

**CREST Mental Maths Olympiad (CMMO)****Sample Paper****Pattern and Marking Scheme**

Grade	Topic/Section	No. of Questions	Marks per Question	Total Marks
Grade 5	Basique	80	3	240
	Avance	20	6	120
Grand Total		100		360

The total duration of the exam is 60 minutes.

Note: For every incorrect answer, there's a penalty of $\frac{1}{3}$ rd of the total marks allotted to that question.

Syllabus**Knowing Our Numbers**

- System of numeration
- Comparison of numbers
- Estimation of numbers and place value of a number
- BODMAS rule
- Whole numbers
- Properties of whole numbers

Integers

- Integers
- Addition and subtraction of integers on number line
- Properties of integers over addition, subtraction, multiplication, division

Fractions and Decimals

- Fractions: Operations and types
- Ascending and descending order of the fractions
- Decimals and their place values
- Operations on decimals

- e. Decimal fractions
- f. Ascending and descending order of the decimals

Playing With Numbers

- a. Factors and multiples
- b. Prime numbers
- c. Composite numbers
- d. Divisibility rules
- e. Prime factorization
- f. H.C.F. and L.C.M.
- g. Play with patterns

Understanding Elementary Shapes

- a. Lines and angles
- b. Classification of triangles, circle & quadrilateral
- c. Polygons
- d. 3D shapes

Mensuration

- a. Perimeter of rectangle
- b. Perimeter of square
- c. Perimeter of triangle
- d. Perimeter of closed figures
- e. Area of rectangle, square and combined figures

Data Handling and Symmetry

- a. Pictographs, line graph and bar graph
- b. Symmetry - Point & Reflection

Comparing Quantities

- a. Percentage
- b. Speed, time and distance
- c. Profit and loss
- d. Problems on ages
- e. Average
- f. Ratio and proportion

For more details, visit <https://www.crestolympiads.com/mental-maths-mmo>

Basique (Each Question is 3 Marks)

- Write in numeral:
One hundred and sixteen million, One hundred and ten thousand, and thirty-nine
 - 113,128,138
 - 116,110,039
 - 122,313,987
 - 126,871,873
- What is the difference between Ninety thousand, four hundred and ten to Nine hundred and twenty thousand, four hundred and four in numeral?
 - 829994
 - 839200
 - 845600
 - 855700
- What digit is in the hundredths place?
2463.3475
 - 3
 - 4
 - 5
 - 7
- What is the total sum of natural numbers within the range of 1 and 100?
 - 2340
 - 3450
 - 4560
 - 5050
- In a survey, it was found that $\frac{2}{3}$ of the people prefer coffee over tea. If there were 150 respondents, how many people preferred coffee?
 - 80
 - 100
 - 120
 - 140
- Which of the following numbers is divisible by 12?
 - 48062
 - 27568
 - 27296
 - 27840
- Lena wants to divide a piece of ribbon into equal-length pieces. If she wants each piece to be 12 cm long, but her ribbon is only 180 cm long, what is the greatest number of pieces she can cut?
 - 12
 - 13
 - 14
 - 15
- Sharon's height is 145.62 cm. She stands on a stool height of 10.50 cm. What is the combined height now?
 - 149.16 cm
 - 156.12 cm
 - 163.54 cm
 - 171.67 cm

18. Which of the following pairs is not correct?

- a. Four thousand sixteen - 4016
- b. Two thousand two - 2002
- c. Nine thousand ninety - 9019
- d. Six thousand fifteen - 6015

19. How many whole numbers are there between 81 and 101?

- a. 18
- b. 17
- c. 19
- d. 21

20. Find the missing number:

$$\underline{\hspace{2cm}} \times (170 + 35) = 50 \times 170 + \underline{\hspace{2cm}} \times 35$$

