



GOVERNMENT OF KARNATAKA

DEPARTMENT OF SCHOOL EDUCATION AND LITERACY

LESSON BASED ASSESSMENT

2025-26



MATHEMATICS

English medium

DEPARTMENT OF STATE EDUCATIONAL RESEARCH AND TRAINING, BANGALORE

N0-04, 100 FEET RING ROAD ,BANASHANKARI 3rd STAGE

BANGALORE 560085

District Institute of Education & training

DAVANAGERE

CONCEPT AND GUIDANCE

Smt. Rashmi Mahesh, IAS

Principal Secretary

DEPARTMENT OF SCHOOL EDUCATION AND LITERACY

DR.TRILOKCHANDRA K V,IAS

Commissioner,

DEPARTMENT OF SCHOOL EDUCATION
BANGALORE

Shri. GOPALKRISHNA H.N

DIRECTOR,D.S.E.R.T ,
BANGALORE

SUPPORT

Smt. GEEETA .S

Principal & DDPI (Development)
District Institute of Education & training
DAVANAGERE

Smt. Mangal V Lecturer

Distriert Institute Of Education And Training
Davanagere

ORGANISER

Smt RADHA P

SADPI
DSERT BANGALORE

RESOURCE PERSONS

Smt Usha L Patil, Asst Teacher

Govt composite Junior college(HS block)
Kodaganur, Davanagere South

Smt Kalpana C N, Asst Teacher

Govt higher primary school
Kuntapalanahalli, Davanagere south

Smt Vanitha S R, Asst Teacher

Govt High School, B.Basapura
Davanagere North

Smt Swetha V G , Asst Teacher

Govt higher primary school
Pamenahalli, Davanagere south

SCRUTINIZER

Sri Gururaj Hosaruker AM

Govt High School, Heggenahalli
Bengaluru north-1

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1.INTEGERS

1.LEARNING OUTCOME :- Performs multiplication and division operations of Integers and knows related rules applies to them.

2.Learning points

- Integers, Difference of Integers.
- Operations of Integers on the Number Line
- Basic Operations of Multiplication and Division of Integers
- Properties of Addition and Subtraction of Integers.

3.Weightage to Objectives

Sl.NO	Objectives	No. of questions	Marks	Percentage
1	Knowledge	14	30	41%
2	Understanding	15	32	43%
3	Application	5	10	14%
4	Skill	1	02	2%
Total		35	74	100%

4. Weightage to difficulty level

Sl.NO	Difficulty level	No. of questions	Marks	Percentage
1	Easy	20	26	35%
2	Average	10	25	34%
3	Difficult	5	23	31%
Total		35	74	100%

1.INTEGERS

I. Choose the correct answer from the given four alternatives:

10x1=10

1. The Sum of any two Integers is always (Easy)
A. Rational number B. Fraction number C. Decimal D. Integer
2. Which of the following integers product gives (-30) (Easy)
A. -6 and +5 B. -6 and -5 C. +6 and +5 D. +6 and -6
3. When a number is multiplied by 0, then the product is (Easy)
A. Different number B. The same number C. Zero D. After number
4. In mathematics, Anusha has written 15 right answers and 3 wrong answers. The representation form in Integers is (Easy)
A. +3,-15 B. -15, +3 C. +15,+3 D. +15,-3
5. The product of two integers (-5) & (-2) that Bhavana and Ranjana have (Easy)
A. +10 B. -10 C. +7 D. -7
6. The product obtained when (-2) is multiplied 3 times (Easy)
A. -6 B. -8 C. +8 D. +18
7. The Quotient of $(-48) \div 8$ is (Easy)
A. +6 B. +5 C. +8 D. -6
8. The product of $(-5) \times 0$ is (Easy)
A. 5 B. 0 C. -5 D. 1
9. The product of additive identity and multiplicative identity is (Easy)
A. 0 B. 1 C. -1 D. none of these
10. The product of 5 negative integers is (Easy)
A. zero B. positive integer C. negative integer D. positive or negative

II. Fill in the blanks:

5x1=5

11. Additive identity is _____ (Easy)
12. Multiplicative identity is _____ (Easy)
13. The numbers on the left side of zero on the number line are _____ (Easy)
14. The numbers on the right side of zero on the number line are _____ (Easy)
15. Integer that is neither positive nor negative is _____ (Easy)

III. 16. Match the following : **4x1=4**

- | | | |
|---------------------|---------|--------|
| a. $(+5)+(-5)$ | i. -1 | (Easy) |
| b. $(+5)-(-5)$ | ii. 0 | (Easy) |
| c. $(+5)\times(-5)$ | iii. 10 | (Easy) |
| d. $(+5)\div(-5)$ | iv. -25 | (Easy) |

IV. 17. Match the following **4x1=4**

- | | | |
|--------------|----------------|--------|
| a. $a+b$ | i. a | (Easy) |
| b. $a+(b+c)$ | ii. $b+a$ | (Easy) |
| c. $a(b+c)$ | iii. $(a+b)+c$ | (Easy) |
| d. $a+(0)$ | iv. $ab+ac$ | (Easy) |

V. Pick the odd one out : **3x1=3**

18. 10, 5, 4, -3 (Easy)
19. Addition, Subtraction, Commutative, Multiplication (Easy)
20. Difference, Sum,,Product,,Closure (Easy)

VI. Answer the following: **5x2=10**

21. The balance in Rekha's account is ₹10,000. She withdrawn ₹2000 to buy Clothes, ₹4000 for provisional items and ₹500 for fruits.What is the balance after withdrawal?

(Average)

22. Find the product of $8\times(-3)(-8)$ (Average)
23. Represent $3\times(-4)$ on number line. (Average)
24. Write 2 set of integers such that $a\div b = -2$ (Average)
25. Write two examples to show that additive identity is 0 (Average)

VII. Answer the following : **5x3=15**

26. Write examples for 3 set of integers whose product is -20 (Average)
27. Show that integers holds good for associative property under multiplication with an example. (Average)
28. A submarine is 596feet below the sea level. It comes up about 25feet per minute. After 20 minutes what will be the distance of the submarine below the sea level. (Average)
29. Explain with an example, which basic operation does not hold good for commutative Property (Average)
30. Show that $a \times (b + c) = (a \times b) + (a \times c)$ with an example. (Average)

VIII. Answer the following :

2x4=8

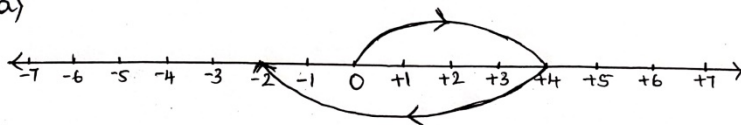
31. Owner of a store earns ₹5 profit for selling each geometry box, ₹1 loss for old books. He earns a profit of ₹185 profit for month. If he has sold 75 old books, then how many geometry boxes did he sell? (Difficult)
32. In a mathematics exam out of 40 questions, a student wrote correct answers for 25 questions, wrong answers for 10 questions and no answers for 5 questions. Teacher gave +5 marks for right answers, -3 marks for wrong answers and 0 marks for no answers. What is the marks secured by the student? (Difficult)

IX. Answer the following :

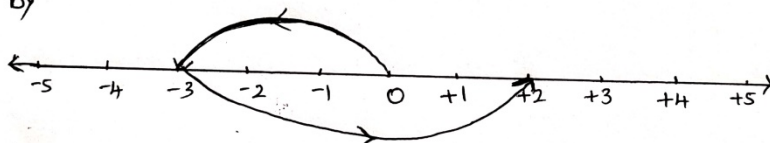
3x5=15

33. Examine whether integers are closed under multiplication for closure, commutative, associative and identity properties with an example. (Difficult)
34. Represent on number line the basic operations addition, subtraction, multiplication and division for the numbers -2 and +4. (Difficult)
35. Teacher has written some number line in the class as below . Represent these in mathematical form. (Difficult)

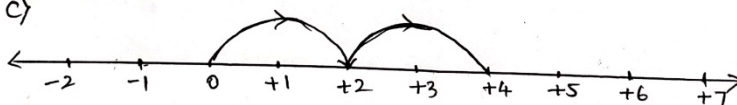
a)



b)



c)



2. FRACTIONS AND DECIMALS

1. LEARNING OUTCOME :- Applying the steps, solve the multiplication and division operations on statement problems of fractions and decimals.

2. Learning points :-

- Definition of fractions, comparison of Types of fractions
- Identifying fractions on a number line.
- Equivalent fractions.
- Addition and subtraction of fractions.
- Problems on multiplication and division of fractions.
- Understand the meaning of decimals.
- Problems on multiplication and division involving decimals.

3. Weightage to Objectives

Sl.NO	Objectives	No. of questions	Marks	Percentage
1	Knowledge	20	44	23%
2	Understanding	64	116	60%
3	Application	16	29	15%
4	Skill	3	5	02%
Total		103	194	100%

4. Weightage to difficulty level

Sl.NO	Difficulty level	No. of questions	Marks	Percentage
1	Easy	36	73	38%
2	Average	60	108	56%
3	Difficult	7	13	6%
Total		103	194	100%

2. FRACTIONS AND DECIMALS

Fractions

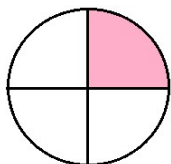
I. Choose the correct answer from the given four alternatives:

5x1=5

1. Fractional representation of shaded part in given picture is

(Easy)

- A. $\frac{1}{2}$ B. $\frac{3}{4}$
C. $\frac{1}{4}$ D. $\frac{2}{4}$



2. Improper fraction form of $1\frac{3}{5}$ is

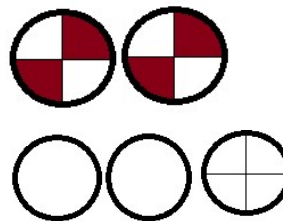
(Easy)

- A. $\frac{9}{5}$ B. $\frac{8}{5}$
C. $\frac{18}{5}$ D. $\frac{8}{3}$

3. Suitable representation of $2 \times \frac{1}{4}$ is

(Easy)

- A. B.
C. D.



4. The value of $5 \times 2\frac{3}{2}$ is

(Easy)

- A. $\frac{35}{2}$ B. $2\frac{1}{2}$
C. $5\frac{7}{2}$ D. $\frac{7}{5}$

5. Mary purchases $1\frac{1}{2}$ m cloth for each of her 3 children for stitching. Hence the total length of cloth purchased by her is

(Easy)

- A. $3\frac{1}{2}$ m B. 3 m
C. $1\frac{3}{2}$ m D. $4\frac{1}{2}$ m

II. Fill in the blanks :

10x1=10

6. Numerator in $\frac{2}{3}$ is _____
7. Denominator in $\frac{1}{2}$ is _____
8. The reciprocal of $\frac{3}{4}$ is _____
9. An example for proper fraction is _____

(Easy)

(Easy)

(Easy)

(Easy)

10. An example for mixed fraction is _____ (Easy)
11. The place value of 6 in 0.6 is _____ (Easy)
12. The decimal form of $\frac{3}{10}$ is _____ (Easy)
13. The place value of 3 in 7.463 is _____ (Easy)
14. The place value of 8 in 5.84 is _____ (Easy)
15. The meaning of deci in decimal is _____ (Easy)

III. 16. Match the following :

5x1=5

- | | | |
|------------|--------------------|--------|
| a. 0.5 | $\frac{5}{100000}$ | (Easy) |
| b. 0.05 | $\frac{5}{10}$ | (Easy) |
| c. 0.005 | $\frac{5}{100}$ | (Easy) |
| d. 0.0005 | $\frac{5}{1000}$ | (Easy) |
| e. 0.00005 | $\frac{5}{10000}$ | (Easy) |

IV. Find the value of :

6x2=12

17. $\frac{1}{4} + \frac{1}{12}$ (Average)
18. $\frac{4}{9} - \frac{2}{15}$ (Average)
19. $\frac{3}{6} + \frac{2}{18}$ (Average)
20. $\frac{9}{16} - \frac{6}{24}$ (Average)
21. $\frac{6}{14} + \frac{3}{35}$ (Average)
22. $\frac{20}{15} - \frac{10}{25}$ (Average)

V. Convert the following into mixed fractions:

5x2=10

23. $\frac{8}{5}$ (Easy)
24. $\frac{4}{3}$ (Easy)
25. $\frac{9}{4}$ (Easy)
26. $\frac{15}{6}$ (Easy)

27. $\frac{39}{7}$

(Easy)

VI. Convert the following into improper fractions:

5x2=10

28. $1\frac{5}{6}$

(Easy)

29. $8\frac{3}{4}$

(Easy)

30. $10\frac{3}{7}$

(Easy)

31. $5\frac{1}{4}$

(Easy)

32. $7\frac{8}{9}$

(Easy)

VII. Solve the following

6x2=12

33. Raheem purchased $1\frac{1}{4}$ m piece of cloth for each of his two children to stitch shirt . Find the total measure of cloth he purchased. (Average)

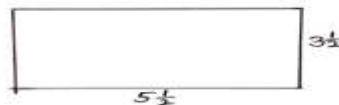
34. Find the perimeter of a square whose length $\frac{3}{4}$ cm . (Average)

35. Find the area of a rectangular table whose length is $2\frac{1}{2}$ cm and breadth is $3\frac{1}{2}$ cm.

(Average)

36. Megha has read $\frac{3}{5}$ th part of a book of 100 pages. Find the remaining part of book she has to read. (Average)

37. Find the perimeter of the given rectangular land



(Average)

38. In a company of 2000 employees, $\frac{3}{8}$ part of the employees are software and the remaining employees are hardware. Find the number of hardware employees.

(Average)

VIII. Multiply and convert to the simplest form of the following.

4x2=8

39. $5 \times \frac{8}{9}$

(Average)

40. $9 \times \frac{2}{7}$

(Average)

41. $4 \times \frac{7}{9}$

(Average)

42. $6 \times \frac{3}{5}$

(Average)

IX. Find the value of the following :**4x2=8**

43. $\frac{5}{6}$ of a) 36 b) 60

(Average)

44. $\frac{4}{9}$ of a) 63 b) 819

(Average)

45. $\frac{2}{3}$ of a) $5\frac{4}{6}$ b) $1\frac{1}{4}$

(Average)

46. $\frac{2}{7}$ of a) $4\frac{3}{28}$ b) $55\frac{2}{35}$

(Average)

X. Multiply and convert to the simplest form of the following.**5x2=10**

47. $\frac{2}{5} \times \frac{15}{8}$

(Average)

48. $\frac{3}{7} \times 21$

(Average)

49. $\frac{4}{20} \times \frac{60}{28}$

(Average)

50. $\frac{120}{140} \times 30$

(Average)

51. $\frac{50}{100} \times \frac{1}{2}$

(Average)

XI. Which is bigger:**4x2=8**

52. $\frac{1}{5}$ of $\frac{4}{8}$ (or) $\frac{2}{3}$ of $\frac{3}{8}$

(Average)

53. $\frac{2}{5}$ of $\frac{1}{6}$ (or) $\frac{2}{3}$ of $\frac{5}{10}$

(Average)

XII. Find the value of the following :**5x2=10**

54. $15 \div \frac{3}{5}$

(Average)

55. $30 \div \frac{5}{6}$

(Average)

56. $28 \div \frac{4}{7}$

(Average)

57. $60 \div \frac{6}{10}$

(Average)

58. $120 \div \frac{12}{40}$

(Average)

XIII. Find the reciprocal of the following and then classify them into proper, improper fractions and mixed fractions. **5x1=5**

59. $\frac{5}{6}$ (Easy)

60. $\frac{21}{1}$ (Easy)

61. $\frac{7}{9}$ (Easy)

62. $\frac{1}{9}$ (Easy)

63. $\frac{4}{9}$ (Easy)

XIV. Find the value of the following : **5x2=10**

64. $\frac{6}{7} \div \frac{3}{4}$ (Average)

65. $\frac{8}{9} \div \frac{5}{6}$ (Average)

66. $\frac{3}{5} \div \frac{2}{3}$ (Average)

67. $\frac{4}{5} \div 2\frac{1}{3}$ (Average)

68. $1\frac{5}{7} \div 3\frac{2}{14}$ (Average)

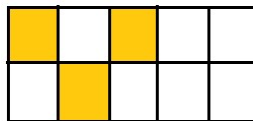
Decimals

I. Choose the correct answer from the given four alternatives: **5x1=5**

69. In given figure the shaded part in decimal form is

A. 3.0 B. 0.3

C. 0.03 D. 30.0



70. Decimal form of $\frac{136}{5}$ is (Easy)

A. 27.2 B. 2.72

C. 272 D. 272.0

71. In Decimal number, the next place of tenth place is (Easy)

A. Unit B. Thousandth

C. Century D. Hundredth

72. In decimal number system, the left side numbers and right side numbers of decimal point is respectively read as (Easy)

- A. Whole and part B. Individual and individual
C. Whole and Whole D. Individual and Whole

73. In 9.43, the place of 4 is (Easy)

- A. Thousandth B. Hundredth
C. Tenth D. Tens

II. Which one is bigger: **5x2=10**

74. 0.09 or 0.9 (Average)

75. 5.64 or 26.4 (Average)

76. 0.99 or 0.0099 (Average)

77. 6.5 or 7.9 (Average)

