. **My all faces are triangular.**

37. **Rajat has drawn all the faces of a solid figure. Name the solid figure.**

38. **Three cubes are joined together and painted with red colour. How many faces are painted with red colour?**

39. **What shapes are needed to cut out of paper to build a triangular prism?**

40. **What is the shape of each face of a triangular pyramid?**

(a) Triangle (b) rectangle (c) Square (d) Circle

ANSWERS:

Q. No.	Answers	Q. No.	Answers
1.	(c)	21.	(a) Front View (b) Right Hand Side View (c) Top View
2.	(c)		
3.	(b)		
4.	Cuboid	22.	18
5.	(a)	23.	(i) - (d) (ii) - (a) (iii) – (e) (iv) – (c) (v) – (b)
6.	(b)		
7.	(a) and (c)		
8.	(c)		
9.	(a)		
10.	(a) and (c)	24.	c
11.	(a) and (c)	25.	Cuboid
12.	(a) Cone (b) Cylinder	26.	Triangular Prism
		27.	Square Pyramid
13.	(a) Triangular Pyramid (b) Square Pyramid (c) Cone	28.	Triangular Pyramid
		29.	Square
		30.	cylinder
		31.	Cube
14.	5	32.	Cone
15.	(a) and (b)	33.	Cuboid
16.	(a) and (b)	34.	Cylinder
17.	(a) Top View (b) Left Hand Side View (c) Front View	35.	Sphere
		36.	Triangular Pyramid
		37.	Cuboid
		38.	14
18.	(a) Front View / Left Hand side View (b) Top View	39.	3 Rectangles and 2 Triangles
19.	(a) Front view (b) Left/Right Hand Side View (c) Top View	40.	Triangle
20.	(a) Top View (b) Front View (c) Left Hand Side View		

Chapter – 18

Smart Charts

Points To Remember:

- **DATA: Information collected or given in the form of numbers is called data. Data can be represented diagrammatically in different forms:**
  Tally marks are used as shown below:

Number of Objects/Persons	Tally Marks
1	|
2	|| or ⌜
3	||| or ⌜
4	|||| or ▭
5	𝍸 or ▨

- **Pictograph: Pictures or symbols are used to represent specific number of items.**
- **Bar graph: Data is represented through horizontal or vertical columns. The length of bar or height of column gives idea about quantity. More than one set of data can be shown so comparison is easy.**
- **Pie chart or Chapati chart: These are used for comparing different parts of a bigger quantity. By looking at the area covered, we can easily tell which quantity is bigger.**
- **Line graph: It represents data collected over a long period of time.**

QUESTIONS:

1. **Using Tally Marks, represent the following numbers:**

   (a) 9 **(b) 17**

2. **In a pictograph, if**  **represents 10 houses then,**

   (a)  = ?

   (b)  = ?

[3-6] Following Circle graph shows the hobby classes that 48 students of Class VIII chose in Summer Camp. What is the number of students that chose each hobby class?

	Hobby Class	No. of Students
3.	Painting	
4.	Music	
5.	Dancing	
6.	Cooking	

[7-11] The following tally marks show favourite mini break snacks of students in a class:

	Snacks	Tally Marks
a.	Veg. sandwich	(i) 𝍸 𝍸 II
b.	Sprouted Chana Chat	(ii) 𝍸 𝍸 𝍸 II
c.	Gur Peanut Chikki	(iii) 𝍸 𝍸 II
d.	Fruit Chat	(iv) 𝍸 II

7. **Which is the most popular snack in the class?**
8. **Which is the least popular snack in the class?**
9. **How many more students like veg. sandwich than fruit chat?**
10. **Which two snacks are equally popular?**
11. **How many total students are there in the class?**

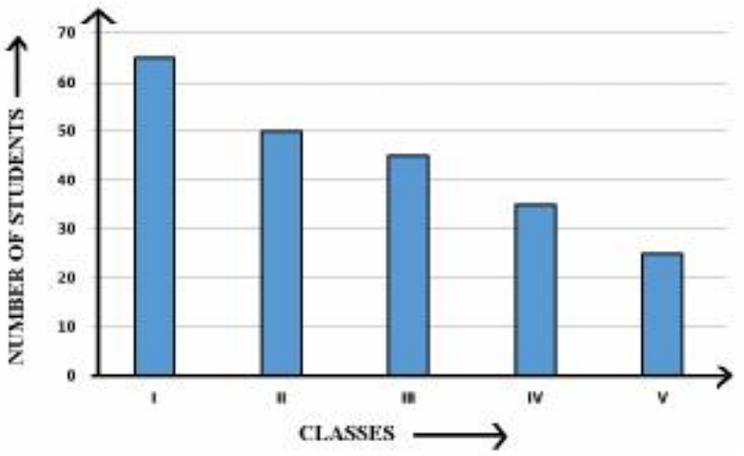
[12-15] The pictograph shows the results of a survey on choice of drinks:

Drink	No. of People
Tea	
Coffee	
Milk	
Juice	
Butter Milk	

= 10 people

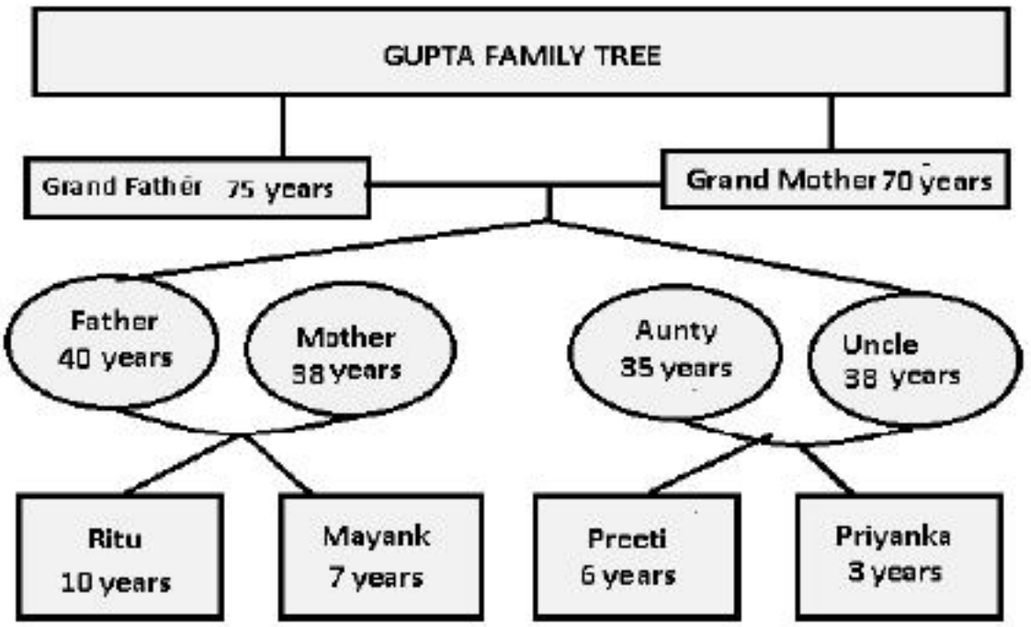
12. **Which is the most and least liked drink?**
13. **What is the total number of people who like Milk, Juice and Butter Milk?**
14. **How many more people prefer Butter Milk to Milk?**
15. **How many total number of people were surveyed?**

[16-19] The Bar Graph shows the number of students in various classes in Primary sections of a school. Read the Bar Graph and answer the following questions:



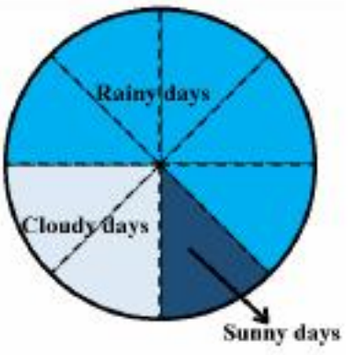
16. **Which class has least number of students?**
17. **Which class has maximum number of students?**
18. **How many more students are there in Class I than in Class V?**
19. **In which class, the number of students is twice the number of students in class V?**

[20-24] Ritu has prepared a family tree of her family.



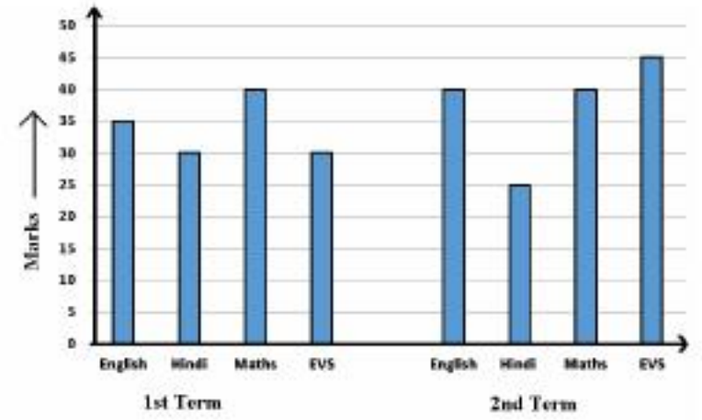
20. **How old was father when Ritu was born?**
21. **What is the difference in ages between the youngest and the oldest person in the family?**
22. **After how many years will Ritu celebrate her 25th birthday?**
23. **What is the age difference between Ritu's father and uncle?**
24. **What is the sum of ages of Ritu and her mother?**

[25-28] The Pie Chart shows the weather for four weeks in Delhi during the month of July .