- a. 35
- b. 50
- c. 170
- d. 30

21. Which is the smallest integer greater than all the negative integers?

- a. 0
- b. 1
- c. -1
- d. 2

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

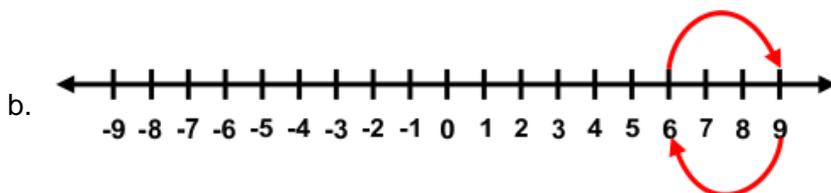
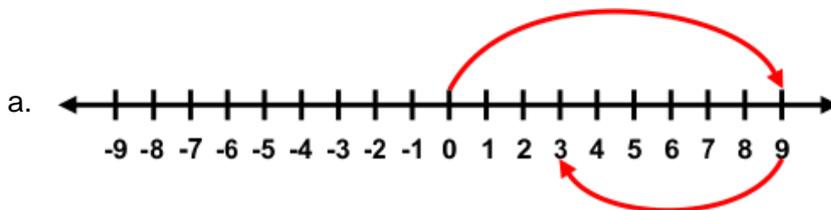
- a. 11
- b. 14
- c. 21
- d. 16

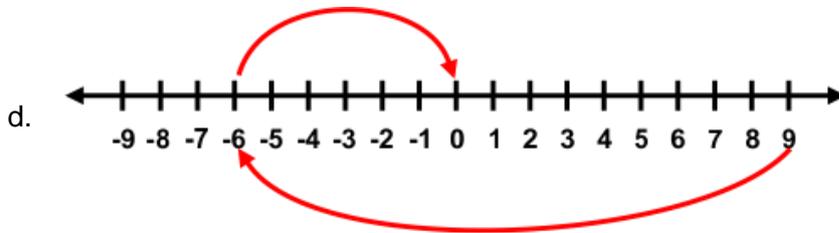
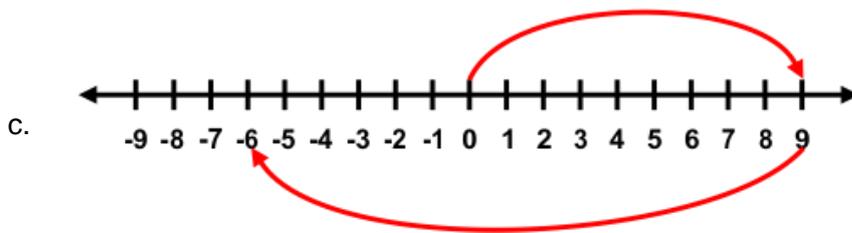
23. If a number is added to -8, the result is -2. What is the number?