78. 8.60 or 7.50 (Average)

III. For the following convert to paisa to rupees form: **5x2=10**

79. 1550 paisa (Average)

80. 6290 paisa (Average)

81. 49 rupees 55 paisa (Average)

82. 75 paisa (Average)

83. 115 Rupees 25 Paisa (Average)

IV. Write the expanded form of the following decimals: **5x2=10**

84. 42.56 (Average)

85. 220.03 (Average)

86. 6.590 (Average)

87. 30.478 (Average)

88. 78.01 (Average)

- V. Convert from gram to kilogram or kilogram to gram: 5x2=10**
89. 5kg 450gm (Average)
90. 1650gm (Average)
91. 33750gm (Average)
92. 18kg 300gm (Average)
93. 71 kg 50gm (Average)

VI. Solve the following 5x3=15

94. Reeta brought 2kg 500gm of sugar and 1kg 250gm of jaggery. Geetha brought 3kg 400gm of sugar and 2kg 550gm of jaggery. Who bought more weight of items.(Average)
95. Ramesha bought 10kg 500gm of mangoes on Monday to sell.He sold 2kg 250gm on Tuesday, 3kg 450gm on Wednesday and 1kg 500gm on Thursday. How much quantity of mangoes are remaining with Ramesh to sell them on Friday. (Average)
96. The length and breadth of a rectangular field are 30 feet and 50 feet respectively.
Find the perimeter and area of the field. (Average)
97. In a cloth shop, Haumanthanna had 20m of cloth piece for blouse, From that Radha brought 2m 500cm, Ganga brought 1m 250cm and Geetha brought 1m 750cm of cloth. Find the length of the remaining cloth. (Average)
98. Fathima, a teacher had, ₹1000. She brought colour papers for ₹505.50, balloons for ₹210.50 and Shawl for ₹315.75. How much amount remained with Fathima ?(Average)

VII. Solve as directed : 3x4=12

99. Sohan is having some Regular geometrical figures with length of sides $3\frac{1}{2}$ cm. What is the perimeter of the each of the following. (Difficult)
- a)Equilateral triangle b)Regular heptagon
- c) Regular pentagon d)Regular octagon
100. Find the product of the following and write in decreasing order: (Difficult)
- a) 5.5×2 b) 2.8×5 c) 3.9×6 d) 4.7×9

101. Divide 10.5 from 10, 100, 1000, and 10000 and also write decimal numbers in increasing order. (Difficult)

102. Convert the following into decimal form and write in increasing and decreasing order: (Difficult)

$$\frac{9}{10}, \frac{9}{100}, \frac{9}{1000}, \frac{9}{10000}$$

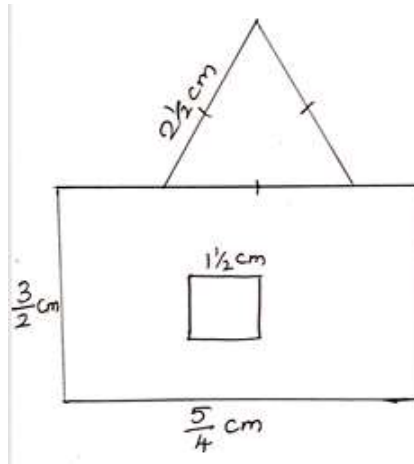
VIII. Solve:

$$1 \times 5 = 5$$

103. Find the perimeter and area of the following figures :

(Difficult)

Triangle, Square, and rectangle.



3.DATA HANDLING

1.LEARNING OUTCOME :- By collecting the data from daily life situation finds the Central tendency such as Mean, Median and Mode and draws bar graph for the given data.

2.Learning points :-

- Data interpretation
- Collection and combination of data, representative values, arithmetic mean, range, median, standard deviation.
- Draw bar graphs and double bar graphs..

3.Weightage to Objectives

Sl.NO	Objectives	No. of questions	Marks	Percentage
1	Knowledge	11	12	23%
2	Understanding	10	17	33%
3	Application	4	10	19%
4	Skill	3	13	25%
Total		28	52	100%

4. Weightage to difficulty level

Sl.NO	difficulty level	No. of questions	Marks	Percentage
1	Easy	11	13	25%
2	Average	14	26	50%
3	Difficult	3	13	25%
Total		28	52	100%

3.DATA HANDLING

I. Choose the correct answer from the given four alternatives:

5x1=5

1. Sum of data divided by number of data we get (Easy)

A. Maximum value B. Minimum value C. Total value D. Mean

2. Mean of first 7 natural numbers is (Easy)

A . 28 B. 26 C. 10 D. 4

3. Difference of highest and lowest observations is (Easy)

A. mode B. range C. Median D. Mean

4. In a group of numbers, repeated number is (Easy)

A. Mean B. Median C. Mode D. Range

5. Graph that can be used to represent the eggs distributed to 6th to 8th class is (Easy)

A. Bar graph B. Line graph C. Double bar graph D. Pi graph

II. Fill in the blanks:

5x1=5

6 .Median lies.....big and small observations. (Easy)

7. Range is thebetween highest and lowest observations. (Easy)

8. Mode isnumber in observations. (Easy)

9. Median isnumber of data, when we write observation in ascending or descending order. (Easy)

10. Bar graph has.....axis. (Easy)

III. Define:

5*1=5

11. Mean (Average)

12. Mode (Average)

13. Median (Average)

14. Bar Graph (Average)

15. Double bar Graph (Average)

IV. Solve the following:

6x2=12

16. Given table represents the marks scored by Janya in 7th standard. Observe the table and answer the questions. (Average)

SUBJECT	KANNADA	ENGLISH	HINDI	MATHS	SCIENCE	SOCIAL SCIENCE
MARKS	97	90	94	96	92	91

A. The subject with maximum score

B. The subject with minimum score

17. Below table shows Rahul's cricket practice timings from Sunday to Saturday. Observe table and answer the questions. (Average)

DAY	SUN	MON	TUE	WED	THU	FRI	SAT
HOURS	6	4	3	2	3	2	5

A. In which days he practices equally.

B. In which days he practices more.

18. Find the mean value for following numbers 8,4,6,9,6,7,5 (Average)

19. What is the mean value of the numbers from 1 to 10? (Average)

20. The 6th std students scored marks in Mathematics are as follows 25,94,66,78,47,16,58, 44.

Find its range. (Average)

21. Find mode and median for the following data 13,14,12,16,12,15,17,14,18. (Average)

V. Solve :**4x3=12**

22. A company owner's gained profit in 5 years is as below(in crores)

(Average)

550, 720, 430, 680, 820

A. mean of 5 years

B. Find range for 5 years

C. Find median

23. In a class there are 60 students and the following table shows their favourite sweets(Average)

MYSOREPAK	PEDHA	JELABI	RASGOLLA	CAKE	BARFI
5	10	12	9	16	8

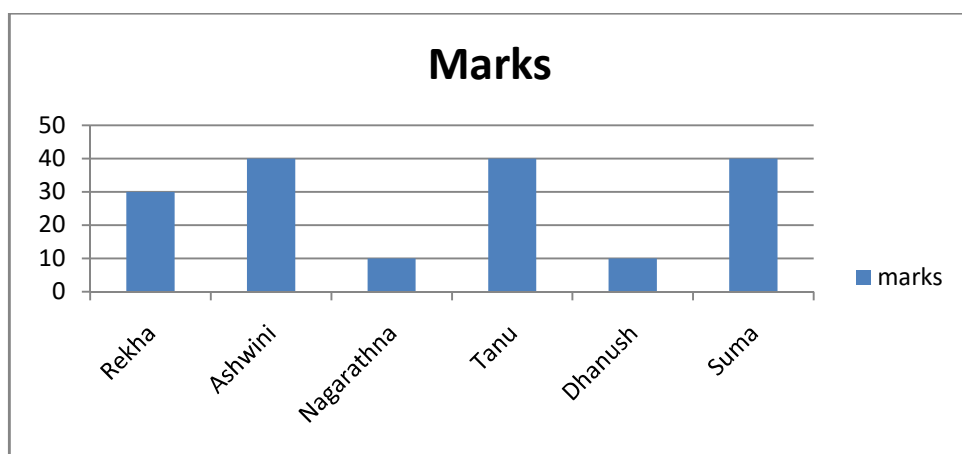
A. Find the range between Jelabi and pedha

B. Find mean between Rasgolla,Mysorepak and Cake

C. Median written in ascending order.

24. Observe bar graph and answer the questions

(Easy)



A. Who scored highest marks?

B. Who scored least marks?

C) Who scored 40 marks?

25. The marks scored in Kannada in annual exam in class 7th is as follows

90, 78, 86, 92, 94, 82, 96, 70.

(Average)

A. Find Range, Median, Mode

VI. Solve:

2x4=8

26. Marks scored by Karim in annual exam is given in the table .Draw a Bar graph(Difficult)

SUBJECT	KAN	ENG	HIN	MATHS	SCI	S.S
MARKS	90	75	80	85	95	90

27. Favourite breakfast of 7th class students are been listed below. Represent it in Bar Graph.

(Difficult)

BREAKFAST	PULAV	CHITRANNA	TOMATO BATH	BISI BELE BATH	POORI SAAGU	UPPITTU
STUDENTS	40	20	30	45	35	15

VII. Solve:

1x5=5

28. The participation of 2nd & 3rd standard in sports are as below. Draw double bar graph.

(Difficult)

GAMES	RUNNING	FROG JUMP	LEMON & SPOON	MUSCIAL CHAIR	BASKET BALL	KUNTABILLE
2 nd std	20	30	40	15	10	45
3 rd std	30	25	50	35	40	55

4.SIMPLE EQUATIONS

1.LEARNING OUTCOME :- Express the daily life situations in the form of simple equations.

2. Learning points :-

- Understand the meaning of a simple equation
- Solve the formation of an equation.
- Apply simple equations in everyday life.

3.Weightage to Objectives

Sl.NO	Objectives	No. of questions	Marks	Percentage
1	Knowledge	14	14	21%
2	Understanding	8	15	22%
3	Application	12	30	45%
4	Skill	2	8	12%
Total		36	67	100%

4. Weightage to difficulty level

Sl.NO	difficulty level	No. of questions	Marks	Percentage
1	Easy	21	21	31%
2	Average	10	25	38%
3	Difficult	5	21	31%
Total		36	67	100%

4.SIMPLE EQUATIONS

I. Choose the correct answer from the given four alternatives:

5x1=5

1. In an equation equality symbol is

(Easy)

- A. $\emptyset$ B. $\equiv$ C. $=$ D. $\neq$

2. The Value of a variable is

(Easy)

- A. Constant B. Varies C. Same D. Negative

3.

(Easy)



The Number of laddus in empty box

- A. 10 B. 7 C. 12 D. 11

4. The Mathematical statement which represents equation is

(Easy)

- A. $a+5=9$ B. $a+5>9$ C. $a+5<9$ D. $a+5\neq 9$

5. In $x - 4 = 5$ the value of variable x is

(Easy)

- A. 4 B. 8 C. 6 D. 9

6.



Observe the figure and identify the suitable equation.

(Easy)

- A. $20-x=9$ B. $x+11=20$
C. $11-x=20$ D. $20+x=11$

II . Write the following statements in equation form:

10x1=10

7. Sum of m and n

(Easy)

8. When y is subtracted from 15 , we get 6

(Easy)

9. 4 is added to the product of a and b

(Easy)

10. 25 times of b is 100 (Easy)
11. 5 is added to 6 times of t we get 10. (Easy)
12. 10 is added to $\frac{1}{2}k$ we get 30 . (Easy)
13. When a is divided by m ,we get 30. (Easy)
14. 7 times of x is multiplied by 5 times of q gives 70 (Easy)
15. The difference of m and 5 is 3 (Easy)
16. The sum of 'a' and 5 is 15 (Easy)

III .Write the following equations in statement form.

5x1=5

17. $4 - x = 2$ (Easy)
18. $6y + 5 = 11$ (Easy)
19. $mn = 25$ (Easy)
20. $5b = 30$ (Easy)
21. $\frac{1}{2}m = 90$ (Easy)

IV .Solve the equations.

x2=10

22. $9a = 63$ (Average)
23. $8m + 15 = 49$ (Average)
24. $6x - 5 = 19$ (Average)
25. $\frac{3a}{7} = 3$ (Average)
26. $4x + 12 = 0$ (Average)

V. Solve .

5x3=15

27. When three times of a number is added to 5 we get 17. Find that number. (Average)
28. In an isosceles triangle, other than equal angle is 50° , find the remaining angles. (Average)
29. I am a three digit number. If you add myself three times, you get tricentury,
then who am I? (Average)

30. I'm biggest four digit number,If a number is added to me you get smallest five digit number,Then who am I? (Average)

31. Ramu's father's age is 6 times that of his son's age ,the sum of their ages is 42.

Then find their age? (Average)

VI. Solve these : **$4 \times 4 = 16$**

32. Mamatha is 4 times as old as her son Advik. After 5 years, the sum of their ages is 80, find Advik's present age? (Difficult)

33. Solve the equation and Verify the answer. $2(x+4)=12$ (Difficult)

34. Janaki's mother's age is 49 years ,Janaki's mother age is 4 years more than 3 times of Janaki's age. Find Janaki's age? (Difficult)

35. The measures of 2 sides of a triangle are 5cm and 7cm more than the third side,the perimeter is 21cm . Find the measure of each side? (Difficult)

VII. Solve these : **$1 \times 5 = 5$**

36. I am largest three-digit number.If I add the largest two-digit number to it and subtract a hundred from it,what is the number that is obtained when half a century is subtracted again? Who am I.? (Difficult)

5. LINES AND ANGLES

LEARNING OUTCOME :- Identifies the various angles and intersecting lines between the lines and solves the problem.

Learning points:

- Identify points, rays, lines, and arcs.
- Understand and identify supplementary angles and complementary angles.
- Understand adjacent angles linear angles, and vertically opposite angles.
- Identifying transversal and intersecting lines.
- Understand the corresponding angles, interior angles and exterior angles formed by the intersection of parallel lines

3.Weightage to Objectives

Sl.NO	Objectives	No. of questions	Marks	Percentage
1	Knowledge	19	20	35%
2	Understanding	13	31	54%
3	Application	1	3	5%
4	Skill	1	3	6%
Total		34	57	100%

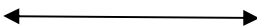
4. Weightage to difficulty level

Sl.NO	Difficulty level	No. of questions	Marks	Percentage
1	Easy	22	22	39%
2	Average	9	22	39%
3	Difficult	3	13	22%
Total		34	57	100%

5. LINES AND ANGLES

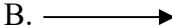
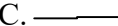
I. Choose the correct answer from the given four alternatives:

5x1=5

1. Name the given figure  (Easy)

- A. Point B. Ray C. Straight line D. curved line

2. Identify the ray in the following figures. (Easy)

- A.  B.  C.  D. 

3. Representation of an angle in symbolic form is (Easy)

- A. $\parallel$ B. $\perp$ C. $\angle$ D. $\sqrt{}$

4. The Supplementary angle of 120° is
(Easy)

- A. 60° B. 180° C. 0° D. 120°

5. Representation of angle is (Easy)

- A. $\overline{BC}$ B. $\widehat{ABC}$ C. $\vec{F}$ D. AC

II. Fill in the blanks :

10x1=10

6. Two rays intersecting at a point form _____. (Easy)

7. A line having two end points is called _____. (Easy)

8. If the sum of two angles is 90° , then these angle are called _____. (Easy)

9. A line can be _____ on both sides. (Easy)

10. The complementary of 45° is _____. (Easy)

11. In supplementary angle if one angle is acute then the other angle is _____. (Easy)

12. Two lines that do not intersect each other when extended are called _____. (Easy)

13. A line moving in only one direction is _____. (Easy)

14. A geometrical figure which has no shape and size, but occupies space is _____. (Easy)

15. Type of angle which is less than 90° is _____. (Easy)

III. Define :

7x1=7

- | | |
|--------------------------|--------|
| 16. Line segment | (Easy) |
| 17. Ray | (Easy) |
| 18. Line | (Easy) |
| 19. Angle | (Easy) |
| 20. Complementary angles | (Easy) |
| 21. Supplementary angles | (Easy) |
| 22. Parallel lines | (Easy) |

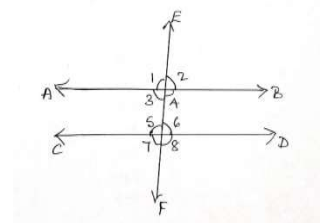
IV. Solve the following

5x2=10

23. Find the complementary and supplementary angles of 65° . (Average)
24. The difference between complementary angles is 20° . Then find the angles. (Average)

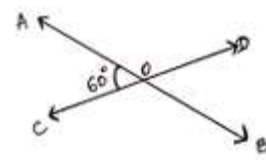
25. In the given figure identify the interior and exterior angle.

(Average)



26. In the given figure find the measure of remaining 3 angles.

(Average)



27. Draw a figure showing the angles formed from a transversal line cutting a pair of parallel lines ?

(Average)

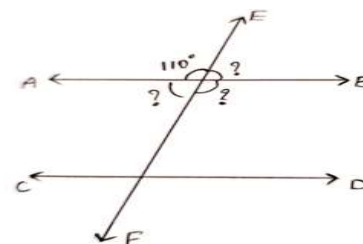
V. Solve the following

4x3=12

28. Explain the difference between complementary and supplementary angles with examples. (Average)
29. $\angle A$ and $\angle B$ are complementary to each other. If $\angle A = x - 20^\circ$ $\angle B = x - 30^\circ$ then find the angles.