25. **What fraction of the days were rainy days?**
26. **What fraction of the days were sunny days?**
27. **What fraction of the days were cloudy days?**
28. **If this Pie Chart shows 56 days, then how many days were sunny days?**

[29-32] The following Bar Graph represents the marks obtained by Sonu in 1st and 2nd term:



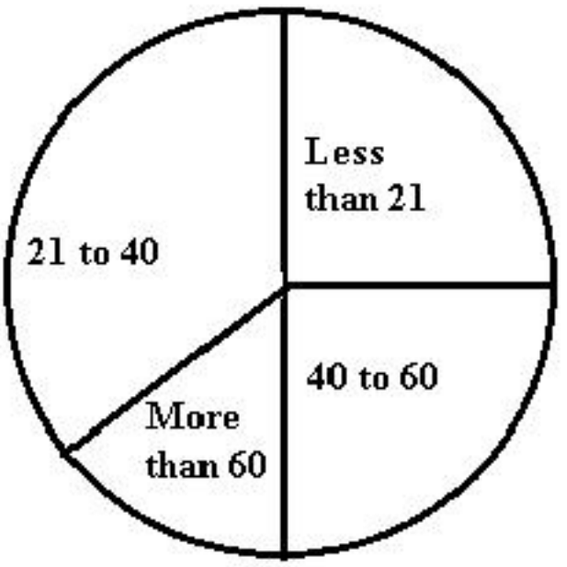
29. **In which subject did Sonu score maximum marks in 1st term?**
30. **In which subject did Sonu score maximum marks in 2nd term?**
31. **Find the difference between the highest and lowest marks obtained in 1st term.**
32. **Find the difference between the highest and lowest marks obtained in 2nd term.**

[33-36] The pictograph shows the sale of T-shirts in a readymade garment store for 4 weeks:

Weeks	No. of T-shirts sold
I	
II	
III	
IV	
	=10 T-Shirts

33. **How many total T-shirts were sold in 4 weeks?**
34. **If the price of one T-shirt is ₹ 200, then find the amount earned by selling all the T-shirts?**
35. **If 25 T-shirts are packed in a carton, how many cartons would be used to pack all the T-shirts?**
36. **How many more T-shirts were sold in last two weeks than in first two weeks?**

[37-40] **The pie-chart show the age group (in years) of voters in a local Election.**



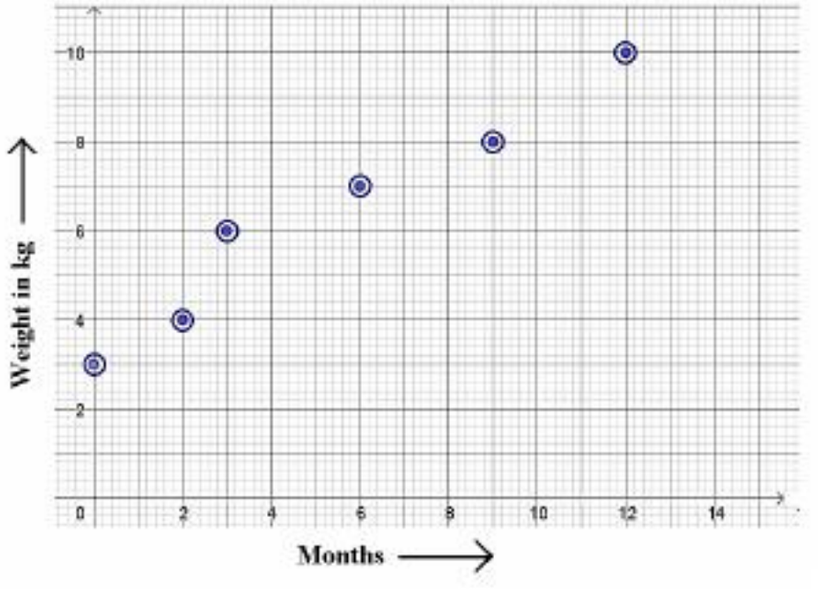
37. **What type of angle is formed for the age group of 21 to 40 years?**

38. **What fraction of voters are under 21 years of age?**

39. **What type of angle is formed for the age group of more than 60 years?**

40. **If there are 400 voters, then how many voters are 21 years or more than 21 years old?**