- a. -6
- b. -3
- c. 6
- d. 4

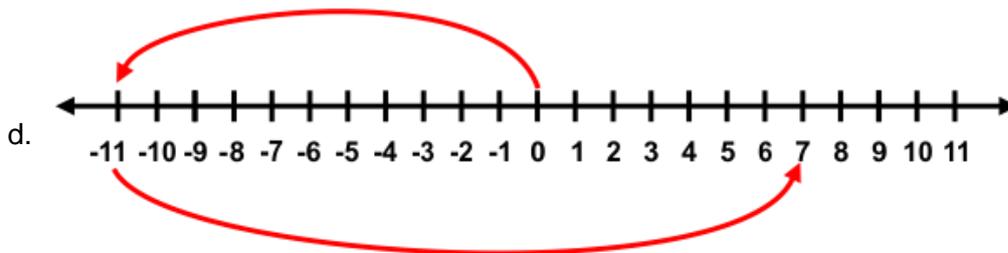
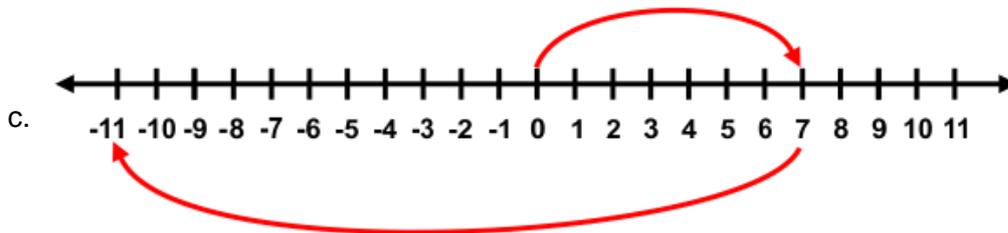
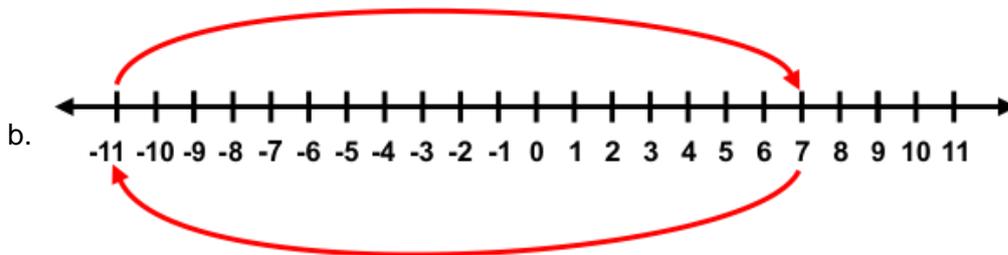
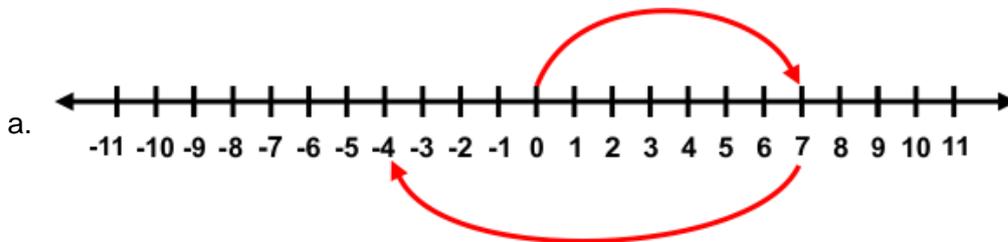
24. Use a number line and add the following integers:

$$9 + (-6)$$





25. Use number line and add the following integers:
 $7 + (-11)$



26. Add:
15 and (-20)

- a. -5
b. -10
c. 20
d. 15

27. Find:
 $25 \times 35 = (25 \times 30) + (25 \times \underline{\quad})$

- a. 5
b. 3
c. 6
d. 4

28. Fill in the blank with correct number:

$$\frac{85}{12} = 7 \frac{1}{\square}$$

- a. 13
b. 15
c. 7
d. 12

29. Convert $\frac{5}{7}$ in the form of a fraction having 49 as the denominator.

- a. $\frac{25}{49}$
b. $\frac{35}{49}$
c. $\frac{5}{49}$
d. $\frac{30}{49}$

30. Arrange the following fractions in decreasing order of magnitude. Use symbols to indicate the result:

$$\frac{9}{25}, \frac{12}{25}, \frac{23}{25}$$

- a. $\frac{9}{25} > \frac{12}{25} < \frac{23}{25}$
b. $\frac{9}{25} > \frac{12}{25} > \frac{23}{25}$
c. $\frac{9}{25} < \frac{12}{25} < \frac{23}{25}$
d. $\frac{9}{25} > \frac{12}{25} = \frac{23}{25}$

31. Arrange the decimals in ascending order:

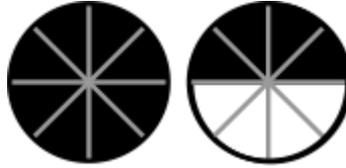
0.2, 0.12, 0.35, 0.72

- a. 0.12, 0.72, 0.35, 0.2
b. 0.72, 0.35, 0.2, 0.12
c. 0.12, 0.2, 0.35, 0.72
d. 0.12, 0.2, 0.72, 0.35

32. What is nine thousandth in decimal form?

- a. 0.009
- b. 0.09
- c. 0.9
- d. 0.0009

33. Write the following fraction in decimal form.



- a. 2
- b. 1.9
- c. 2.2
- d. 1.5

34. 1 metre equals 39.37 inches; how many inches are there in 12 metres?