(Average)

30. In the given figure find the remaining angles and give reason. (Average)

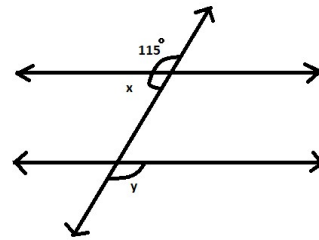


31. What are vertically opposite angles. Explain. (Average)

VI. Solve the following :

2x4=8

32. In the given figure find the value if x and y with suitable reason. (Difficult)



33. In the given figure mention which property is used.

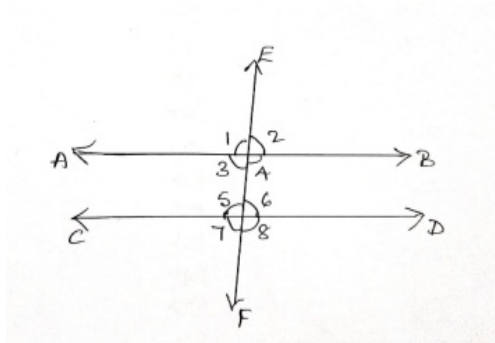
(Difficult)

i) $\angle 1 + \angle 2 = 180^\circ$

ii) $\angle 1 = \angle 4$

iii) $\angle 1 = \angle 7$

iv) $\angle 3 = \angle 5$

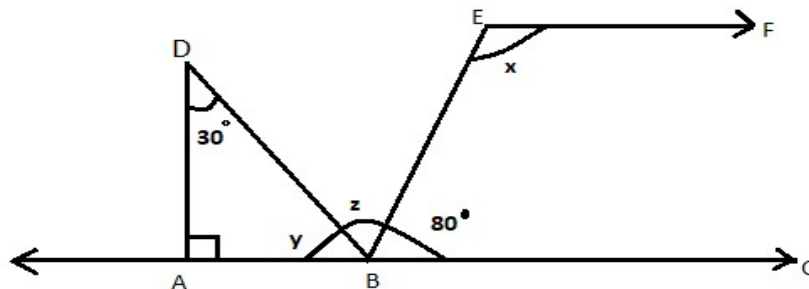


VII. Solve the following

1x5=5

34. In the given figure find the value of x,y and z (Hint : $AC \parallel EF$)

(Difficult)



6. TRIANGLE AND ITS PROPERTIES

LEARNING OUTCOME :- Knows the properties of triangle practically and logically.

2.Learning points :-

- Definition of triangle, types of triangles based on sides and angles.
- Altitudes, medians, exterior angles of a triangle and their properties
- Relationship between right-angled triangles and the Pythagorean theorem

3.Weightage to Objectives

Sl.NO	Objectives	No. of questions	Marks	Percentage
1	Knowledge	10	10	41%
2	Understanding	6	15	39%
3	Application	4	12	10%
4	Skill	1	4	10%
Total		21	41	100%

4.Weightage to difficulty level

Sl.NO	Difficulty level	No. of questions	Marks	Percentage
1	Easy	11	15	37%
2	Average	9	22	54%
3	Difficult	1	4	9%
Total		21	41	100%

6. TRIANGLE AND ITS PROPERTIES

I. Choose the correct answer from given four alternatives:

5x1=5

1. The geometrical figure formed by joining 3 non-collinear points is (Easy)
A. Square B. Rectangle C. Triangle D. Circle
2. The sum of interior angle of a triangle is (Easy)
A. 360^0 B. 90^0 C. 180^0 D. 0^0
3. The type of triangle which satisfies Pythagoras statement is (Easy)
A. Obtuse angle triangle B. Right angle triangle
C. Acute angle triangle D. Equilateral triangle
4. If two sides of a triangle are equal, then such angle is called (Easy)
A. Equilateral triangle B. Isosceles triangle
C. Scalene triangle D. Right angle triangle
5. The Exterior angle of a triangle is equal to (Easy)
A. Sum of interior opposite angle
B. Adjacent angle
C. Interior angle
D. Sum of all interior angle.

II. Fill in the blanks :

5x1=5

6. In a right angle triangle hypotenuse is to right angle (Easy)
7. Each angle of an equilateral triangle measures (Easy)
8. The triangle having three unequal sides is (Easy)
9. If a triangle has an angle 90^0 , then it is (Easy)
10. The philosopher Pythagoras belongs to country. (Easy)

III.11.Match the following.

5x1=5

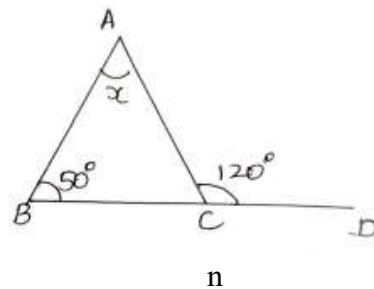
- | | | |
|-------------------|-------------------|--------|
| a. Right angle | i. 225° | (Easy) |
| b. Acute angle | ii. 90° | (Easy) |
| c. Obtuse angle | iii. 65° | (Easy) |
| d. Straight angle | iv. 125° | (Easy) |
| e. Reflex angle | v. 180° | (Easy) |

IV. Solve .

5x2=10

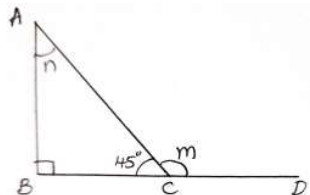
12. In figure, find the measure of x and y

.(Average)



13. In the figure, find value of m and

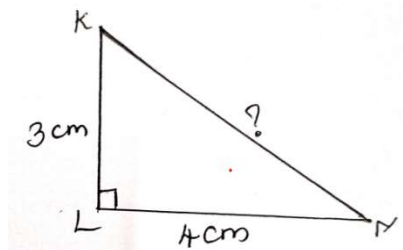
(Average)



14. According to Pythagoras theorem

(Average)

find the measure of side KM .



15.State Pythagoras theorem.

(Average)

16.List out the difference between right angled triangle and acute angle triangle. (Average)

V. Solve these.

4x3=12

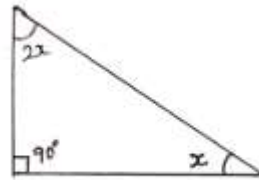
17. Mention the types of triangles based on their angle?

(Average)

18. Mention the types of triangles based on their sides?

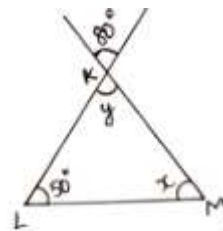
(Average)

19. Find the angles in the given triangle (Average)



20. In the given figure find the value of x and y

(Average)



VI. Solve these:

1x4=4

21. Explain Pythagoras theorem in right angle triangle .

.(Difficult)

7. COMPARING QUANTITIES

1.LEARNING OUTCOME :- Understands the meaning of percentage and solves problems related to conversion of percentage to fractions and decimals and vice-versa.

2.Learning points :-

- Meaning of percentage.
- Comparison of quantities by percentage
- Conversion of fraction to percentage
- Introduction to percentage of profit and percentage of loss.
- Definition of simple interest.
- Concept of principal, interest rate, time and amount which are necessary to calculate simple interest.
- Finding simple interest with the help of formula

3.Weightage to Objectives

Sl.NO	Objectives	No. of questions	Marks	Percentage
1	Knowledge	5	7	15%
2	Understanding	12	27	56%
3	Application	5	11	23%
4	Skill	1	3	6%
Total		23	48	100%

4.Weightage to difficulty level

Sl.NO	Difficulty level	No. of questions	Marks	Percentage
1	Easy	11	13	27%
2	Average	9	22	46%
3	Difficult	3	13	27%
Total		23	48	100%

7.COMPARING QUANTITIES

I. Choose the correct answer from the given four alternatives:

5x1=5

1. The Symbol to represent percentage is

(Easy)

A. $\div$ B. $\pm$ C. % D. $\times$

2. The Decimal form of 25% is

(Easy)

A. 0.25 B. 2.5 C. 25.0 D. 0.025

3. Percentage means

(Easy)

A.200 B. 10 C. 0.100 D. 100

4. The symbol for ratio is

(Easy)

A $\therefore$ B $\because$ C $:$ D $\therefore$

5. Ratio form of $\frac{2}{3}$ is

(Easy)

A. 2:3 B. 23 C. 3:2 D. 32

II. Write the following in fractions :

5x1=5

6. 0.1

(Easy)

7. 0.25

(Easy)

8. 0.08

(Easy)

9. 0.4

(Easy)

10. 7.5

(Easy)

III. Find the value of :

5x2=10

11. 15 % of 250

(Average)

12. 25 % of 1000

(Average)

13. 10 % of 5 Kg

(Average)

14. 50 % of 4000 m

(Average)

15. 20 % of 10 litre

(Average)

IV. Solve the following :

5 x 3=15

16. In a town of 25000 voters, 40% are female voters and remaining are male voters. Then find the number of male voters. (Average)
17. Write the formulas of profit, profit %, loss and loss%. (Easy)
18. Peter bought a TV for ₹50,000 and after 2 years, sold it for ₹35,000. Calculate how much percentage profit or loss he got. (Average)
19. Divya bought an old scooter for ₹25,000. After 3 months she sold it for ₹30,000. Calculate profit% or loss%. (Average)
20. Convert the 2:3 into percentage form (Average)

V. Solve the following :

2x4=8

21. Anitha has ₹35,000 in her account. Find simple interest and amount for 5 years with 5% rate of interest. (Difficult)
22. For certain amount, the interest for 5% rate and time period 3 years is ₹450. Find the amount. (Difficult)

VI. Solve the following :

1x5=5

23. Kumar took a loan of ₹30,000 for 5 years with 3% interest from a finance company. In the same year he took loan of ₹40,000 for 5 years with 4% interest from a pawn broker. Then how much interest he has to pay to each of them. For whom he gave more interest. (Difficult)

8.RATIONAL NUMBERS

1.LEARNING OUTCOME :- Solve basic operation problems on Rational Numbers related to daily life.

2.Learning points :-

- Meaning and necessity of rational numbers.
- Positive and negative rational numbers.
- Representation of rational numbers on the number line.
- Comparison of rational numbers.
- Basic operations on rational numbers.

3.Weightage to Objectives

Sl.NO	Objectives	No. of questions	Marks	Percentage
1	Knowledge	15	15	25%
2	Understanding	13	29	48%
3	Application	6	12	20%
4	Skill	1	4	7%
Total		35	60	100%

4. Weightage to difficulty level

Sl.NO	Difficulty level	No. of questions	Marks	Percentage
1	Easy	15	15	25%
2	Average	19	41	68%
3	Difficult	1	4	7%
Total		35	60	100%

8.RATIONAL NUMBERS

I. Choose the correct answer from the given four alternatives: 10x1=10

1. A rational number with no reciprocal is (Easy)
A. -1 B. 0 C. $\frac{3}{5}$ D. 1
2. The product of a rational number and its reciprocal is (Easy)
A. 0 B. $\frac{2}{2}$ C. $\frac{1}{2}$ D. -1
3. A number which is not a rational number is. (Easy)
A. $\frac{1}{5}$ B. $\frac{5}{1}$ C. $\frac{0}{5}$ D. $\frac{5}{0}$
4. The symbol to represent Rational numbers is (Easy)
A. Q B. I C. Z D. N
5. The number of rational numbers between two rational numbers (Easy)
A. one B. finite C. zero D. infinite
6. A number having its reciprocal same as its rational number (Easy)
A. 1 B. $\frac{0}{2}$ C. 2 D. -1
7. The positive rational number among the following is (Easy)
A. $\frac{-3}{5}$ B. $\frac{-3}{-5}$ C. $\frac{3}{-5}$ D. $-(\frac{-3}{-5})$
8. The rational number which is neither positive nor negative is (Easy)
A. 1 B. -1 C. 0 D. $\frac{-1}{2}$
9. The reciprocal of $\frac{-4}{9}$ is (Easy)
A. $\frac{-4}{9}$ B. $\frac{-9}{4}$ C. $\frac{1}{4}$ D. $\frac{-1}{9}$
10. The additive inverse of $\frac{-2}{3}$ is (Easy)
A. $\frac{-3}{2}$ B. $\frac{3}{2}$ C. $\frac{-2}{3}$ D. $\frac{2}{3}$

II. Name the given rational numbers as positive and negative rational numbers: 5x1=5

11. $\frac{-1}{4}$ _____ (Easy)

12. $\frac{-5}{-8}$ _____ (Easy)

13. $\frac{3}{7}$ _____ (Easy)

14. $-5\frac{1}{2}$ _____ (Easy)

15. $\frac{7}{-9}$ _____ (Easy)

III. Fill the blanks with suitable signs(>, <, =) 5x2=10

16. $\frac{1}{-3}$ $\frac{-1}{4}$ (Average)

17. $\frac{-5}{6}$ $\frac{-4}{3}$ (Average)

18. $\frac{1}{-11}$ $\frac{-1}{11}$ (Average)

19. $\frac{2}{-3}$ $\frac{-3}{2}$ (Average)

20. $\frac{1}{-3}$ $\frac{4}{12}$ (Average)

IV. Fill the blank with suitable integer: 2x2=4

21. $\frac{3}{4} = \frac{\quad}{8} = \frac{-9}{\quad}$ (Average)

22. $\frac{-1}{3} = \frac{-5}{\quad} = \frac{\quad}{21}$ (Average)

V. Find the simplest form of: 3x2=6

23. $\frac{-42}{28}$ (Average)

24. $\frac{-45}{-18}$ (Average)

25. $\frac{128}{-64}$ (Average)

VI. Solve the following:**6x2=12**

26. Find 5 rational numbers between $\frac{-3}{5}$ and $\frac{-1}{3}$ (Average)

27. $\frac{-2}{7}$, Write 4 equal rational numbers (Average)

28. $\frac{5}{-3}$, Write 4 equal rational numbers (Average)

29. Simplify : $\frac{7}{4} + (\frac{-11}{8})$ (Average)

30. Simplify : $\frac{2}{9} - \frac{5}{3}$ (Average)

31. Simplify : $\frac{3}{-5} \times \frac{-5}{3}$ (Average)

VII. Solve as directed:**3x3=9**

32. Write the following rational numbers in increasing order

$\frac{5}{4}, \frac{3}{2}, \frac{5}{8}, \frac{3}{4}$ (Average)

33. (Which is bigger) $\frac{-3}{4}$ or $\frac{2}{3}$ (Average)

34. (Which is bigger) $\frac{5}{7}$ or $\frac{4}{5}$ (Average)

VIII. 35. Represent rational number $\frac{-7}{4}$ and $\frac{5}{4}$ on number line.

1x4=4**(Difficult)**

9.PERIMETER AND AREA.

1.LEARNING OUTCOME :- Finds the perimeter and Area of a triangle, parallelogram, circle and solves applied problems of daily life.

2.Learning points :-

- Concept of perimeter and area.
- Finds the perimeter and area of a parallelogram and triangle.
- Finds the circumference and area of a circle.

3.Weightage to Objectives

Sl.NO	Objectives	No. of questions	Marks	Percentage
1	Knowledge	10	10	13%
2	Understanding	8	14	18%
3	Application	19	48	63%
4	Skill	1	4	6%
Total		38	76	100%

4. Weightage to difficulty level

Sl.NO	Difficulty level	No. of questions	Marks	Percentage
1	Easy	17	21	28%
2	Average	17	38	50%
3	Difficult	4	17	22%
Total		38	76	100%

9.PERIMETER AND AREA.