[41-45] **Look carefully the growth chart (baby's weight in first 12 months after birth) and answer the questions:**



41. What was baby's weight when she was born?

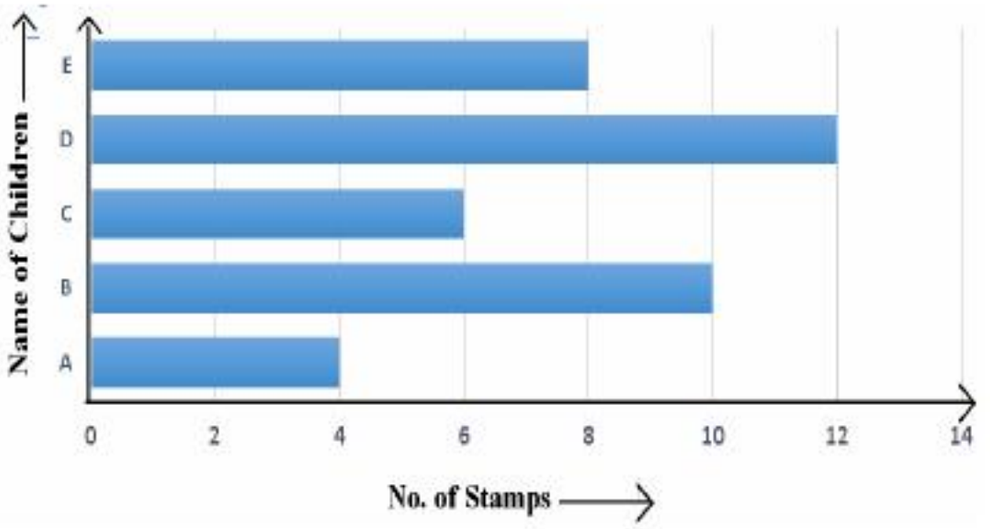
42. What was baby's weight when she was 2 months old?

43. What was her weight at 12 months?

44. How many kilograms did the baby gain in first 3 months?

45. How much weight did the baby gain from 9th to 12th month?

[46-50] The Bar Graph shows the number of stamps collected by 5 children. Richa has more stamps than Megha but less than Geetu. Rashmi has the maximum number of stamps and Mona has the least number of stamps.



46. Which bar represents Richa?

47. To whom does the bar C represent?

48. What is the sum of all the stamps collected by all five children?

49. Find the difference between maximum and minimum number of stamps collected.

50. Represent the minimum and maximum number of stamps as a fraction.

ANSWERS:

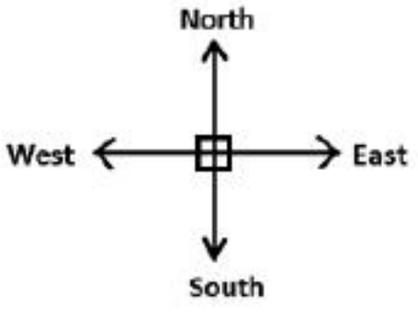
Q. No.	Answers	Q. No.	Answers
1.	(a) 𝍸 𝍸 |||| (b) 𝍸 𝍸 𝍸 ||	26.	$\frac{1}{8}$
2.	(a) 40 (b) 5	27.	$\frac{1}{4}$
3.	24	28.	7 days
4.	12	29.	Maths
5.	6	30.	EVS
6.	6	31.	10
7.	Sprouted Chana Chat	32.	20
8.	Fruit Chat	33.	200
9.	5	34.	₹ 40000
10.	Veg. Sandwich and Gur Peanut Chikki	35.	8
11.	48	36.	30
12.	Tea and Milk	37.	Obtuse Angle
13.	130	38.	One-fourth ($\frac{1}{4}$)
14.	30	39.	Acute Angle
15.	250	40.	300 voters
16.	V	41.	3 kg
17.	I	42.	4 kg
18.	40 students	43.	10 kg
19.	II	44.	3 kg
20.	30 years old	45.	2 kg
21.	72 years	46.	E
22.	After 15 years	47.	Megha
23.	2 years	48.	40
24.	48 years	49.	8
25.	$\frac{5}{8}$	50.	$\frac{1}{3}$

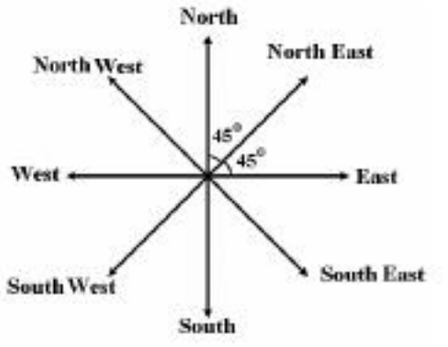
Chapter-19

DIRECTIONS

Points To Remember:

- **There are four main directions –East, West, South and North and four intermediate directions- North East, South East, South West and North West which are represented in map as:**

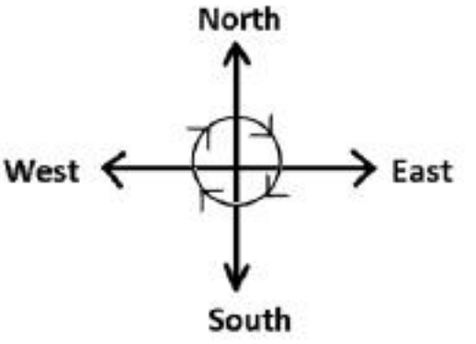




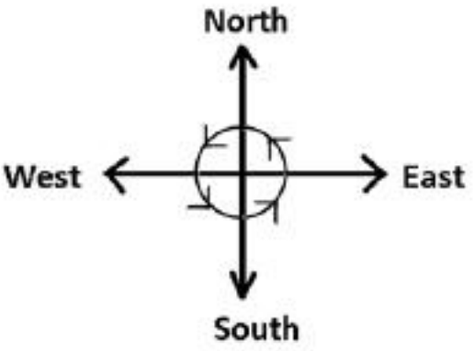
- **The Right and Left directional movement:**

  The right and left movement of a person is always with reference to the body, moving in the scenario. It is not with respect to the person who is solving the questions.

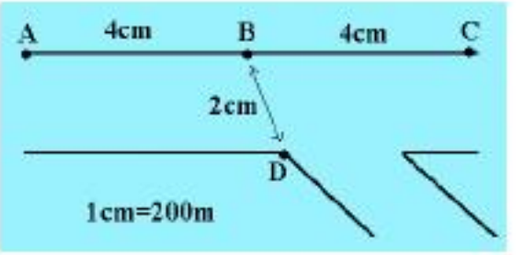
  - **Clockwise turn (Right turn): When somebody moves in direction which is same as the moving direction of clock-hands.**



- **Anti clockwise turn (Left turn) : Moving in the opposite direction of the clockwise direction.**



- **Actual distance between any two locations on land can be calculated with the help of scale given on the map :**



For the given portion of map :

Position	Distance between them on map	Actual distance
A and B	4 cm	4 × 200 = 800 m
B and D	2 cm	2 × 200 = 400 m
A and C	8 cm	8 × 200 = 1600 m
B and C	4 cm	4 × 200 = 800 m

- **Any picture can be magnified or reduced by taking grids of different square size.**

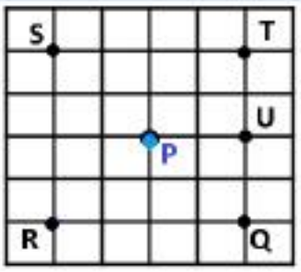
Change in length of square of grid	Change in size	Change in area
2 times (Double)	2 times	4 times
4 times	4 times	16 times
Half(½)	Half	1/4 times

➢ **The directions of sun rays and shadow:**

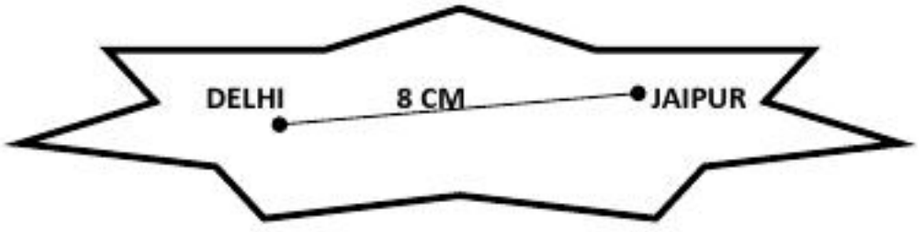
- **At the time of sunrise, if a man stands facing the east, his shadow will be towards west.**
- **At the time of sunset, the shadow of an object is always in the east.**
- **If a man stands facing the north at the time of sunrise, his shadow will be towards his left and at the time of sunset, it will be towards his right.**
- **At 12:00 noon, the rays of the sun are vertically downward hence there will be no shadow.**

Direction of person/object (Facing)	Position of Shadow	
	Sunrise (Morning)	Sunset (Evening)
North	Left (i.e. West)	Right (i.e. East)
South	Right (i.e. West)	Left (i.e. East)
East	Back (i.e. West)	Front (i.e. East)