- a. 472.44
- b. 470.2
- c. 483.2
- d. 480.2

35. Write all the factors of 36.

- a. 1, 2, 3, 6, 9, 18, 23
- b. 1, 23
- c. 1, 2, 3, 4, 6, 9, 12, 18, 36
- d. 0, 2, 3, 4, 8, 12, 36

36. What is the smallest common multiple of 3 and 4?

- a. 12
- b. 15
- c. 16
- d. 18

37. Below 10, there are _____ prime numbers.

- a. 3
- b. 6
- c. 4
- d. 8

38. How many prime numbers are there which are less than 30?

- a. 10
- b. 30
- c. 50
- d. 20

39. Which of the following number are divisible by 6?

3277, 9582, 34646, 63587

- a. 9582
- b. 3277
- c. 34646
- d. 63587

40. What is the prime factorisation of 100?

- a. $2 \times 2 \times 5 \times 5$
- c. $2 \times 2 \times 3 \times 5$

- b. $2 \times 2 \times 2 \times 5 \times 5$
- d. $2 \times 5 \times 5 \times 5$

41. What is the prime factorisation of 342?

- a. $2 \times 3 \times 3 \times 3 \times 19$
- c. $2 \times 2 \times 3 \times 3 \times 19$

- b. $2 \times 3 \times 3 \times 19$
- d. $2 \times 3 \times 3 \times 19 \times 19$

42. Which smallest number leaves in each case the remainder 6 when it is divided by 16, 24, 32, 40?

- a. 386
- c. 486

- b. 286
- d. 586

43. Which smallest number is exactly divisible by 18, 24, 30, 36?

- a. 860
- c. 680

- b. 380
- d. 360

44. Find the L.C.M. of 76, 95.

- a. 280
- c. 760

- b. 300
- d. 380

45. What comes next in the given series?

5, 9, 13, 17, _____.

- a. 19
- c. 23

- b. 21
- d. 20

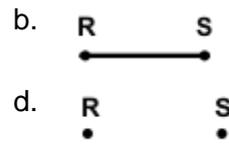
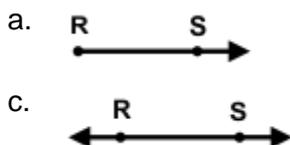
46. What comes next in the given series?

121, 232, 343, _____.

- a. 545
- c. 453

- b. 454
- d. 455

47. Which of the following option represent ray RS correctly?



48. A line segment is 8 cm long and is divided into 4 equal parts. What is the length of each part?

- a. 4
- b. 8
- c. 3
- d. 2

49. How many right angles make 180° ?

- a. Two
- b. Zero
- c. One
- d. Three

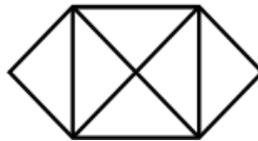
50. What is the angle name for one complete revolution?