I.Choose the correct answer from the given four alternatives.5x1=5

1. The number of sides in parallelogram is (Easy)
A. 3 B. 4 C. 5 D. 6
2. A perpendicular line is drawn from vertex of triangle to the opposite side is (Easy)
A. length B. height C. breadth D. base
3. The value of π is (Easy)
A. 1.14 B. 2.14 C. 3.14 D. 4.14
4. .Distance of circular path of a circle is (Easy)
A. area B.circumference C. perimeter D. both B and C
5. The correct relation between radius and diameter of a circle is (Easy)
A.Diameter= $2 \times$ radius B. radius= $2 \times$ diameter
C. diameter= $\frac{1}{2} \times$ radius D. all above

II. Fill in the blanks.

5x1=5

- 6.In circle the radius is.....times diameter. (Easy)
- 7.In parallelogram perpendicular is drawn to its base is..... (Easy)
- 8.Number of circles with common centre is called..... (Easy)
- 9.Diameter is biggest of a circle. (Easy)
10. Product of Circumference of the circle and π is..... of a circle. (Easy)

III. 11. Match the following:

4x1=4

- | | | |
|--------------------------|---------------------------------------|--------|
| a. Area of triangle | 1. πr^2 | (Easy) |
| b. Area of circle | 2. base x height | (Easy) |
| c. Diameter | 3. πd | (Easy) |
| d. Area of parallelogram | 4. $\frac{1}{2} \times$ base x height | (Easy) |
| e. Circumference | 5. $2 \times$ radius | (Easy) |

IV. Find the measure of diameter for the given radius:

3x1=3

12. 3cm

(Easy)

13. 10m

(Easy)

14. 12ft

(Easy)

V. Find the measure of Radius for given Diameter:

3x1=3

15. 18 ft

(Easy)

16. 21 cm

(Easy)

17. 74 m

(Easy)

VI. Calculate the Area of Triangle using the given measures:

4x2=8

18. Base= 6 cm Height = 10 cm

(Average)

19. Base = 14 m Height= 8 m

(Average)

20. Base = 3 m Height= 18 m

(Average)

21. Base = 10 m Height= 7 m

(Average)

VII. Find the Area of Parallelogram whose base and height are as follows:

4x2=8

22. Base = 10 cm , Height = 7 cm

(Average)

23. Base = 3.5 m , Height = 9 m

(Average)

24. Base = 4 cm , Height = 5.2 cm

(Average)

25. Base = 7.5 m , Height = 2.5 m

(Average)

VIII. Solve these .

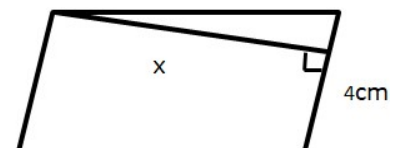
5x2=10

26. Find the area of a parallelogram having base 3cm, height 5cm.

(Average)

27. Area of a parallelogram is 24 sqcm, base is 4 cm.
find its height.

(Average)



28. Radius of a bangle is 15cm. Find the required length of lace to cover bangle. ($\pi = 3.14$)

(Average)

29. A triangular board is for ready for exhibition, whose base is 8cm and height is 10 cm. Find its Area

(Average)

30. Construct concentric circle whose radius are 3cm and 6cm.

(Average)

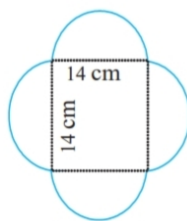
IX. Solve these.**3x3=9**

31. A farmer digs a flower bed with a radius of 7cm in the center of his field. He needs to buy fertilizer, if he needs 1kg of fertilizer for per square meter of area, Then how much fertilizer is needed for the flower bed? (Average)

32. The area of circular shaped garden is 314 m^2 . The fountain in the centre of garden will cover the radius of 12 m. Does the fountain completely wets the garden? (Average)

33. A circular flower garden has path of 4m width, the diameter of flower garden is 66m. What is the area of the path? (Average)

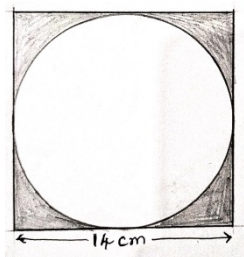
34. Find the perimeter of given figure .(Average)

**X. Solve:****2x4=8**

35. Draw a circle with a radius of 4.5cm, Identify the radius, diameter, circumference and center of the circle. (Difficult)

36. The base of a triangle is 7 cm, height is 4cm and base of the parallelogram is 7 cm its height is 4 cm. Finding the area of both and find whose area is greater. (Difficult)

37. Find the area of the shaded region. (Difficult)

**XI.38. Complete the given table:****(Difficult) 1x5=5**

Parallelogram	Base	Height	Area
A	6m	8m	
B	4cm	2cm	
C		3ft	15 ft^2
D		2m	14 m^2
E	5ft		35 ft^2

10. ALGEBRAIC EXPRESSION

1.LEARNING OUTCOME :- Knows the basics of algebra and simplifies algebraic expressions.

2. Learning points :-

- Definitions of variables and Algebraic terms
- Knowing the factors of Algebraic terms, Algebraic expressions and coefficients.
- Classifies monomial, binomial, trinomial and polynomials.
- Like and unlike terms.
- Finds the value of algebraic terms.

3.Weightage to Objectives

Sl.NO	Objectives	No. of questions	Marks	Percentage
1	Knowledge	14	19	23%
2	Understanding	15	45	56%
3	Application	3	7	9%
4	Skill	5	10	12%
Total		37	81	100%

4. Weightage to difficulty level

Sl.NO	Difficulty level	No. of questions	Marks	Percentage
1	Easy	10	10	12%
2	Average	23	54	67%
3	Difficult	4	17	21%
Total		37	81	100%

10. ALGEBRAIC EXPRESSION

I.Choose the correct answer from the given four alternatives

5x1=5

1.Representation of variables can be shown by these

(Easy)

- A. 1,2,3 B. -1,-2,-3
C. A,B,C D. a,b,c

2. .Having the exact value is

(Easy)

- A. Constant. B. Algebraic terms
C. Equation D.Factors

3. By adding algebraic terms we get

(Easy)

- A. Co-efficient B.Algebraic expression C. Algebraic term D. Factor

4. In $10xy^2$ co-efficient of xy^2 is

(Easy)

- A. $10x$ B. y^2 C. 10 D. $10y^2$

5. Co-efficient means

(Easy)

- A. Numerical factor B. Factor C. Algebraic term D .Variable

II.Fill in the blanks.

5x1=5

6.Terms with same variables are

(Easy)

7. Terms with different variables are

(Easy)

8. In algebraic expressions we use mathematical operations.

(Easy)

9. Factors of $2xy$ are

(Easy)

10. In $xy+4$ variables are

(Easy)

III. Write algebraic expression for the following statements.**5x2=10**

11. The product of one by two and xy (Average)
12. Sum of squares of a and b are added. (Average)
13. Product of k and m are subtracted from their sum. (Average)
14. Difference of c and d is multiplied by their sum (Average)
15. 5 is added to the quotient of 4y and 6z. (Average)

IV. Construct factors tree.**5x2=10**

16. $2a^2 + b^2$ (Average)
17. $7x^2y$. (Average)
18. $4kl^2m^2$ (Average)
19. y^2+7 (Average)
20. $12x^2y^2$ (Average)

V. Write the terms and co-efficients of x**5x2=10**

21. $2x+y$ (Average)
22. $5xy+3x$. (Average)
23. $abx+3ax$ (Average)
24. $15x+6xy$ (Average)
25. $8xy^2+7xy$ (Average)

VI. 26. Classify the following as monomials, binomials and trinomials:**1x3=3**

a^2x , $5x^2y$, $6x+2y$, $8x-2a$, $9x^2yz$, $19y^2$, $ax+bx-cx$, $6k+2l$, $2xy-3xy+5xy$. (Average)

VII. 27. Identify like and unlike algebraic terms.**1x3=3**

xy , $5k$, $7xy$, $8n$, $9a$, $3n$, $4xy$, $2p$, $15xy$, $19n$, $2zp$. (Average)

VIII. 28. Define like and unlike terms? Give examples. (Average)**1x3=3****XI. If $a = -1$, find the value of following algebraic expression.****5x3=15**

29. $-5a+1$, (Average)
30. $-a+7ab$ (Average)
31. $3a^2+4$ (Average)
32. $15a+7a$ (Average)
33. $20a+4a-5a$ (Average)

X. If $k = 2$, $l = -3$ and $m = 4$ find the value of

$3 \times 4 = 12$

34. $5k^2 + 9l - 15m$.

(Difficult)

35. $3kl + 5km - 4l$.

(Difficult)

36. $2(k+m) - 2l$

(Difficult)

XI. Solve

$1 \times 5 = 5$

37. If $a = 5$, $b = -3$ and $c = -1$ find the value of $5(a^2 + b^2 - c^2) + 3(a^2 + 3b) - 4(a + b)$ (Difficult)

11.EXPONENTS AND POWERS

1.LEARNING OUTCOME :- Reads and writes the exponential numbers and their expanded forms, prime factorisations and expresses in exponent form. Generalize the rules and apply them in daily life.

2.Learning points :-

- Definition of exponents
- Laws of exponents
- Solves problems using Laws of exponents

3..Weightage to Objectives

SL.NO	Objectives	No. of questions	Marks	Percentage
1	Knowledge	12	12	15%
2	Understanding	15	44	55%
3	Application	7	19	24%
4	Skill	1	5	6%
Total		35	80	100%

4.. Weightage to difficulty level

SL.NO	Difficulty level	No. of questions	Marks	Percentage
1	Easy	11	15	19%
2	Average	19	44	55%
3	Difficult	5	21	26%
Total		35	80	100%

11.EXPONENTS AND POWERS

I. Choose the correct answer from the given four alternatives:

5x1=5

1. Exponential form of $10 \times 10 \times 10 \times 10$ is (Easy)

- A. 4^{10} B. $\frac{4}{10}$ C. $\frac{10}{4}$ D. 10^4

2. In 5^2 exponent is. (Easy)

- A. 2 B. 5 C. 25 D. 10

3. The correct form of reading 10^2 is (Easy)

- A. Ten to the power two B. Ten square C. Both A and B D. ten two

4. The value of 100^0 is (Easy)

- A. 1 B. 100 C. 0 D. 10

5. The negative base raised to any even power is (Easy)

- A. Positive integer B. Negative integer C. Is zero D. Additive identity

II. Fill in the blanks

5x1=5

6. In 6^1 the base number is (Easy)

7. The expanded form of 7^3 is (Easy)

8. The value of (-1) raised to any even number is (Easy)

9. The value of $(2)^4$ is (Easy)

10. 10^3 is read as (Easy)

III. Match with correct pair

5x1=5

a. $2^2 \times 2^4$ 1) 6^2 (Easy)

b. $2^7 \div 2^3$ 2) 2^6 (Easy)

c. $(2^3)^4$ 3) 2^4 (Easy)

d. $2^3 \div 2^3$ 4) 2^{12} (Easy)

e. $2^2 \times 3^2$ 5) 2^0 (Easy)

IV. Find value of each of the following

$3 \times 2 = 6$

12. 5^4 (Average)

13. 2^6 (Average)

14. 4^3 (Average)

V. Express in exponential form

$4 \times 2 = 8$

15. 425 (Average)

16. 243 (Average)

17. 4124 (Average)

18. 540 (Average)

VI. Simplify

$6 \times 2 = 12$

19. 5×2^4 (Average)

20. 3×7^3 (Average)

21. $3^3 \times 5^3$ (Average)

22. $10^2 \times 0$ (Average)

23. $6^0 \times 4^3$ (Average)

24. 8×9^2 (Average)

VII. Simplify by using the laws of exponents and write in exponential form

$6 \times 3 = 18$

25. $5^2 \times 5^3$ (Average)

26. $6^x \times 6^3$ (Average)

27. $10^9 \div 10^5$ (Average)

28. $3^4 \times 2^4$ (Average)

29. $(3^4)^3 \div 3^3$ (Average)

30. $(7^2)^3$ (Average)

VIII.Simplify and express in exponential form.

$$4 \times 4 = 16$$

$$31. \frac{2^3 \times 3^4 \times 4}{3 \times 3^2}$$

(Difficult)

$$32. \frac{3^4 \times 25 \times 16}{5^2 \times 4}$$

(Difficult)

$$33. \frac{27 \times 36}{3 \times 6}$$

(Difficult)

$$34. \frac{125 \times 3^4 \times 5}{3^2 \times 2^3}$$

(Difficult)

XI .35.Simplify

$$1 \times 5 = 5$$

(Difficult)

$$\frac{(2^5)^2 \times 7^3}{8^3 \times 7}$$

12.SYMMETRY

1.LEARNING OUTCOME :- Identifies two dimensional symmetrical figures and performs operations on reflection and rotational symmetry.

2.Learningpoints :-

- Meaning of symmetry.
- Identifies lines and axis of symmetry of figures.
- Order of Rotational symmetry of figures
- Knows the center of rotation and angles of rotation of figures.

3.Weightage to Objectives

Sl.NO	Objectives	No. of questions	Marks	Percentage
1	Knowledge	6	7	14%
2	Understanding	4	8	16%
3	Application	10	14	28%
4	Skill	7	21	42%
Total		27	50	100%

34.Weightage to difficulty level

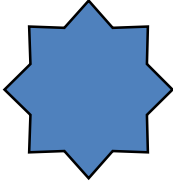
Sl.NO	difficulty level	No. of questions	Marks	Percentage
1	Easy	15	15	30%
2	Average	9	22	44%
3	Difficult	3	13	26%
Total		27	50	100%

12.SYMMETRY

I.Choose the correct answer from the given four alternatives

10x1=10

1.

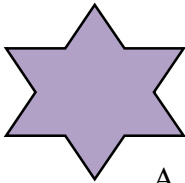


In given fig number of linear symmetry is

(Easy)

- A. 4 B. 6 C. 8 D. More

2.



No of rotational symmetry is

(Easy)

- A. 2 B. 8 C. 6 D. More

3. Figure which is not regular polygon

(Easy)

- A. Rectangle B. Square C. Equilateral triangle D. Rhombus

4. Number of sides in a regular polygon is proportional to its line of symmetry. (Easy)

- A. Is big B. Is small C. Equal D. Unequal

5. Regular polygon has.....number of lines of symmetry.

(Easy)

- A. 2 B. 3 C. 4 D. 5

6. The letter which has only 2 rotational isomorphic modes.

(Easy)

- A. S B. E C. B D. P

7. The number of linear symmetries that a circle has

(Easy)

- A. 0 B. 4 C. many D. None

8. If rotation rotates an object around a fixed point, that fixed point is

(Easy)

- A. Center of rotation B. Angle of rotation
C. Radius of gyration. D. Diameter of rotation

9. The number of times an object appears the same as before in a complete rotation is (Easy)
 A. Rotational symmetry order B. Angle of rotational symmetry
 C. Both A and B D. Not A and B
10. Half a rotation is equal to the angle of rotation. (Easy)
 A. 90^0 B. 360^0 C. 180^0 D. 270^0

II. Fill in the blanks

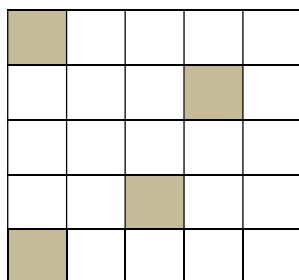
5x1=5

11. The right side movement of hand in a clock is known as (Easy)
 12. The order of Rotational symmetry of a square is (Easy)
 13. Every angle of an equilateral triangle is (Easy)
 14. The traffic Symbol having rotational symmetry is (Easy)
 15. The rotational symmetry of letter Z is..... (Easy)

III. Solve

5x2=10

16. Write the difference between center of rotation and Angle of rotation (Average)
 17. Which English alphabet have only long mirror reflection (Average)
 18. Write number of lines of linear symmetry for rectangle, square, circle (Average)
 19. Draw some figures which are not having linear symmetry. (Average)
 20. Draw diagonal to following figure, shade some regions to make symmetrical figure. (Average)



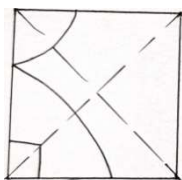
VI. Solve.

4x3=12

21. List out the letters in English alphabet from A to Z having horizontal and vertical reflection. (Average)
 22. List out symmetrical shapes you find in your kitchen. (Average)
 23. Which shape looks same as we turn it around 60^0 at the center. Explain with diagram (Average)

24. Complete the following picture according to symmetrical lines.

(Average)

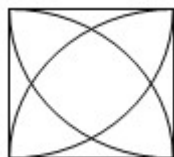


V. Solve as directed.

2x4=8

25. Draw the given picture by rotating 90° 180° 270° and 360°

(Difficult)



26. Draw any flower and rotate same flower by rotation 90° , 180° , 270° and 360° (Difficult)

VI. 27. Complete the following table.

(Difficult) 1x5=5

Shapes	Number of linear symmetry
Triangle	
Quadrilateral	
Pentagon	
Hexagon	
Octagon	
Decagon	

13. VISUALISING SOLID SHAPES

1.LEARNING OUTCOME :- Draws net diagrams of cube, cuboid, square based prism and creates images and identifies edges, faces, vertices and isometric sketch of the cube.

2.Learningpoints :-

- Concept of plane figures and solids.
- Concept of faces, edges and vertices of solids.
- Isometric Sketch

3.Weightage to Objectives

Sl.NO	Objectives	No. of questions	Marks	Percentage
1	Knowledge	11	15	39%
2	Understanding	3	4	11%
3	Application	5	7	18%
4	Skill	4	12	32%
Total		23	38	100%

4. Weightage to difficulty level

Sl.NO	Difficulty level	No. of questions	Marks	Percentage
1	Easy	16	20	53%
2	Average	6	14	37%
3	Difficult	1	4	10%
Total		23	38	100%

13. VISUALISING SOLID SHAPES

I. Choose the correct answer from the given four alternatives.

10x1=10

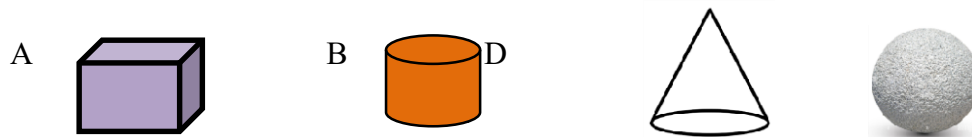
1. Two dimensional figure among the following is

(Easy)

- A. cube B. cylinder C. cone D. rectangle

2. Cylinder among the given figures is

(Easy)



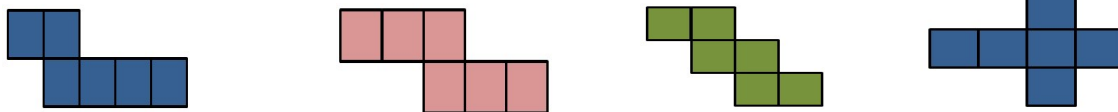
3. Number of vertices in cube will be

(Easy)

- A. 6 B. 8 C. 12 D. 4

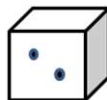
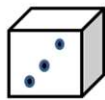
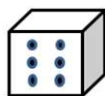
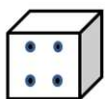
4. The net not forms the cube is

(Easy)



5. Opposite face of the dice with five dots is

(Easy)



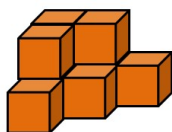
6. If cone shaped ice cream is cut vertically, then we get

(Easy)

- A. circle B. triangle C. square D. rectangle

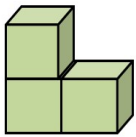
7. Number of cubes in the figure

(Easy)



- A. 3 B. 5 C. 9 D. 8

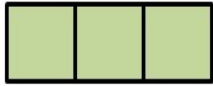
8.