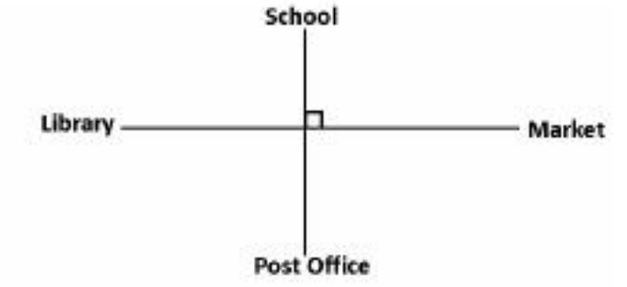
QUESTIONS:



1. **(a) Which point is in north-west of P?**
   (b) Which point is in East of P?
   (c) Which point is in south west of P?
2. **The scale on map is 5cm = 1 km, if the distance shown on the map is 20cm, what is the actual distance?**
3. **If 1 cm on a map shows 50 km on the ground. With the help of given figure, tell how far is Jaipur from Delhi?**



4. Aman is facing the market now. If he makes 270° turn to the right, which direction will he be facing?



(5-8) Fill the boxes:-

	Scale	Actual Distance	Distance on map
5.	½ cm=1km	32 km	
6.	1cm=1km	17 km	
7.	2cm=1km		50 cm
8.	3cm=1km	25 km	

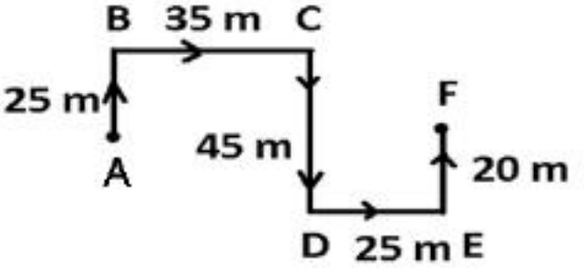
(9-13) If actual distance = 225 km, then fill in the blanks.

	Scale	Distance On Map
9.	1cm =25 km	
10.	1 cm =	15 cm
11.	1cm =45 km	
12.	1 cm =	9 cm
13.	1cm =75 km	

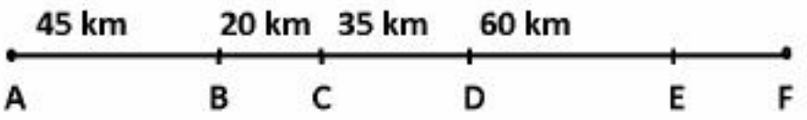
14. If 1 cm on a map shows 45 km on the ground, how far is Agra from Delhi?

AGRA ——— 8 cm ——— DELHI

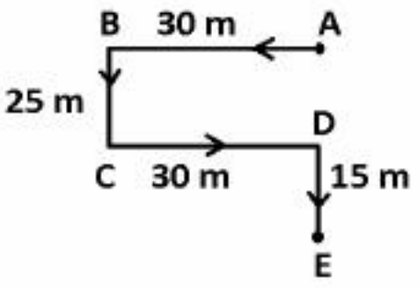
15. What is the shortest distance between A to F in metre?



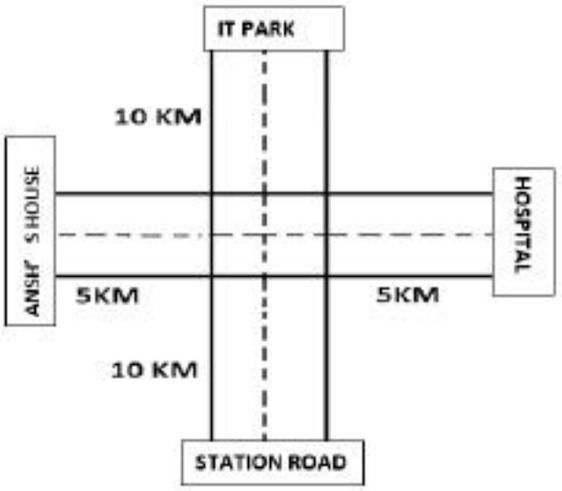
(16-18) On a line AB of 200 km, find the distance of the following-



16. **Distance between E to F.**
17. **Distance between D to F.**
18. **Distance between B to F.**
19. **What is the shortest distance between A to E?**



[20-24] See the given map and answer the questions



20. **Ansh cycles from his house to hospital. How much distance does he cover?**
21. **Ansh travels from his house to station road, picks up his grand-mother and takes her to the hospital. Find the total distance travelled by Ansh in this journey?**
22. **What type of angle is formed between the roads connecting IT Park and the hospital?**