- a. Acute angle
- b. Obtuse Angle
- c. Complete Angle
- d. Zero Angle

51. Two lines are said to be perpendicular to each other when they meet at _____ angle.

- a. 90°
- b. 360°
- c. 270°
- d. 180°

52. How many triangles are there in the following figures?

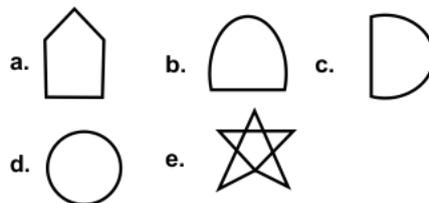


- a. 13
- b. 14
- c. 10
- d. 11

53. What is the sum of the interior angle of a quadrilateral?

- a. 270°
- b. 180°
- c. 90°
- d. 360°

54. Which of the following are polygons?

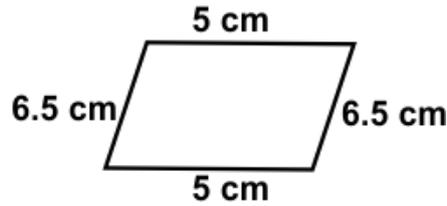


- a. a, e
- b. d, b
- c. c, a
- d. b, e

55. A 3D shape with one circular face and one flat face is called:

- a. cylinder
- b. cone
- c. rectangle
- d. prism

56. Find the perimeter of the given figure:

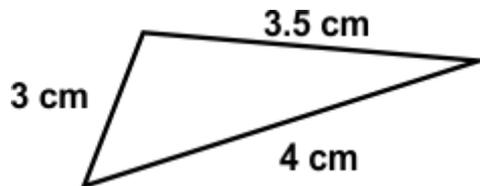


- a. 25 cm
b. 6.5 cm
c. 10 cm
d. 23 cm

57. Find the perimeter of the rectangle whose sides are 5 cm and 2 cm:

- a. 9.5 cm
b. 14 cm
c. 10 cm
d. 11 cm

58. Find the perimeter of the given triangle:

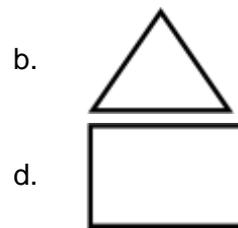
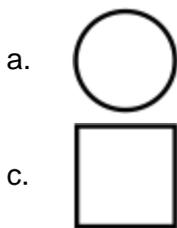


- a. 10.2 cm
b. 10 cm
c. 10.5 cm
d. 10.4 cm

59. Find the cost of fencing a square park of side 120 m at the rate of \$4 per metre.

- a. \$1,920
b. \$1,900
c. \$1,980
d. \$1,960

60. Which figure has a greater area?



61. The area of a triangle with a base 6 cm and a height 4 cm is:

- a. 14 cm^2
b. 12 cm^2
c. 24 cm^2
d. 36 cm^2

62. Find the area of the square whose one side is 2.5 cm long.

- a. 6.5 cm^2
b. 6.55 cm^2
c. 6.225 cm^2
d. 6.25 cm^2

- a. 1150 books
- b. 1250 books
- c. 1200 books
- d. 1300 books

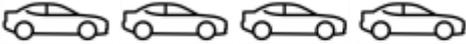
67. Read the pictograph given below and answer the following question:
What is the number of persons employed in government service?

Job	Number of Persons	Each  = 3000 persons
Private Service		
Government Service		
Factory Service		

- a. 20000
- b. 35000
- c. 30000
- d. 28000

68. Mr Robert made a pictograph below to show the number of cars washed at a car washing station three days a week.

From the pictograph, find the number of cars were washed on Friday:

Days	Number of cars washed	One  = 5
Friday		
Saturday		
Sunday		

- a. 24
- b. 16
- c. 20
- d. 22

69. How many lines of symmetry does a regular hexagon have?

- a. 5
- b. 7
- c. 6
- d. 4

70. Which of the following letters has point symmetry?

- a. A
- b. M
- c. O
- d. P

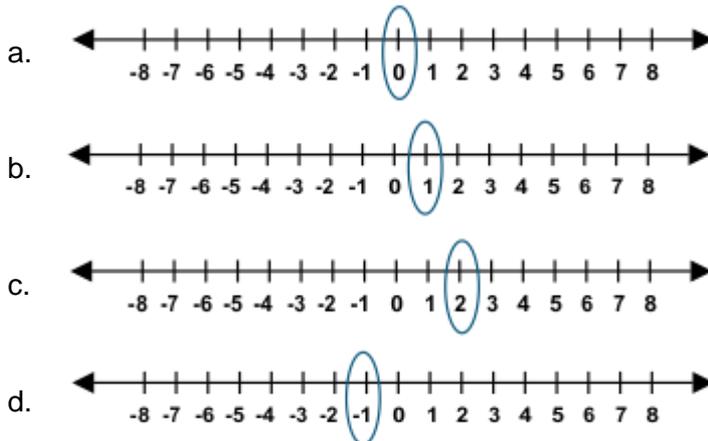
80. Express 32 : 60 in its simplest form.