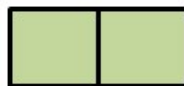
Top View of the solid figure

(Easy)

A.



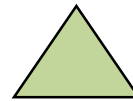
B.



C.



D.



9.



Lateral view of this solid is

(Easy)

A.



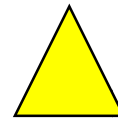
B.



C.



D.

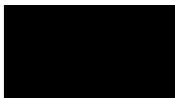


10. Shadow of this figure

(Easy)



A.



B.



C.



D.



II. Fill up the blanks.

5x1=5

11. Number of faces in squared based pyramid.....

(Easy)

12. If a brick is cut vertically, then we get.....

(Easy)

13. Number edges in cuboid.....

(Easy)

14. is an example for sphere

(Easy)

15. Dice is an example for.....

(Easy)

III.16. Match the following

5x1=5

a.Cuboid



(Easy)

b. Cube



(Easy)

c.Sphere



(Easy)

e. Cone



(Easy)

f. Cylinder



(Easy)

IV.Solve as directed:

4x2=8

17. What are polygon and solids .give examples

(Average)

18. Draw any two solid figure.

(Average)

19.How much faces,edges and vertices a pyramid has?

(Average)

20. How much rectangles required for cuboid web?

(Average)

V.Draw as directed

2x3=6

21. Draw web diagram of cube,Construct cube.

(Average)

22. Construct cube and cuboid in graph sheet

(Average)

VI. Draw as instructed.

1x4=4

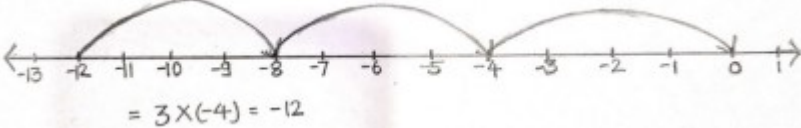
23.Draw Isometric sketch for the shapes. Cylinder,cone and square based prism

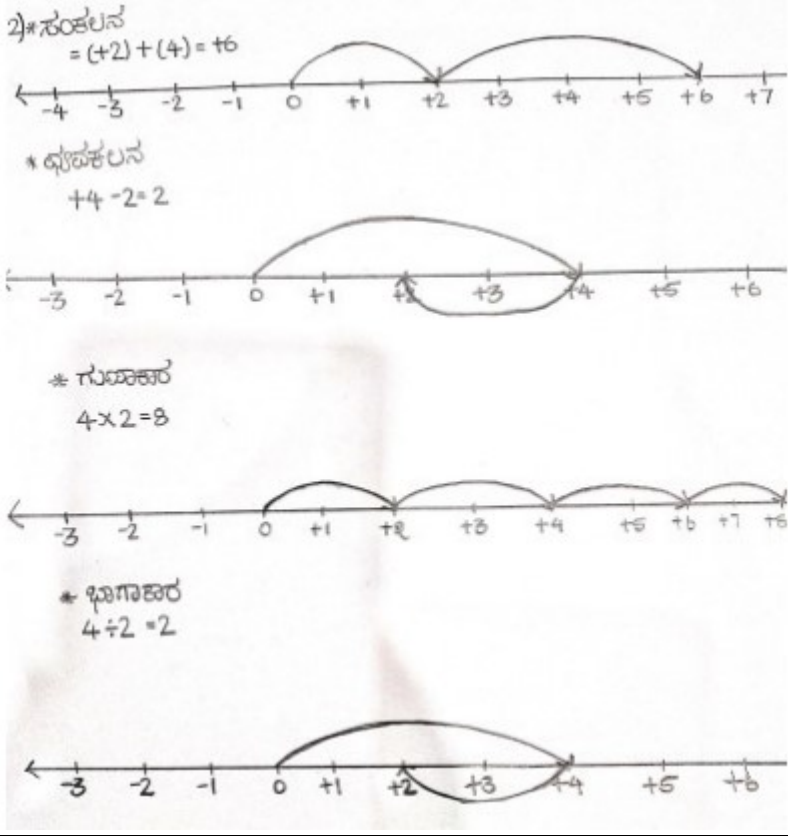
(Difficult)

KEY ANSWERS

Integers

Q.No	Answers
I.1	D. integers
2	A. -6 and +5
3	C. 0
4	D. +15,-3
5	A. +10
9	B. -8
7	D. -6
8	B. 0
9	A. 0
10	c)negative integer
II.11	0
12	1
13	negative number
14	Positive number
15	0
III.16	a. $(+5)+(-5)$ 2. 0 b. $(+5)-(-5)$ 3. 10 c. $(+5)\times(-5)$ 4. - 25 d. $(+5)\div(-5)$ 1. -1
IV.17	2. $b+a$ 3. $(a+b)+c$ 4. $ab+ac$ 1. a
V.18	-3
19	Commutative
20	Closure
VI.21	$+\text{₹}10,000-2000-4000-500=10000-6500=3500$
22	$8\times(-3)(-8)= 8\times24=192$

23	 $= 3 \times (-4) = -12$
24	$a \div b = -2$ $-4 \div 2 = -2, -6 \div 3 = -2$
25	$1 + (-1) = 0, 5 + (-5) = 0$
VII.26	$(+5) \times (-4) = -20, (+2) \times (-10) = -20, (-2) \times (10) = -20$
27	$(a \times b) \times c = a \times (b \times c)$ (Associative property under multiplication) $a=3, b=-2, c=-5,$ $(a \times b) \times c = \{3 \times (-2)\} \times (-5) = (-6) \times (-5) = 30$ $a \times (b \times c) = 3 \times \{(-2) \times (-5)\} = 3 \times (10) = 30$ $\therefore (a \times b) \times c = a \times (b \times c)$
28	The distance of submarine below the sea level = 596 feet Raise per minute = 25 feet The distance of the submarine below the sea level = $596 - 25 \times 20 = 596 - 500 = 96$ feet
29	$a=5, b=-4,$ $a+b=b+a, a+b=5-4=1=b+a=-4+5$ commutative property is closed under addition. $a-b=b-a, a-b=5-(-4)=5+4=9, b-a=-4-5=-9, a-b \neq b-a,$ commutative property is not closed under subtraction $a \times b=b \times c, a \times b=5 \times (-4)=-20=b \times a=(-4) \times 5=-20,$ commutative property is closed under multiplication. $a \div b=b \div a, 5 \div (-4), b \div a=(-4) \div 5, a \div b \neq b \div a,$ commutative property is not closed under division
30	$a=2, b=-3, c=-5, a \times (b + c) = (a \times b) + (a \times c)$ $a \times (b + c) = 2 \times (-3-5) = 2 \times (-8) = -16$ $(a \times b) + (a \times c) = \{2 \times (-3)\} + \{2 \times (-5)\} = (-6) + (-10) = -16$ $a \times (b + c) = (a \times b) + (a \times c)$
VIII.31	Number of geometry boxes sold $= \frac{185-75}{5} = \frac{110}{5} = 22$
32	$5 \times 25 + (-3)10 = 125 - 30 = 95$

IX.33	$a \times b = c$ $2 \times 3 = 6$ (closure property) $a \times b = b \times a$ $2 \times 3 = 3 \times 2 = 6$ (commutative property) $(a \times b) \times c = a \times (b \times c)$ $(2 \times 3) \times 4 = 2 \times (3 \times 4) = 6 \times 4 = 2 \times 12 = 24$ (Associative property) $a \times 1 = 1 \times a = a$ (Identity)
34	 Handwritten mathematical diagrams illustrating addition and multiplication on a number line. 1) * ಸಂಕಲನ (Addition): $(+2) + (+4) = +6$. The number line shows jumps from 0 to +2 and then from +2 to +6. 2) * ಘಟಕಲನ (Subtraction): $+4 - 2 = 2$. The number line shows a jump from 0 to +4 and then a backward jump from +4 to +2. 3) * ಗುಣಕಾರ (Multiplication): $4 \times 2 = 8$. The number line shows four jumps of size 2, starting from 0 and ending at +8. 4) * ಭಾಗಕಾರ (Division): $4 \div 2 = 2$. The number line shows two jumps of size 2, starting from 0 and ending at +4.
35	a. $+4 - 6 = -2$ b. $-3 + 5 = +2$ c. $+2 + 2 = +4$

Fractions and Decimals

I.1	C. $\frac{1}{4}$	
2	B. $\frac{8}{5}$	
3	A	
4	A. $\frac{35}{2}$	
5	D. $4\frac{1}{2}$	
II.6	2	
7	2	
8	$\frac{4}{3}$	
9	$\frac{3}{4}$	
10	$1\frac{3}{4}$	
11	$\frac{6}{10}$	
12	0.3	
13	$\frac{3}{1000}$	
14	$\frac{8}{10}$	
15	Factor of $\frac{1}{10}$	
III. 16.a	0.5	$\frac{5}{10}$
b	0.05	$\frac{5}{100}$

c	0.005 $\frac{5}{1000}$
d	0.0005 $\frac{5}{10000}$
e	0.00005 $\frac{5}{100000}$
IV.17	$\frac{1}{4} + \frac{1}{12} = \frac{3+1}{12} = \frac{4}{12} = \frac{1}{3}$ LCM of 4 and 12 is 12
18	$\frac{4}{9} - \frac{2}{15} = \frac{20-6}{45} = \frac{14}{45}$ LCM of 9 and 15 is 45
19	$\frac{3}{6} + \frac{2}{18} = \frac{9+2}{18} = \frac{11}{18}$ LCM of 6 and 18 is 18
20	$\frac{9}{16} - \frac{6}{24} = \frac{27-12}{48} = \frac{15}{48} = \frac{5}{16}$ LCM of 16 and 24 is 48
21	$\frac{6}{14} + \frac{3}{35} = \frac{30+6}{70} = \frac{36}{70}$ LCM of 14 and 35 is 70
22	$\frac{20}{15} - \frac{10}{25} = \frac{100-30}{75} = \frac{70}{75}$ LCM of 15 and 25 is 75
V. 23	$\frac{8}{5} = 1\frac{3}{5}$
24	$\frac{4}{3} = 1\frac{1}{3}$
25	$\frac{9}{4} = 2\frac{1}{4}$
26	$\frac{15}{6} = 2\frac{3}{6}$
27	$\frac{39}{7} = 5\frac{4}{7}$
VI. 28	$1\frac{5}{6} = \frac{11}{6}$
29	$8\frac{3}{4} = \frac{35}{4}$
30	$10\frac{3}{7} = \frac{73}{7}$
31	$5\frac{1}{4} = \frac{21}{4}$

32	$7\frac{8}{9} = \frac{71}{9}$
VII. 33	Total length of the shirt purchased = $1\frac{5}{6} \times 2 = \frac{11}{6} \times 2 = \frac{11}{3}$
34	Perimeter of a square = $4a = 4 \times \frac{3}{4} = 3$
35	Area of a rectangular table = length $\times$ breadth = $2\frac{1}{2} \times 3\frac{1}{2} = \frac{5}{2} \times \frac{7}{2} = \frac{35}{4} = 8\frac{3}{4}\text{cm}^2$
36	Number of pages Megha read = $100 \times \frac{3}{5} = 20 \times 3 = 60$ Number of pages to be read by Megha = $100 - 60 = 40$
37	Perimeter of the rectangular field = $2(l+b) = 2(3\frac{1}{2} + 5\frac{1}{2}) = 9\text{cm}$
38	Number of software employees = $2000 \times \frac{3}{8} = 250 \times 3 = 750$ Number of hardware employees = $2000 - 750 = 1250$
VIII.39	$5 \times \frac{8}{9} = \frac{40}{9} = 4\frac{4}{9}$
40	$9 \times \frac{2}{7} = \frac{18}{7} = 2\frac{4}{7}$
41	$4 \times \frac{7}{9} = \frac{28}{9} = 3\frac{1}{9}$
42	$6 \times \frac{3}{5} = \frac{18}{5} = 3\frac{3}{5}$
IX. 43	a) $\frac{5}{6} \times 36 = 5 \times 6 = 30$ b) $\frac{5}{6} \times 60 = 5 \times 10 = 50$
44	a) $\frac{4}{9} \times 63 = 4 \times 7 = 28$ b) $\frac{4}{9} \times 819 = 4 \times 91 = 364$
45	a) $\frac{2}{3} \times 5\frac{4}{6} = \frac{2}{3} \times \frac{34}{6} = \frac{34}{9}$ b) $\frac{2}{3} \times 1\frac{1}{4} = \frac{2}{3} \times \frac{5}{4} = \frac{35}{6}$
46	a) $\frac{2}{7} \times 4\frac{3}{28} = \frac{2}{7} \times \frac{115}{28} = \frac{115}{98}$ b) $\frac{2}{7} \times 5\frac{2}{35} = \frac{2}{7} \times \frac{177}{35} = \frac{354}{245}$
X.47	$\frac{2}{5} \times \frac{15}{8} = \frac{3}{4}$
48	$\frac{3}{7} \times 21 = \frac{3}{3} = 1$

49	$\frac{4}{20} \times \frac{60}{28} = \frac{3}{7}$
50	$\frac{120}{140} \times 30 = \frac{6}{7} \times 30 = \frac{180}{7} = 25\frac{5}{7}$
51	$\frac{50}{100} \times \frac{1}{2} = \frac{1}{4}$
XI. 52	$\frac{1}{5}$ of $\frac{4}{8}$ or $\frac{2}{3}$ of $\frac{3}{8}$ $\frac{1}{5} \times \frac{4}{8} = \frac{1}{10}$, $\frac{2}{3} \times \frac{3}{8} = \frac{1}{4}$ LCM of 10 and 4 is 40 $\frac{1}{10} = \frac{4}{10} < \frac{1}{4} = \frac{10}{40}$
53	$\frac{2}{5}$ of $\frac{1}{6}$ or $\frac{2}{3}$ of $\frac{5}{10}$ $\frac{2}{5} \times \frac{1}{6} = \frac{1}{15}$, $\frac{2}{3} \times \frac{5}{10} = \frac{1}{3}$ LCM of 15 and 3 is 15 $\frac{1}{15} < \frac{1}{3} = \frac{3}{15}$
XII.54	$15 \div \frac{3}{5} = 15 \times \frac{5}{3} = 25$
55	$30 \div \frac{5}{6} = 30 \times \frac{6}{5} = 36$
56	$28 \div \frac{4}{7} = 28 \times \frac{7}{4} = 16$
57	$60 \div \frac{6}{10} = 60 \times \frac{10}{6} = 100$
58	$120 \div \frac{12}{40} = 120 \times \frac{40}{12} = 400$
XIII.59	$\frac{6}{5}$ improper Fraction
60	$\frac{1}{21}$ proper fraction
61	$\frac{9}{7}$ improper fraction
62	$\frac{9}{1}$ whole number
63	$\frac{9}{4}$ improper fraction

XIV.64	$\frac{6}{7} \div \frac{3}{4} = \frac{6}{7} \times \frac{4}{3} = \frac{2 \times 4}{7} = \frac{8}{7}$
65	$\frac{8}{9} \div \frac{5}{6} = \frac{8}{9} \times \frac{6}{5} = \frac{16}{15}$
66	$\frac{3}{5} \div \frac{2}{3} = \frac{3}{5} \times \frac{3}{2} = \frac{9}{10}$
67	$\frac{4}{5} \div 2\frac{1}{3} = \frac{4}{5} \times \frac{7}{3} = \frac{28}{15}$
68	$1\frac{5}{7} \div 3\frac{2}{14} = \frac{12}{7} \div \frac{44}{14} = \frac{12}{7} \times \frac{14}{44} = \frac{6 \times 2}{22} = \frac{12}{22}$
I. 69	B. 0.3
70	A. 27.2
71	D. hundredth
72	A. whole and individual
73	C. tenth
II.74	0.9
75	26.4
76	0.99
77	7.9
78	8.60
III.79	1550p=15.50rs
80	6290p=92.9rs
81	49rs 55p = 49.55 rs
82	75 p= 0.75 rs
83	115rs 25 p = 115.25 rs
IV. 84	$42.56=4 \times 10 + 2 \times 1 + \frac{5}{10} + \frac{6}{100}$