23. What type of angle is formed between the roads connecting Ansh's house and hospital?

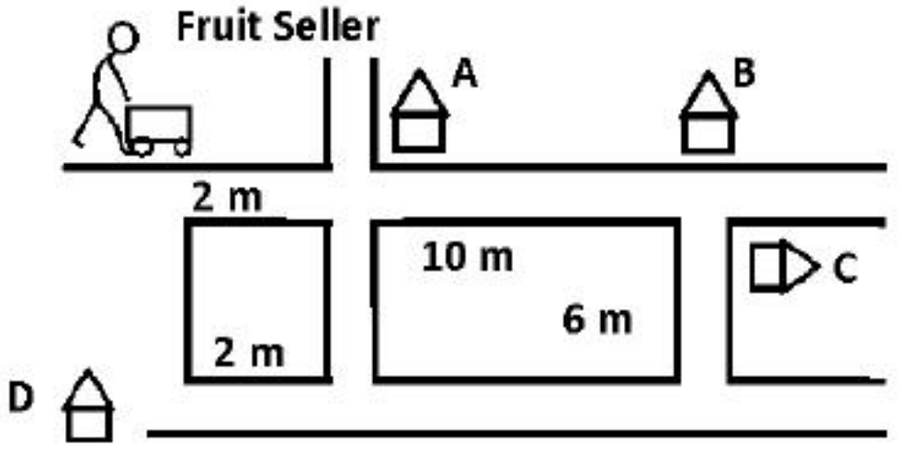
24. From Ansh's house to the IT Park and then to the hospital, how many turns does he have to take?

25. Seema and Radha started moving in opposite directions from point A. After walking 27 metre on either side both stopped. Then Seema started moving towards Radha. How much distance did she cover to meet Radha?

26. Megha is walking around a rectangular park. She started her walk facing west. After taking two turns at the corners of the park, which direction would she be facing?

27. Ravi is walking around a square park. If he started his walk facing north direction, then after taking three turns at the corners of the park, which direction would he be facing?

[28-30] Look at the map given below and answer.

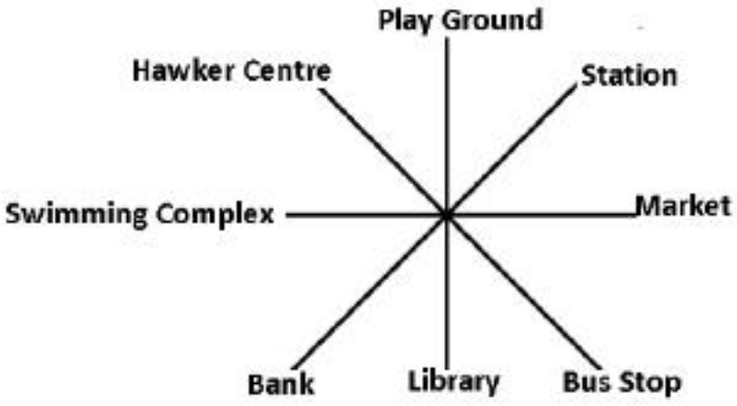


28. A fruit seller delivers fruits every day to the houses A, B, C, and D, in this sequence. How much distance in metres does he travel everyday starting from his house to house D?

29. House D does not want fruits a day. How much distance in metres does he have to travel from his house to house C?

30. How many turns does he have taken to complete his journey from A to D?

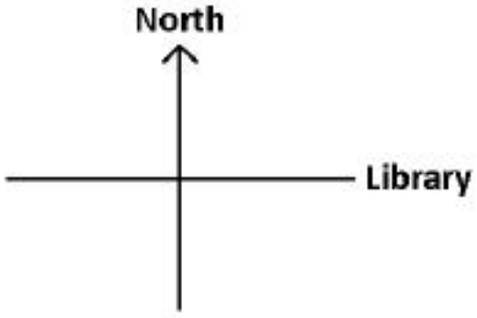
31. If Diksha is facing the swimming complex and she turns 135° in clockwise direction, what will she be facing finally?



32. Mohit turns clockwise 270° and faces North-East in the end. Which direction was Mohit facing originally?

33. After walking 6 km, I turned to the right and then walked 2 km. After that I turned to the left and walked 10 km. In the end I was moving towards the North. In which direction did I start my journey? (Hint: The direction we are facing is always assumed as North)

34. Priya was facing the library at the beginning. She turned anticlockwise to face South. What angle did she turn through?



35. Hema walks 6 km south and then turns left and walks 4 km straight. She again turns left and walks 5 km. Which direction is she facing now?