- a. 9 : 15
- c. 8 : 15

- b. 16 : 15
- d. 9 : 20

Avance (Each Question is 6 Marks)

81. What is the difference between -4 and 5?



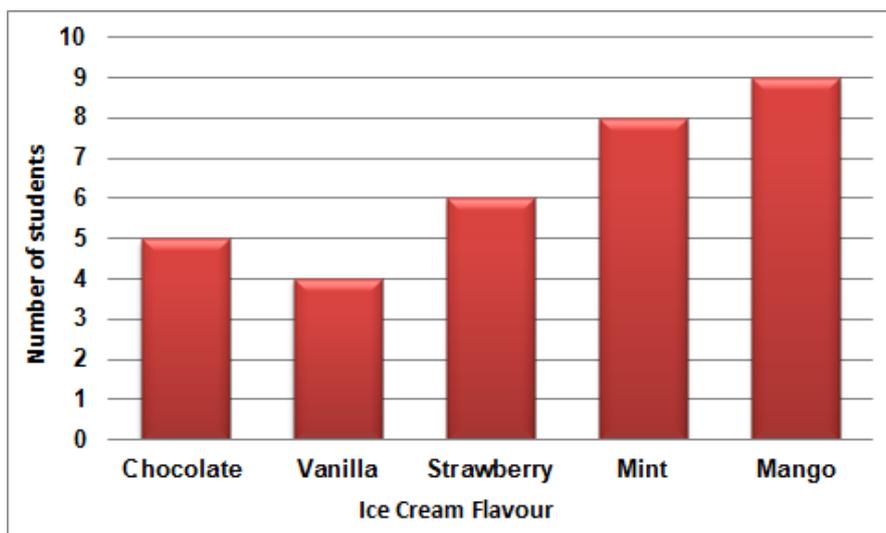
82. Out of 30 students in a class, $\frac{2}{5}$ are boys. How many girls are in the class?

- a. 12 girls
- c. 18 girls

- b. 14 girls
- d. 20 girls

83. The given bar graph shows a survey was conducted to determine the favourite ice cream flavour of students in a class. Study it and answer the following.

Which flavour of ice cream is the most popular among the students in the class?



- a. Mint
- c. Mango

- b. Vanilla
- d. Chocolate

84. Mark received a 92% and a 78% on the first two maths tests. What grade must he receive on the third test to have an average of 84%?

- a. 80%
- b. 82%
- c. 84%
- d. 86%

85. The product of two numbers is 6272, and 4 times of one of the numbers is 256. What is the other number?

- a. 89
- b. 98
- c. 100
- d. 198

86. Sum of two integers is -80. If one of them is -90, then what will be the other integer?

- a. -10
- b. -80
- c. 10
- d. 5

87. Which fraction is the smallest?

- a. $\frac{3}{6}$
- b. $\frac{4}{6}$
- c. $\frac{5}{12}$
- d. $\frac{11}{12}$

88. What is the place value of 6 in the decimal number 12.56?

- a. Thousandths
- b. Hundredths
- c. Ones
- d. Tenths

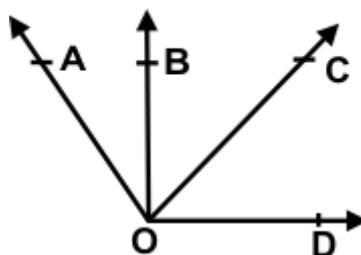
89. Which of the following number are divisible by 4?
36474, 216221, 209810, 99238, 394234, 20496516