85	$220.03 = 2 \times 100 + 2 \times 10 + 0 \times 1 + \frac{0}{10} + \frac{3}{100}$
86	$6.590 = 6 \times 1 + \frac{5}{10} + \frac{9}{100} + \frac{0}{1000}$
87	$30.478 = 3 \times 10 + 0 \times 1 + \frac{4}{10} + \frac{7}{100} + \frac{8}{1000}$
88	$78.01 = 7 \times 10 + 8 \times 1 + \frac{0}{10} + \frac{1}{100}$
V. 89	5kg 450 gm = 5.45kg
90	1650 gm = 1.65 kg
91	33780gm = 33.75 kg
92	18kg 300 gm = 18.300 kg
93	71 kg 50 gm = 71.05 kg
VI. 94	Reeta borrowed 2kg 500gm + 1kg 250gm = 3kg 750gm Geetha borrowed 3kg 400gm + 2kg 550gm = 5kg 950gm Geetha borrowed more than Reeta
95	Quantity of mangoes sold on Tuesday = 2kg 250g quantity of mangoes sold on Wednesday = 3kg 450g quantity of mangoes sold on Thursday = 1kg 500g Total quantity sold = 7kg 200g Quantity of mangoes to be sold on Friday is 10kg 500g - 7kg 200g = 3kg 300g For Friday Ramesh left with 3kg 300g
96	Perimeter of the rectangular farm = $2(l+b) = 2(30+50) = 2 \times 80 = 160$ feet Area of rectangular farm = $l \times b = 30 \times 50 = 1500$ sq. feet
97	Length of cloth borrowed by Radha = 2m 250cm Length of cloth borrowed by Ganga = 1m 250cm + 1m 750cm Total length borrowed = 5m 500cm The length of the cloth left = 20m - 5m 500cm = 14m 500cm
98	Cost of the colour paper = Rs 50550p Cost of balloons = Rs 200 50p

	Cost of the woollen cloth =Rs215 75p Cost of all the items =Rs921 75p Amount remained with Teacher =Rs1000-Rs921 75p=Rs78 25p
99	Perimeter of a triangle = $3 \times \text{Side} = 3 \times 3\frac{1}{2} = 3 \times \frac{7}{2} = \frac{21}{2} = 10\frac{1}{2}\text{cm}$ Perimeter of pentagon = $5 \times 3\frac{1}{2} = 5 \times \frac{7}{2} = \frac{35}{2} = 17\frac{1}{2}\text{cm}$ Perimeter of Hectagon = $7 \times 3\frac{1}{2} = 7 \times \frac{7}{2} = \frac{49}{2} = 24\frac{1}{2}\text{cm}$ Perimeter of Octagon = $8 \times 3\frac{1}{2} = 8 \times \frac{7}{2} = \frac{56}{2} = 28\text{cm}$
100	a) $5.5 \times 2 = 11.0$ b) $2.8 \times 5 = 14.0$ c) $3.9 \times 6 = 23.4$ d) $4.7 \times 9 = 42.3$ Decreasing order 42.3, 2.4, 14.0, 11.0
101	$\frac{10.5}{10} = 1.05$, $\frac{10.5}{100} = 0.105$, $\frac{10.5}{1000} = 0.0105$, $\frac{10.5}{10000} = 0.00105$ Increasing order 0.00105, 0.0105, 0.105, 1.05
102	a) $\frac{9}{10} = 0.9$ b) $\frac{9}{100} = 0.09$ c) $\frac{9}{1000} = 0.009$ d) $\frac{9}{10000} = 0.0009$ Increasing order : 0.0009, 0.009, 0.09, 0.9 Decreasing order : 0.9, 0.09, 0.009, 0.0009
VIII. 103	Perimeter of a triangle = $3 \times \text{Side} = 3 \times 2\frac{1}{2} = 3 \times \frac{5}{2} = \frac{15}{2}\text{cm}$ Perimeter of a rectangle = $2(l+b) = 2(\frac{3}{2} + \frac{5}{4}) = 2(\frac{3}{2} + \frac{5}{4}) = 2(\frac{6+5}{2}) = 2(\frac{11}{2}) = \frac{11}{2}\text{cm}$ Area of a rectangle = $a \times b = \frac{3}{2} \times \frac{5}{4} = \frac{15}{8}\text{sq cm}$ Perimeter of a square = $4a = 4 \times 1\frac{1}{2} = 4 \times \frac{3}{2} = 6\text{cm}$ Area of square = $a^2 = (1\frac{1}{2})^2 = (\frac{3}{2})^2 = \frac{9}{4}\text{sq cm}$

Data Handling

Qn.No	Answers
I.1	D.Mean
2.	D. 4
3.	B.Range
4.	C.Mode
5.	A. bar graph
II.6	Between
7.	Difference
8.	Repeated
9.	Middle
10.	2
III.11	Mean: Mean is the representative values of data
12.	Mode: In a set of observations the observation that occurs most often
13.	Median: It refers to the value which lies in the middle of the data with half of the observations above it and the other half below it
14.	Bar graph: It is the representation of numbers using bars of uniform widths
15.	Double Bar graph: It is the graph that helps to compare two collections of data at a glance.
IV.16	a. Kannada b. English
17.	a. Tuesday, Thursday, Wednesday, Friday b. Sunday
18.	Mean = $\frac{\text{Total number of values}}{\text{number of values}}$ Mean = $\frac{8+4+6+9+5+6+7+5+4}{9}$ Mean = $\frac{54}{9}$ Mean = 6

19.	$\text{Mean} = \frac{\text{Total number of values}}{\text{number of values}}$ $\text{Mean} = \frac{55}{10}$ $\text{Mean} = 5.5$
20.	$\text{Range} = \text{Maximum marks} - \text{Minimum marks}$ $\text{Range} = 94 - 16$ $\text{Range} = 78$
21.	$\text{Mode} = 12, 14$ $\text{Median} = 12, 12, 13, 14, 14, 15, 16, 17, 18 = 14$
V.22	$\text{a. Mean} = \frac{\text{Total number of values}}{\text{number of values}}$ $\text{Mean} = \frac{550 + 720 + 430 + 680 + 820}{5}$ $\text{Mean} = \frac{3200}{5}$ $\text{Mean} = 640$ $\text{b. Range} = \text{Maximum profit} - \text{Minimum profit}$ $\text{Range} = 820 - 430$ $\text{Range} = 390$ $\text{c. Median} = 430, 550, 680, 720, 820,$ $\text{Median} = 680$
23.	$\text{a. Range} = \text{Maximum} - \text{Minimum}$ $\text{Range} = 12 - 10$ $\text{Range} = 2$ $\text{b. Mean} = \frac{\text{Total number of values}}{\text{number of values}}$ $\text{Mean} = \frac{9 + 5 + 16}{3}$ $\text{Mean} = \frac{30}{3}$ $\text{Mean} = 10$ $\text{c. Median written in ascending order} = 5, 8, 9, 10, 12, 16$ $= \frac{9 + 10}{2}$ $= \frac{19}{2}$ $= 9.5$
24.	a. Tanu and Suma $\text{b. Nagarathna and Dhanush}$ c. Ashwini
25.	$\text{a. Range} = \text{Maximum} - \text{Minimum}$ $\text{Range} = 96 - 70$ $\text{Range} = 26$ $\text{b. Mean} = \frac{\text{Total number of values}}{\text{number of values}}$ $\text{Mean} = \frac{90 + 78 + 86 + 92 + 94 + 82 + 96 + 70}{8}$

$$\text{Mean} = \frac{688}{8}$$

Mean = 86

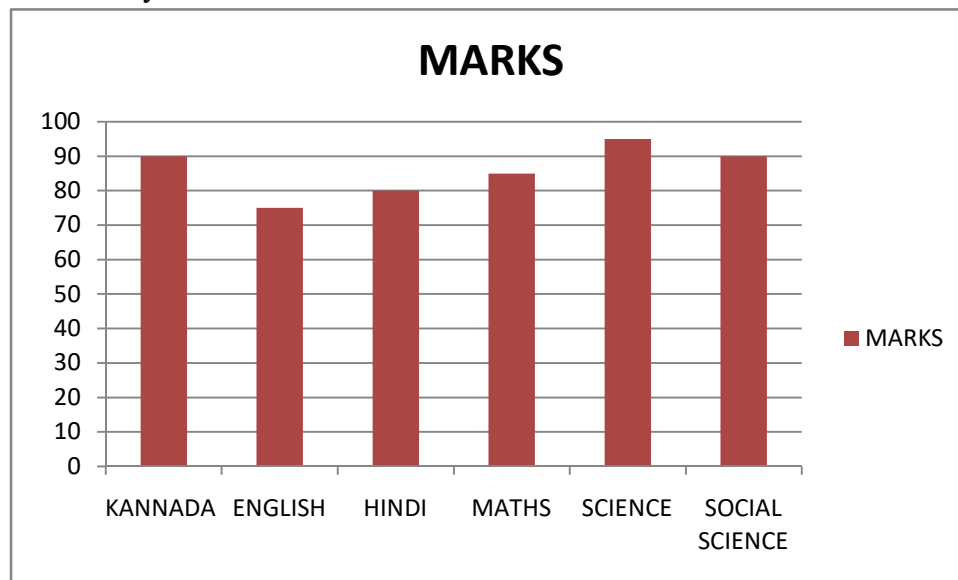
c. Median = 70, 78, 82, 86, 90, 92, 94, 96

$$\begin{aligned} &= \frac{86+9}{2} \\ &= \frac{176}{2} \\ &= 88 \end{aligned}$$

VI.26

Scale-x- Axis= Subjects -1 cm

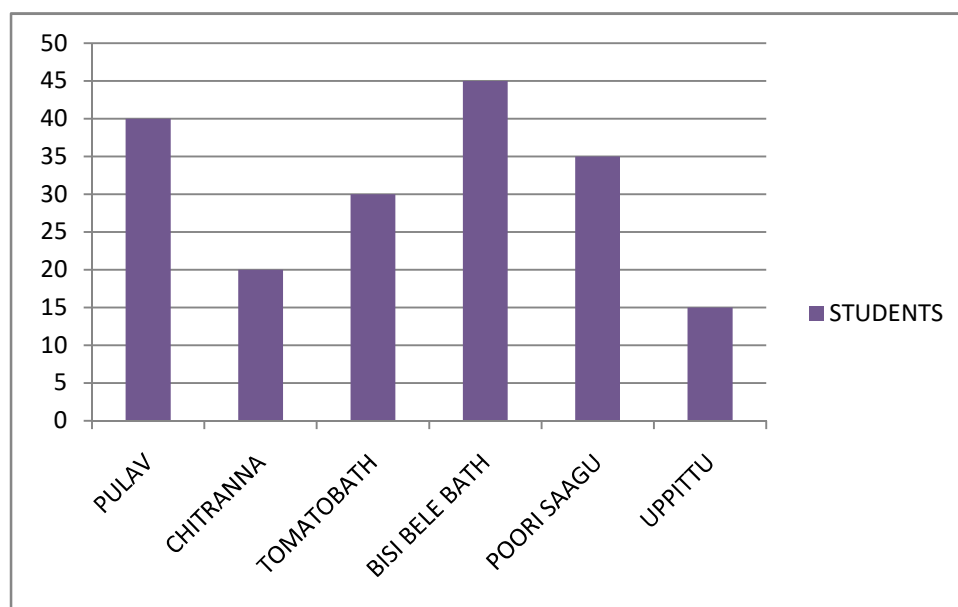
y- Axis = 10Marks -10 cm



27.

Scale-x- Axis= BREAKFAST-1 cm

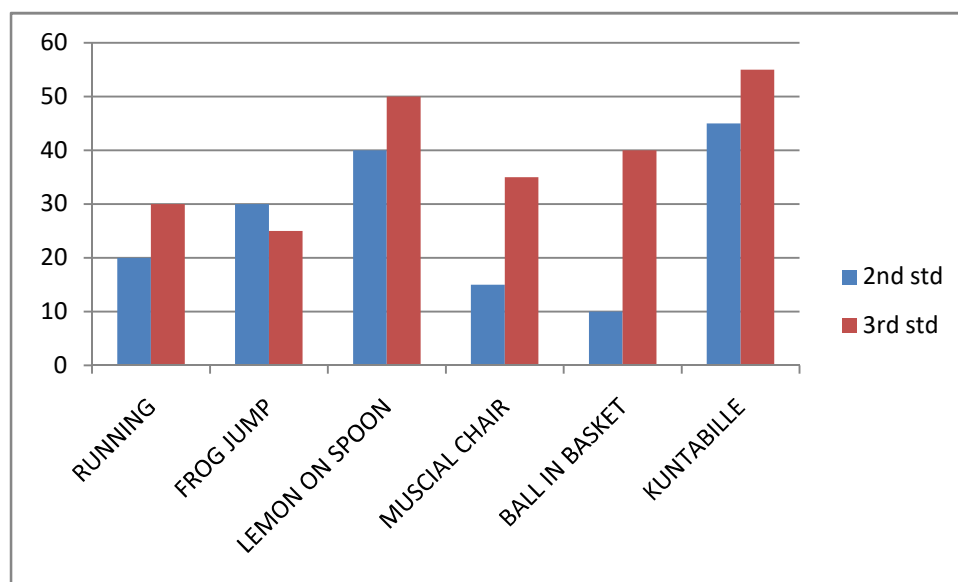
y- Axis = 10STUDENTS-10 cm



VII.28

Scale-x- Axis= 1GAME -1 Km

y- Axis = 10STUDENTS-10 cm



Simple Equations

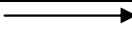
Q.No	Answers
I.1	C)=
2.	B)not constant
3.	B)7
4.	A) $a + 5 = 9$
5.	D)9
6.	A) $20 - x = 9$
II.7	$m + n = 9$
8.	$15 - y = 6$
9.	$ab + 4$
10.	$25b = 100$
11.	$6t + 5 = 10$
12.	$\frac{1}{2}k + 10 = 30$
13.	$m \div a = 40$
14.	$5p - 7x = 70$
15.	$m - 5 = 3$
16.	$a + 5 = 15$
III.17	x is subtracted from 4 to get 2.
18.	Sum of 6 times of y is 11
19.	Product of m and n is 25.

20.	5 times of b is equal to 30
21.	$\frac{1}{2}$ of m is 90
IV.22	$9a = 63$ $\frac{63}{9} a = 7$
23.	$8m + 15 = 49$ $8m = 49 - 15$ $8m = 34$ $m = \frac{34}{8}$
24.	$6x - 5 = 19$ $6x = 19 + 5$ $6x = 24$ $x = 4$
25.	$\frac{3a}{7} \quad 3a / 7 = 3$ $3a = 7 \times 3$ $3a = 21$ $a = \frac{21}{3}$ $a = 7$
26.	$4x + 12 = 0$ $4x = 0 - 12$ $4x = -12$ $x = -12 / 4$ $x = -3$
V.27	Let the number be 'x' $3x + 5 = 17$ $3x = 17 - 5$ $3x = 12$ $x = \frac{12}{3}$ $x = 4$
28.	$x^\circ + x^\circ + 50^\circ = 180^\circ$ (2 angles of an isosceles Triangle is equal) $2x^\circ + 50^\circ = 180^\circ$

	$2x^0 = 180^0 - 50^0$ $2x^0 = 130^0$ $x^0 = \frac{130^0}{2} = \frac{130}{2}$ $x^0 = 65^0$
29.	Let the 3 digit no: be x, Tricentury means 300 $x+x+x = 300$ $3x = 300 \Rightarrow x = 100$ then I am 100
30.	Greatest 4 digit number =9999, Smallest 5 digit number =10000 Let the number be y $9999 + y = 10000$ $y = 10000 - 9999 \Rightarrow y = 1$ Then i am 1
31.	Let Ramu's age be 'n' Then his father's age will be $n + 6n = 42$ $7n = 42$ $n = \frac{42}{7} = 6$ Then Ramu's age is 6 yrs
VI.32	Let Advick's age be 'm' and mothers mamatha's age be 4m After 5 yrs their age will be m+5 and m+5 . $(m+5) + (4m+5) = 80$ $5m + 10 = 80 \Rightarrow 5m = 80 - 10$ $5m = 70 \Rightarrow m = 14$ Therefore Advick's age is 14.
33.	$2(x + 4) = 12$ $2x + 8 = 12$ $2x = 12 - 8$ $2x = 4$ $x = \frac{4}{2}$ $x = 2$

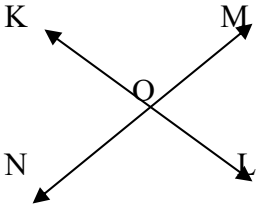
34.	Let Janaki's age be 'y' Then mother's age is 3y $3y + 4 = 49$ $3y = 49 - 4$ $3y = 45$ $y = \frac{45}{3}$ $y = 15$ Janaki's age = 15
35.	Let one side of triangle be 'y' Then remaining 2 sides will be y+5 and y+7 Perimeter of triangle = sum of 3 sides $21 = y + y + 5 + y + 7$ $3y + 12 = 21 \implies 3y = 21 - 12$ $3y = 9 \implies y = 3 \text{ cm}$ Therefore Perimeter of triangle is 21 cm and length of sides is 3 cm, 8 cm and 10 cm .
VII.36	Greatest 3 digit number is 999, Greatest 2 digit number = 99 Century = 100 Half century = 50 $(999 + 99 - 100) - 50$ $= 1098 - 150 = 948 .$

Lines and angles

Sl.No	Answers
I. 1	C)Straight line
2	B) 
3	C)∠
4	A) 60 ⁰
5	B)∠ABC
II. 6	Angle
7	Line segment
8	Complementary angle
9	Extended
10	45 ⁰
11	Obtuse
12	Parallel lines
13	Ray
14	Point
15	Acute angle

III.16	Line segment: Line with two end points
17	Ray: Line with one end point and extending in other side
18	Line: Line extending from point towards opposite direction
19	Angle: Two rays with a common end point forms an angle
20	Complementary angle: Sum of two angles making a right angle
21	Supplementary angle: Sum of two angles making a Straight angle.
22	Parallel lines: Two Straight line with common distance in between and that never meets
IV.23	Complementary angle= $90^{\circ}-65^{\circ}=25^{\circ}$ Supplementary angle= $180^{\circ}-65^{\circ}=115^{\circ}$
24	Let complementary angle be x then another angle will be x-20 $x + x - 20^{\circ} = 90^{\circ} \Rightarrow 2x - 20^{\circ} = 90^{\circ}$ $2x = 90^{\circ} + 20^{\circ} = 110^{\circ}$ $x = 55^{\circ}$ so one angle is 55° and another is 35°
25	Interior angles $\angle 3, \angle 4, \angle 5, \angle 6$ exterior angles $\angle 1, \angle 2, \angle 7, \angle 8$
26	$\angle AOC = 60^{\circ}$ $\angle DOC = 60^{\circ}$ $\angle AOD = 180^{\circ} - \angle AOC$ $\angle AOD = 180^{\circ} - 60^{\circ}$ $\angle AOD = 120^{\circ}$
27	When a transversal intersects two parallel lines the angles formed on one side are corresponding angles.