36. One morning after sunrise, Khushi and Ravi were sitting in a lawn with their backs towards each other. Khushi's shadow fell exactly towards her left hand side. Which direction was Ravi facing?

37. A clock is so placed that at 2:00 pm the minute hand points towards North-West. In which direction does the hour hand point at 6:00 pm?

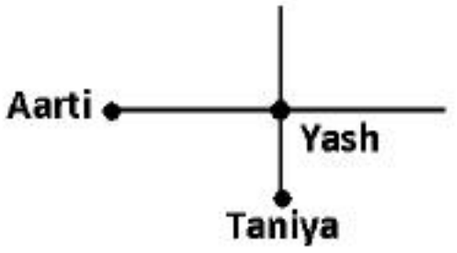
38. P, Q, R and S are playing a game of carom. P, R and S, Q are partners. S is to the right of R and R is facing West. Then in which direction is Q facing? (Hint: Partners sit oppositely)

39. If South East becomes North, North East becomes West and so on. What will West become?

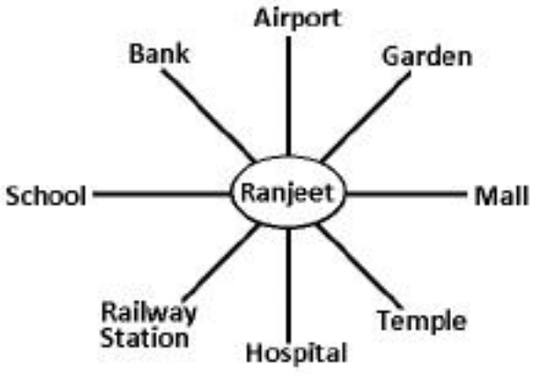
40. Divya drives 30 km towards south. Then she turns right and drives 60 km. She again turns right and drives 30 km. Finally she drives 10 km after turning to the left. How far is she now from her starting point?

41. A man is doing Yogasan with his head down and legs up. His face is towards south. In which direction, will his right hand be?

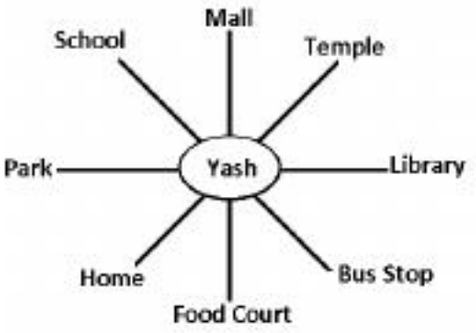
42. If Taniya is in the South of Yash and Yash is in the East of Aarti, then in which direction is Aarti with respect to Taniya?



43. Ranjeet is facing the temple. He turns 90° anticlockwise and then turns 135° clockwise. What will he be facing now?



44. Yash is facing towards the Bus stop now. If he takes $3\frac{1}{8}$ turns anti clockwise, then what will he be facing now?



45. Rahul keeps his time piece on the table in such a way that at 6 pm, hour hand points to north. In which direction the minute hand will point at 9:15pm?

46. (a). Who is standing to the North East of Rishi?

(c) Who is standing to the South West of Rishi?

Priya	Mohit	Vineet
Nidhi	Rishi	Ansh
Sonali	Kavya	Riya

47. The time in a watch is 7:30. In which direction the minute hand points?

48. To walk from his home to school, Ajay has to cycle towards south. In which direction does he cycle on his way back home?

49. In the given clock, the minute hand rotates 270° anticlockwise, then in which direction will it point ?

ANSWERS:

Q. No.	Answers	Q. No.	Answers
1.	(a) S (b) U (c) R	26.	East Direction
2.	4 km	27.	West Direction
3.	400 km	28.	30 m
4.	School	29.	12 m
5.	16 cm	30.	2 turns
6.	17 cm	31.	Station
7.	25 km	32.	South-east
8.	75 cm	33.	North
9.	9 cm	34.	270°
10.	15 km	35.	North
11.	5 cm	36.	South
12.	25 km	37.	South-East
13.	3 cm	38.	North
14.	360 km	39.	South-East
15.	60 m	40.	70 km
16.	40 km	41.	East
17.	100 km	42.	North-West
18.	155 km	43.	Hospital
19.	40 m	44.	Library
20.	10 km	45.	West
21.	30 km	46.	(a) Vineet (b) Sonali
22.	Right Angle	47.	South
23.	Straight Angle	48.	North
24.	3 turns	49.	East
25.	54 m		

MENTAL MATHS

DIRECTORATE OF EDUCATION GOVT.OF N.C.T.OF DELHI

पढ़े चलो बढ़े चलो