- a. 394234
- b. 20496516
- c. 216221
- d. 36474

90. Which of the following can be drawn on a piece of paper?

- a. A line
- b. A line segment
- c. A ray
- d. A plane

91. How many angles are formed in the given figure?

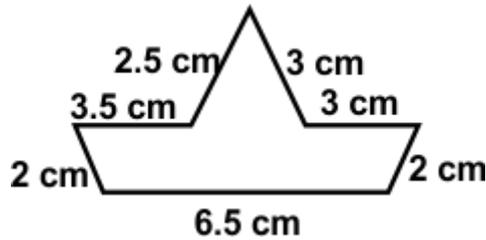


- a. Nine
- b. Six
- c. Four
- d. Eight

92. The sum of the interior angles of a polygon with n sides is:

- a. $180n$
- b. $360n - 360$
- c. $90n$
- d. $180(n - 2)$

93. Find the perimeter of the figure given below:

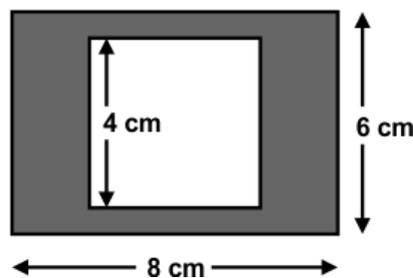


- a. 22 cm
- b. 22.1 cm
- c. 22.58 cm
- d. 22.5 cm

94. Find the area of the tile which is 25 cm long and 12 cm wide.

- a. 280 cm^2
- b. 250 cm^2
- c. 320 cm^2
- d. 300 cm^2

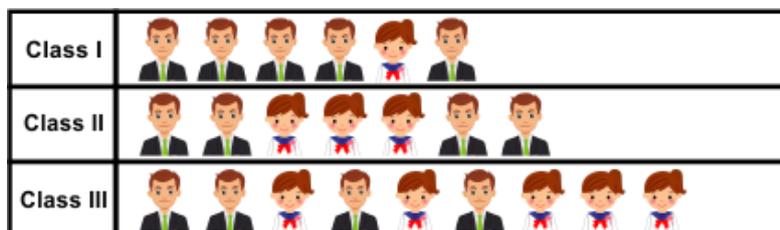
95. A rectangle has a length of 8 cm and a width of 6 cm. A square with sides of length 4 cm is inscribed inside the rectangle. Find the area of the shaded region.



- a. 36 cm^2
- b. 48 cm^2
- c. 24 cm^2
- d. 32 cm^2

96. Look at the pictograph representing a number of boys and girls in three classes. Answer the following questions:

- a. How many girls and boys are there in class II?
- b. Which class has more girls than boys?
- c. What is the difference in the number of girls and boys in class III?



= 5 Boys, = 5 Girls

- a. a. 10 boys 25 girls, b. class II, c. 10 girls more
- b. a. 10 boys 25 girls, b. class II, c. 10 boys more
- c. a. 20 boys 15 girls, b. class III, c. 5 girls more
- d. a. 15 boys 25 girls, b. class III, c. 10 boys more

97. Which of the following triangle has no lines of symmetry?

- a. Isosceles
- b. Equilateral
- c. Scalene
- d. Right

98. If a person can paint a room in 4 hours and another person can paint the same room in 6 hours, how long will it take for both people to paint the room together?

- a. 3 hrs 24 min
- b. 2 hrs 24 min
- c. 2 hrs 48 min
- d. 2 hrs 14 min

99. A person sold a goat at 6% loss. The selling price was \$3196. What was the cost price?

- a. \$3,420
- b. \$3,240
- c. \$3,400
- d. \$3,450

100. The ratio of red balls to blue balls in a bag is 3 : 4, how many blue balls are there if there are 18 red balls?

- a. 54
- b. 22
- c. 20
- d. 24

Answer Key

1.	b	2.	a	3.	b	4.	d	5.	b	6.	d	7.	d
8.	b	9.	a	10.	a	11.	d	12.	c	13.	a	14.	a
15.	d	16.	c	17.	a	18.	c	19.	c	20.	b	21.	a
22.	a	23.	c	24.	a	25.	a	26.	a	27.	a	28.	d
29.	b	30.	c	31.	c	32.	a	33.	d	34.	a	35.	c
36.	a	37.	c	38.	a	39.	a	40.	a	41.	b	42.	c
43.	d	44.	d	45.	b	46.	b	47.	a	48.	d	49.	a
50.	c	51.	a	52.	c	53.	d	54.	a	55.	b	56.	d
57.	b	58.	c	59.	a	60.	d	61.	b	62.	d	63.	c
64.	c	65.	a	66.	b	67.	c	68.	c	69.	c	70.	c
71.	b	72.	d	73.	a	74.	d	75.	c	76.	c	77.	d
78.	a	79.	b	80.	c	81.	b	82.	c	83.	c	84.	b
85.	b	86.	c	87.	c	88.	b	89.	b	90.	b	91.	b
92.	d	93.	d	94.	d	95.	d	96.	c	97.	c	98.	b
99.	c	100.	d										