V.28	If the sum of two angles is 90° then they are complementary angles. Ex : $45^\circ + 45^\circ = 90^\circ$ $25^\circ + 65^\circ = 90^\circ$ If the sum of two angles is 180° then they are supplementary angles. Ex : $100^\circ + 80^\circ = 180^\circ$ $120^\circ + 60^\circ = 180^\circ$
29	$\angle A = x - 20^\circ$ and $\angle B = x - 30^\circ$ If A and B complementary angles, $A + B = 90^\circ$ $x - 20^\circ + x - 30^\circ = 90^\circ$ $2x - 50^\circ = 90^\circ \Rightarrow 2x = 90^\circ + 50^\circ$ $2x = 140^\circ \Rightarrow x = 70^\circ$ $A = 70^\circ - 20^\circ = 50^\circ$, $B = 70^\circ - 30^\circ = 40^\circ$ complementary angles 50° and 40°.
30	$\angle AOE = 110^\circ$ $\angle AOB = 180^\circ$ $\angle AOB = \angle AOE - \angle EOB$ $180^\circ = 110^\circ + \angle EOB$ $\angle EOB = 180^\circ - 110^\circ = 70^\circ$ (Alternate angles) vertically opposite angle of $\angle AOE$ is 110° also vertically opposite angle of $\angle EOB$ IS 70°
31	When two lines intersect in the form of X, the angles formed at the point in opposite directions is called vertically opposite angle. $\overrightarrow{KL}$ & $\overrightarrow{MN}$ lines intersect at O

	 Here four angles are - $\angle KOM$ $\angle MOL$ $\angle LON$, $\angle NOK$
VI. 32	$115^{\circ} + x = 180^{\circ} \text{ (straight angle)}$ $x = 180^{\circ} - 115^{\circ}$ $x = 65^{\circ}$ $y = 115^{\circ} \quad \text{(corresponding angles)}$
33	$\angle 1 + \angle 2 = 180^{\circ}$ here $\angle 1$ and $\angle 2$ are on same line. These are supplementary ii) $\angle 1 = \angle 4$ here $\angle 1$ and $\angle 4$ are vertically opposite angles are equal. iii) $\angle 1 = \angle 7$ here $\angle 1$ and $\angle 7$ exterior angles iv) $\angle 3 = \angle 5$ here $\angle 3$ and $\angle 5$ interior angles on one side of the transversal.
VII. 34	$x + 80^{\circ} = 180^{\circ} \text{ (EF } \parallel \text{ AC interior angles sum } 180^{\circ})$ $x = 180^{\circ} - 80^{\circ}$ $x = 100^{\circ}$ $90^{\circ} + 30^{\circ} + y = 180^{\circ} \text{ (sum of interior angles of triangle } 180^{\circ})$ $y + 120^{\circ} = 180^{\circ}$ $y = 180^{\circ} - 120^{\circ}$ $y = 60^{\circ}$

	$y + z + 80^{\circ} = 180^{\circ}$ $60^{\circ} + z + 80^{\circ} = 180^{\circ}$ $z = 180^{\circ} - 140^{\circ}$ $z = 40^{\circ}$
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Triangles and its properties

Q.No	Answers
I.1	C.Triangle
2.	C. 180^0
3.	B.Right angle triangle
4.	B.Isoseles triangle
5.	A.Sum of opposite interior angles
II.6	Opposite
7.	60^0
8.	Scelene triangle
9.	Right angle triangle
10.	Greek
III.11a	90^0
b	65^0
c	125^0
d	180^0
e	225^0
IV.12	$120^0 + y = 180^0$ $y = 180^0 - 120^0 = 60^0$ $\triangle ABC = 50^0 + y^0 + x^0$

	$180^{\circ}=50^{\circ}+60^{\circ}+x^{\circ}$ $x^{\circ}=180^{\circ}-110^{\circ}$ $x^{\circ}=70^{\circ}$
13	$\angle m = 180^{\circ} - 45^{\circ}$ $\angle m = 135^{\circ}$ $\angle B = 90^{\circ}$ $\angle n = 180^{\circ} - 90^{\circ} + 45^{\circ}$ $\angle n = 180^{\circ} - 135^{\circ}$ $\angle n = 45^{\circ}$
14	$KM^2 = KL^2 + LM^2$ $KM^2 = 3^2 + 4^2$ $KM^2 = 25$ $KM = \sqrt{25}$ $KM = 5cm$
15	In right angled triangle ,the square of the length of the hypotenuse is equal to the sum ofSquares of the lengths of the other two sides.
16	In acute angled triangle all angles are acute. In right angled triangle one angle is 90° .
V.17	On the basis of angle,triangle is classified into 3 types Acute angled triangle. Right angled triangle. Abtuse angle triangle.
18	On the basis of sides , triangle is classified into 3 types. Equilateral triangle Isoseles triangle Scalene triangle

19	Sum of interior angles of a triangle 180° $\angle y = 90^\circ$ $\angle x + \angle y + \angle z = 180^\circ$ $2x + 90^\circ + x = 180^\circ$ $3x + 90^\circ = 180^\circ$ $3x = 180^\circ - 90^\circ$ $3x = 90^\circ$ $x = \frac{90^\circ}{3}$ $x = 30^\circ$
20	$\angle y = 50^\circ$ $\angle y + 50^\circ + x = 180^\circ$ $80^\circ + 50^\circ + x = 180^\circ$ $130^\circ + x = 180^\circ$ $x = 180^\circ - 130^\circ$ $x = 50^\circ$
VI.21	Pythagorous theorem

COMPARING QUANTITIES

Q.No	Answers
I.1	C)%
2.	A)0.25
3.	D)100
4.	C):
5.	A)2 : 3
II.6	$\frac{1}{10}$
7.	$\frac{125}{100}$
8.	$\frac{8}{100}$
9.	$\frac{4}{10}$
10.	$\frac{75}{10}$
III.11	$\frac{15}{100} \times \frac{15}{100} \times 250 = 37.5$
12.	$\frac{25}{100} \times \frac{25}{100} \times 1000 = 250$
13.	$\frac{10}{100} \times 5000 = 500\text{gm}$
14.	$\frac{50}{100} \times 4000 = 2000 \text{ m}$
15.	$\frac{20}{100} \times 10 = 2 \text{ lt}$
IV.16	Total number of voters =25000 Women voters= 40% Men voters = ?

	$= 25000 \times \frac{40}{100} \times \frac{40}{100}$ $= 1000$ Men voters = 1000
17.	Profit = selling price - cost price $\% \text{ profit} = \frac{\text{profit}}{\text{cost price}} \times 100$ Loss = cost price - selling price $\% \text{ loss} = \frac{\text{loss}}{\text{cost price}} \times 100$
18.	cost price = ₹50,000 selling price = ₹50,000 Loss = cost price - selling price Loss = ₹50,000 - ₹35,000 Loss = ₹15,000 $\% \text{ loss} = \frac{\text{loss}}{\text{cost price}} \times 100$ $\% \text{ loss} = \frac{15000}{50000} \times 100$ $\% \text{ loss} = 3\%$
19.	cost price = ₹25,000 selling price = ₹30,000 profit = selling price - cost price profit = ₹30,000 - ₹25,000 profit = ₹5,000 $\% \text{ profit} = \frac{\text{profit}}{\text{cost price}} \times 100$ $\% \text{ profit} = \frac{5000}{25000} \times 100$ %profit = 20%
20.	2:3 $2x + 3x = 100$ $5x = 100$ $x = \frac{100}{5} = 20$ part of proportion = $2x + 3x$

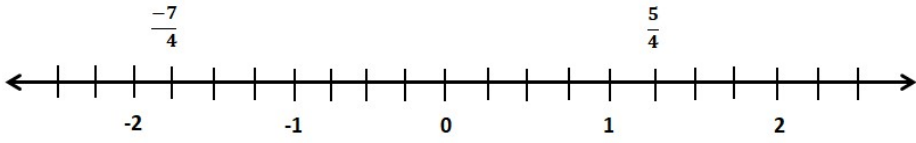
	$= 2 \times 20 + 3 \times 20$ $= 40 + 60$ $= 100$ or $2 + 3 = 5$ $= \frac{2}{5} \times \frac{2}{5} \times 100$ $= 40$ $= \frac{3}{5} \times \frac{3}{5} \times 100$ $= 60$ $= 40 + 60$ $= 100$
V.21	principal = P = ₹35,000 Rate of interest = R = 5% time = T = 5 years I = ? A = ? $I = \frac{35000 \times 5 \times 5}{100}$ $= ₹ 8750$ Amount = principal + interest $\text{Amount} = 35,000 + 8750$ $\text{Amount} = ₹43,750$
22.	$\text{principal} = \frac{SI \times 100}{R \times T}$ $\text{principal} = \frac{450 \times 100}{5 \times 3}$ $\text{principal} = \frac{45000}{15}$ $\text{principal} = ₹3,000$

	Amount = principal + interest $= 3,000 + 450$ $= ₹3,450$
VI.23	Principal in finance company = I = ₹30,000 Rate of interest = R = 3% Time = T = 5 yrs $I = \frac{P \times T \times R}{100}$ $= \frac{30000 \times 5 \times 3}{100}$ $= ₹ 4500$ Rate of interest in pawn shop = I = ₹40,000 Rate of interest = R = 4% time = T = 5 yrs $I = \frac{P \times T \times R}{100}$ $= \frac{40000 \times 5 \times 4}{100}$ $= ₹ 8000$ He should pay more to pawn shop

Rational numbers

Q.no	Answers
I.1	B)0
2.	B) $\frac{2}{2}$
3.	D)5/0
4.	A)Q
5.	D)infinite
6.	D)base
7.	B) $\frac{-3}{-5}$
8.	C)0
9.	$\frac{-9}{4}$
10.	$\frac{2}{3}$
II.11	Negative rational number
12.	Positive rational number
13.	Positive rational number
14.	Negative rational number
15.	Negative rational number
III. 16	$\frac{-4}{12} > \frac{-3}{12}$
17.	$\frac{-15}{18} > \frac{-24}{18}$
18.	$\frac{1}{-11} = \frac{-1}{11}$
19.	$\frac{-4}{6} > \frac{-9}{6}$

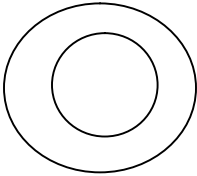
20.	$\frac{-4}{12} < \frac{+4}{12}$
IV.21	$\frac{3}{4} = \frac{6}{8} = \frac{-9}{-12}$
22.	$\frac{-1}{3} = \frac{-5}{15} = \frac{-7}{12}$
V.23	$\frac{-42}{28} = \frac{-42 \div 7}{28 \div 7} = \frac{-6}{4}$ $\frac{-6 \div 2}{4 \div 2} = \frac{-3}{2}$
24.	$\frac{-45}{-18} = \frac{45 \div 9}{18 \div 9} = \frac{5}{2}$
25.	$\frac{128}{-64} = \frac{128 \div 8}{-64 \div 8} = \frac{16}{-8}$ $\frac{16 \div 8}{-8 \div 8} = \frac{2}{-1} = -2$
VI.26	Five rational numbers between $\frac{-3}{5}$ and $\frac{-1}{3}$ are $\frac{-8}{15}, \frac{-7}{15}, \frac{-6}{15}, \frac{-5}{15}, \frac{-4}{15}$
27.	$\frac{-2}{17} = \frac{-4}{14}, \frac{-6}{21}, \frac{-8}{28}, \frac{-10}{35}$
28.	$\frac{5}{-3} = \frac{10}{-6}, \frac{15}{-9}, \frac{20}{-12}, \frac{25}{-15}$
29.	$\frac{7}{4} + \left(\frac{-11}{8} \right)$ $= \frac{14 + (-11)}{8}$ $= \frac{14 - 11}{8} = \frac{14 + (-1)}{8} = \frac{3}{8}$
30.	$\frac{7}{-5} \times \frac{-5}{3} = 1$
31.	$\frac{2}{9} - \frac{-5}{3} = \frac{2 - 15}{9} = \frac{-13}{9}$
VII.32	$\frac{5}{4} \times \frac{2}{2} = \frac{10}{8}$ $\frac{3}{2} \times \frac{4}{4} = \frac{10}{8}$ $\frac{5}{8} \times \frac{1}{1} = \frac{5}{8}$

	$\frac{3}{4} \times \frac{2}{2} = \frac{6}{8}$
33.	$\frac{-3}{4} \text{ or } \frac{2}{3}$ $\frac{-3}{4} \times \frac{3}{3} = \frac{-9}{12}$ $\frac{2}{3} \times \frac{4}{4} = \frac{8}{12}$ $\frac{-9}{12} > \frac{8}{12}$
34.	$\frac{5}{7} \text{ or } \frac{4}{5}$ $\frac{5 \times 5}{7 \times 5} = \frac{25}{35}$ $\frac{4 \times 7}{5 \times 7} = \frac{28}{35}$ $\frac{5}{7} > \frac{4}{5}$
VIII.35	 A number line is shown with arrows at both ends. Major tick marks are labeled -2, -1, 0, 1, and 2. Between each major tick mark, there are three smaller tick marks, dividing each unit into four equal parts (quarters). Above the number line, the fraction $-\frac{7}{4}$ is written above the second tick mark to the left of 0. The fraction $\frac{5}{4}$ is written above the first tick mark to the right of 1.

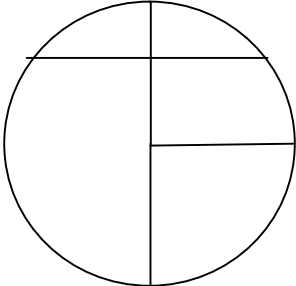
Perimeter and area

Q. NO	ANSWERS
I.1	B.4
2	B.Height
3	C.3.14
4	D.Both B & C
5	D.All the above
II.6	Half
7	Height
8	Concentric circles
9	Chord
10	Circumference
III.11	A. Area of triangle B. Area of circle C. Diameter D. Area of parallelogram E. Circumference d. $\frac{1}{2}$ x base x height a. πr^2 e. 2 x radius b. base x height c. πd
IV.12	Radius =3cm Diameter= 2 x radius $= 2 \times 3 = 6 \text{ cm}$
13	Radius =10m Diameter= 2 x radius $= 2 \times 10 = 20 \text{ m}$
14	Radius =12ft Diameter= 2 x radius $= 2 \times 12 = 24 \text{ ft}$
V. 15	Diameter =18 ft Radius = Diameter $\div$ 2 $= 18 \div 2$ $= 9 \text{ ft}$

16	Diameter = 21 cm Radius = Diameter $\div$ 2 = 21 $\div$ 2 = 10.5 cm
17	Diameter = 74 m Radius = Diameter $\div$ 2 = 74 $\div$ 2 = 37 m
VI.18	Base = 6 cm Height = 10 cm Area of Triangle = $\frac{1}{2}$ x base x height = $\frac{1}{2}$ x 6 x 10 = 30 cm ²
19	Base = 14 m Height = 8 m Area of Triangle = $\frac{1}{2}$ x base x height = $\frac{1}{2}$ x 14 x 8 = 56 m ²
20	Base = 3 m Height = 18 m Area of Triangle = $\frac{1}{2}$ x base x height = $\frac{1}{2}$ x 3 x 18 = 27 m ²
21	Base = 10 m Height = 7 m Area of Triangle = $\frac{1}{2}$ x base x height = $\frac{1}{2}$ x 10 x 7 = 35 m ²
VII.22	Base = 10 cm , Height = 7 cm Area of Parallelogram = base x height = 10 x 7

	$= 70 \text{ cm}^2$
23	Base = 3.5 m , Height = 9 m Area of Parallelogram = base x height $= 3.5 \times 9$ $= 31.5 \text{ m}^2$
24	Base = 4 cm , Height = 5.2 cm Area of Parallelogram = base x height $= 4 \times 5.2$ $= 20.8 \text{ cm}^2$
25	Base = 7.5 m , Height = 2.5 m Area of Parallelogram = base x height $= 7.5 \times 2.5$ $= 18.75 \text{ m}^2$
VIII.26	Base=3cm,Height=5cm, $A=b \times h$ $= 3 \times 5$ $= 15 \text{ cm}^2$
27	Area of parallelogram = $b \times h$ $24 = 4 \times x$ $x = \frac{24}{4}$ $x = 6 \text{ cm}$
28	Circumference of bangle = $2\pi r$ $= 2 \times 3.14 \times 15$ $= 94.2 \text{ cm}$
29	$A = \frac{1}{2} \times b \times h$ $= \frac{1}{2} \times 8 \times 10$ $= 40 \text{ cm}^2$
30	

IX.31	$r=7\text{m} \quad A = ? \quad \text{Area of land} = \frac{1}{2} r^2$ $= \frac{1}{2} \times 7^2$ $= \frac{1}{2} \times 49$ $= \frac{49}{2}$ $A = 24.5 \text{ m}^2$ Fertilizer needed = 24500kg
32	Area of circular park = 314m^2 Fountain's radius = 12m Fountain's area = πr^2 $= 3.14 \times (12)^2$ $= 3.14 \times 144$ Fountain's area = 452.16 m^2
33	Area of flowers circular path = $\pi (r_1^2 - r_2^2)$ $= 3.14 ((37)^2 - (33)^2)$ $= 3.14 (1369 - 1089)$ $= 3.14 (280)$ $= 879.20 \text{ m}^2$
34	Diameter = 14 cm Radius = 7 cm Circumference = $2 \times \pi \times r$ $= 2 \times \frac{22}{7} \times 7$ $= 2 \times 22$ $= 44 \text{ cm}$ Total perimeter of given figure = $4 \times \frac{1}{2} \times 44$ $= 4 \times 22$ $= 88 \text{ cm}$

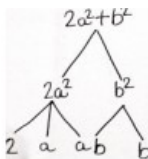
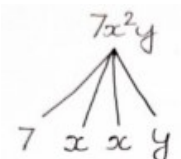
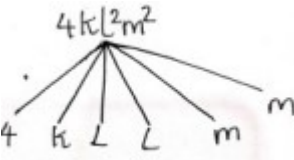
X.35	O- Centre of the circle OB - Radius AB – Diameter CD – Chord C = Circumference 
36	Area of triangle = $\frac{1}{2} \times b \times h$ $= \frac{1}{2} \times 7 \times 4$ Area of triangle = 14 cm^2 Area of parallelogram = $b \times h$ $= 7 \times 4$ Area of parallelogram = 28 cm^2 Area of parallelogram is more than area of triangle.
37	Side = 14 cm Area of Square = side x side $= 14 \times 14$ $= 196 \text{ cm}^2$ Radius= 7 cm Area of circle = πr^2 $= \frac{22}{7} \times 7 \times 7$ $= 154 \text{ cm}^2$ Area of shaded region = Area of square – area of circle $= 196 - 154$ $= 42 \text{ cm}^2$
XI.38	A. Area= base x height $= 6 \times 8 = 48 \text{ m}^2$ B. Area= base x height $= 4 \times 2 = 8 \text{ cm}^2$ C. Base = Area $\div$ Height $= 15 \div 3 = 5 \text{ ft}$ D. Base = Area $\div$ Height

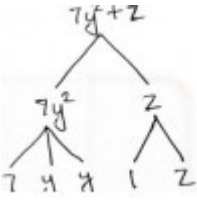
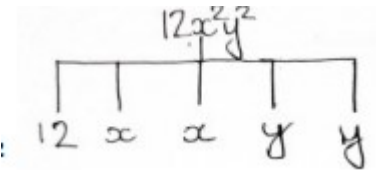
$$= 14 \div 2 = 7 \text{ m}$$

$$\text{E. Height} = \text{Area} \div \text{Base}$$

$$= 35 \div 5 = 7 \text{ ft}$$

Algebraic Expressions

Q.NO.	ANSWERS.
I.1	D. a,b,c
2	A. value
3	B. Algebraic expression
4	C. 10
5	B. factors
II.6	Like terms
7	Unlike terms
8	4
9	2, x , y
10	xy
III. 11	$\frac{1}{2}xy$
12	$a^2 + b^2$
13	$k + m - km$
14	$c-d \times c+ d$
15	$\frac{4y}{6z} \times 5$
IV.16	$2a^2 + b^2$ 
17	$7x^2y$ 
18	$4kl^2m^2$ 

19	$7y^2 + z$ 
20	$12x^2y^2$ 
V.21	$2x+y$ $2x = \text{term}$ $2 = \text{co efficient of } x$
22	$5xy+3x$ $5xy, 3x = \text{terms}$ $5, 3 = \text{co efficient of } x$
23	$abx + 3ax$ $abx, 3ax = \text{terms}$ $ab, 3a = \text{co efficient of } x$
24	$15 + 6xy$ $15x, 6xy = \text{terms}$ $15, 6y = \text{co efficient of } x$
25	$8xy^2+7xy$ $8xy^2, 7xy = \text{terms}$ $8y^2, 7y = \text{co efficient of } x$
VI.26	Monomial :- $a^2x, 4x^2y, 9x^2y^2, 19x^2y^2, 19y^2$. Binomial :- $6x+2y, 8x-2a, 6k+2l$. Trinomial :- $ax+bx-cx, 2xy-3xy+5xy$
VII.27	Like terms :- $xy, 7xy, 4xy, 15xy$. Unlike terms :- $5k, 9a, 2p, 22q$
VIII.28	Terms have the same algebraic factors, they are like terms. Ex: $-4x, 5x, 6x$ Terms have different algebraic factors they are unlike terms. Ex: $-6k, 2l, 8m, 9n$.

IX.29	$a = -1, \quad -5a + 1 = -5(-1) + 1 = +5 + 1 = 6$
30	$-a + 7ab = -(-1) + 7(-1)b = +1 - 7b$
31	$3a^2 + 4 = 3(-1)^2 + 4 = 3 + 4 = 7$
32	$15a + 7a = 15(-1) + 7(-1) = -15 - 7 = -2$
33	$20a + 4a - 5a = 20(-1) + 4(-1) - 5(-1) = -20 - 4 + 5 = -24 + 5 = -19$
X.34	$K=2, l=-3, m=4$ $5k^2 + 9l - 15m = 5(2)^2 + 9(-3) - 15(4) = 20 - 27 - 60 = -67$
35	$3kl + 5km - 4l = 3(2)(-3) + 5(2)(4) - 4(-3) = -18 + 40 + 12 = -18 + 52 = 34$
36	$2(k+m) - 2l = 2(2+4) - 2(-3) = 2(6) + 6 = 12 + 6 = 18$
XI.37	$a=5, b=-3, c=-1,$ $5(a^2 + b^2 - c^2) + 3(a^2 + 3b) - 4(a+b)$ $= 5((5)^2 + (-3)^2 - (-1)^2) + 3(5^2 + 3(-3)) - 4(5 + (-3))$ $= 5(25 + 9 - 1) + 3(25 - 9) - 4(5 - 3)$ $= 5(33) + 3(16) - 4(2)$ $= 165 + 48 - 8$ $= 213 - 8$ $= 205$

Exponents and powers

Q.No	Answers
I.1	D. 10^4
2.	A.2
3.	C. A & B both
4.	A.1
5.	A. positive integer
II.6	6
7.	$7 \times 7 \times 7$
8.	1
9.	8
10.	cube
III.11	b) 2^6
	c) 2^4
	d) 2^{12}
	e) 2^0
	a) 6^2
IV.12	5^4 $= 5 \times 5 \times 5 \times 5$ $= 25 \times 5 \times 5$ $= 125 \times 5$ $= 625$
13.	2^6 $= 2 \times 2 \times 2 \times 2 \times 2 \times 2$ $= 8 \times 2 \times 2 \times 2$

	$= 36 \times 2 \times 2$ $= 36 \times 4$ $= 144$
14.	4^3 $= 4 \times 4 \times 4$ $= 16 \times 4$ $= 64$
V.15	$425 = 5 \times 5 \times 17$ $= 5^2 \times 17$
16.	243 $= 3 \times 3 \times 3 \times 3 \times 3$ $= 3^5$
17.	4124 $= 2 \times 2 \times 1031$ $= 2^2 \times 1031$
18.	540 $= 2 \times 2 \times 3 \times 3 \times 3 \times 5$ $= 2^2 \times 3^3 \times 5$
VI.19	5×2^4 $= 5 \times 2 \times 2 \times 2 \times 2$ $= 5 \times 16$ $= 80$
20.	3×7^3 $= 3 \times 7 \times 7 \times 7$ $= 3 \times 49 \times 7$ $= 3 \times 343$ $= 1029$
21.	$3^3 \times 5^3$ $= 3 \times 3 \times 3 \times 5 \times 5 \times 5$ $= 27 \times 125$ $= 3375$
22.	$10^2 \times 0$ $= 10 \times 10 \times 0$ $= 100 \times 0$ $= 0$
23.	$6^0 \times 4^3$ $= 1 \times 4 \times 4 \times 4$

	$= 1 \times 64$ $= 64$
24.	8×9^2 $= 8 \times 9 \times 9$ $= 8 \times 81$ $= 648$
VII.25	$5^2 \times 5^3$ $= a^m \times a^n$ $= 5^2 \times 5^3$ $= 5^{2+3}$ $= 5^5$
26.	$6^x \times 6^3$ $= a^m \times a^n$ $= 6^x \times 6^3$ $= 6^{x+3}$
27.	$10^9 \div 10^5$ $= \frac{a^m}{a^n} = a^{m-n}$ $= \frac{10^9}{10^5} = 10^{9-5}$ $= 10^4$
28.	$3^4 \times 2^4$ $= a^m \times b^m$ $= (ab)^m$ $= 3^4 \times 2^4$ $= (3 \times 2)^4$ $= (6)^4$
29.	$(3^4)^3 \div 3^3$ $= \frac{a^m}{a^n} = a^{m-n}$ $= (3^4)^3 \div 3^3$ $= 3^{12} \div 3^3$ $= \frac{3^{12}}{3^3} = 3^{12-3} = 3^9$

30	$(7^2)^3$ $= (a^m)^n = a^{mn}$ $= (7^2)^3$ $= 7^{2 \times 3}$ $= 7^6$
VIII.31	$\frac{2^3 \times 3^4 \times 4}{3 \times 3^2}$ $= \frac{2^3 \times 3^4 \times 2^2}{3^{1+2}}$ $= \frac{2^{3+2} \times 3^4}{3^3}$ $= 2^5 \times 3^{4-3}$ $= 2^5 \times 3^1$
32.	$\frac{3^4 \times 25 \times 16}{5^2 \times 4}$ $= \frac{3^4 \times 5^2 \times 4^2}{5^2 \times 4}$ $= 3^4 \times 5^{2-2} \times 4^{2-1}$ $= 3^4 \times 5^0 \times 4^1$ $= 3^4 \times 1 \times 4^1$
33.	$\frac{27 \times 36}{3 \times 6}$ $= \frac{3^3 \times 6^2}{3 \times 6}$ $= 3^{3-1} \times 6^{2-1}$ $= 3^2 \times 6^1$
34.	$\frac{125 \times 3^4 \times 5}{3^2 \times 2^3}$ $= \frac{5^3 \times 3^4 \times 5}{3^2 \times 2^3}$ $= 5^{3-1} \times 3^{4-2} \times 2^3$ $= 5^2 \times 3^2 \times 2^3$
IX.35	$\frac{(2^5)^2 \times 7^3}{8^3 \times 7}$ $\frac{2^{10} \times 7^3}{(2^3)^3 \times 7^1}$

=

$$= \left(\frac{2^{10}}{2^9}\right) \times \left(\frac{7^3}{7^1}\right)$$

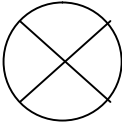
$$= 2^{10-9} \times 7^{3-1}$$

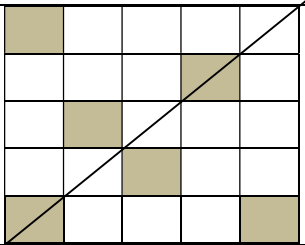
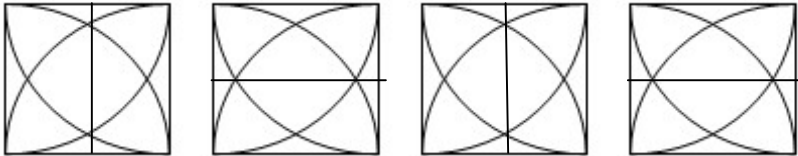
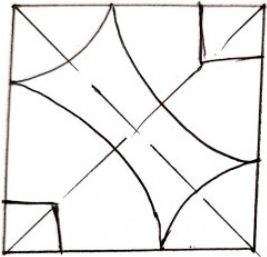
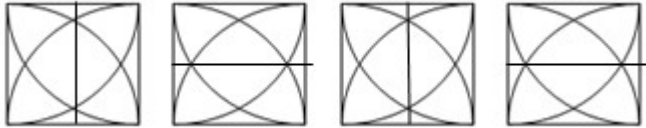
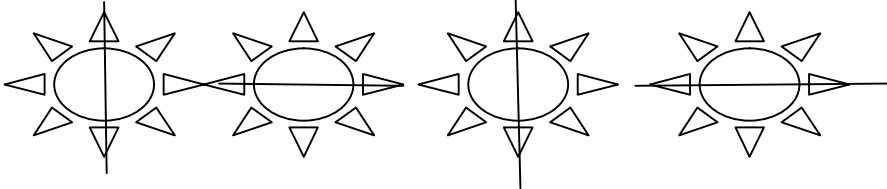
$$= 2^1 \times 7^2$$

$$= 2 \times 49$$

$$= 98$$

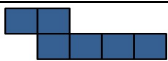
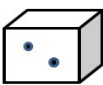
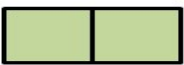
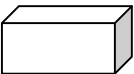
Symmetry

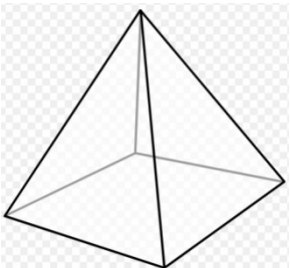
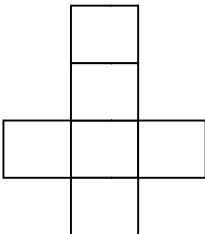
Q.No	Answers
I.1	C)8
2.	c)6
3.	A)Rectangle
4.	C)Equal
5.	D)5
6.	A)S
7.	C)many
8.	C)Centre of rotation
9.	A)Angle of Rotaional symmetry
10.	C)180 ⁰
II.11	clockwise
12.	4
13.	60 ⁰
14.	
15.	2
III.16	Rotation turns object about a fixed point. This Fixed point is the centre of
17.	A R H I
18.	Rectangle – 2 Square– 4 circle- infinite

19.	
20.	
IV.21	H I O X
22.	Taya dasa pan chairboxes
23.	
24.	
V.25	
26.	

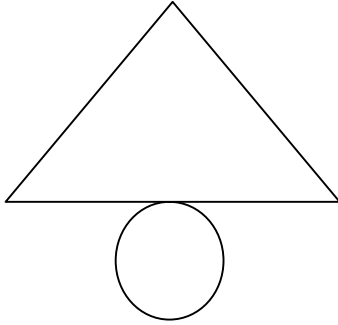
VI.27	Shapes	Number of linear symmetry
	Triangle	3
	Quadrilateral	4
	Pentagon	5
	Hexagon	6
	Octagon	8
	Decagon	10

Visualising solid shapes

Q.NO	ANSWERS
I.1	D.rectangle
2.	
3.	B.8
4.	
5.	
6.	A.circle
7.	C.9
8.	B 
9.	C 
10.	B 
II.11	5
12.	rectangle
13.	12
14.	ball
15.	cube
III.16	
	
	

							
							
IV.17	<table border="1"> <tr> <td>2 Dimensional objects</td><td>3 Dimensional Objects</td></tr> <tr> <td>2 dimensional objects has length and breadth</td><td>3 dimensional objects has length breadth and height</td></tr> <tr> <td>Ex: square triangle</td><td>Ex: cube cuboid</td></tr> </table>	2 Dimensional objects	3 Dimensional Objects	2 dimensional objects has length and breadth	3 dimensional objects has length breadth and height	Ex: square triangle	Ex: cube cuboid
2 Dimensional objects	3 Dimensional Objects						
2 dimensional objects has length and breadth	3 dimensional objects has length breadth and height						
Ex: square triangle	Ex: cube cuboid						
18	cylinder cone  						
19	 vertices- 5 edges- 8 faces- 5						
20	4						
V.21							
22	Draw Fig on graph						
VI.23	 cylinder						

Cone



Square based pyramid

