Grade 6

CREST Mental Maths Olympiad (CMMO)

Sample Paper

Pattern and Marking Scheme				
Grade	**Topic/Section**	**No. of Questions**	**Marks per Question**	**Total Marks**
Grade 6	Basique	80	1	80
	Avance	20	2	40
Grand Total		**100**		**120**

The total duration of the exam is 60 minutes.

Syllabus

Knowing Our Numbers

a. System of numeration
b. Comparison of numbers
c. Estimation of numbers and place value of a number
d. BODMAS rule
e. Whole numbers
f. Properties of whole numbers

Integers

a. Integers
b. Addition and subtraction of integers on number line
c. Properties of integers over addition, subtraction, multiplication, division

Fractions and Decimals

a. Fractions: Operations and types
b. Ascending and descending order of the fractions
c. Decimals and their place values
d. Operations on decimals
e. Decimal fractions
f. Ascending and descending order of the decimals

Algebra

a. Variables and constants
b. Algebraic expressions

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 1 Mark)

1. How much time will Robert spend practicing the piano in 10 days, if he practices for 3/4 of an hour each day?

   a. 5 hours
   b. 6.5 hours
   c. 7.5 hours
   d. 8 hours

2. Identify the sequence which is in increasing order:

   a. 10.05 < 10.35 < 10.53 < 10.5
   b. 10.5 < 10.53 < 10.35 < 10.05
   c. 10.05 < 10.35 < 10.5 < 10.53
   d. 10.53 < 10.05 < 10.5 < 10.35

3. Which of the following numbers are divisible by 14?

   a. 35968
   b. 47936
   c. 57024
   d. 87088

4. What is the largest four-digit number that is divisible by 15, 25, 40, and 75?

   a. 9600
   b. 9700
   c. 9800
   d. 9900

5. If there are 50 seats in a cinema hall and 60% of them are occupied, how many seats are empty?

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

6. If a store had 100 items in stock and 20% of them were sold, how many items are left in the store?

   a. 70
   b. 80
   c. 90
   d. 100

7. If a father's age is five times his son's age, and four years ago, the father was nine times older than his son, what is the father's current age?

   a. 30 years
   b. 36 years
   c. 40 years
   d. 48 years

8. If Stalin earned $14, $16, $18, $20, $22, $24, and $26 on consecutive days in a week, what is his average daily earning?

   a. $18
   b. $20
   c. $22
   d. $24

9. If 180 students are to be divided into three classes in the ratio of 3 : 4 : 5, how many students will be in each class?

a. 20, 25, 35
b. 15, 25, 40
c. 45, 60, 75
d. 30, 35, 40

10. How many degrees are there in a straight angle?

a. 60^o
b. 90^o
c. 180^o
d. 360^o

11. How many zeros are in the number 1 trillion?

a. 8
b. 10
c. 12
d. 14

12. What is the value of a number that contains 8 ones and has 2 less tens than the number of ones in it?

a. 60
b. 62
c. 64
d. 68

13. Fill in the blank:
_____ hundred thousand = 1 million

a. 10000
b. 1000
c. 100
d. 10

14. What is the sum of the first five natural numbers?

a. 16
b. 18
c. 15
d. 14

15. What is the nearest hundred of 243?

a. 220
b. 230
c. 200
d. 300

16. Estimate the following product to the nearest thousand 52 x 103.

a. 5050
b. 5000
c. 5203
d. 5302

17. Simplify:
25 ÷ 5 X [5 X {24 ÷ (18 - 15)}]

a. 220
b. 200
c. 230
d. 210

18. Which of the fractions is the greatest fraction?

a. 1
b. 2
c. 3
d. 0

19. Fill in the missing number:
8870 x 461 - 8870 x 361 = _____.

a. 870000
b. 887900
c. 889300
d. 887000

20. Fill in the missing number:
10 - [100 - (89 + 5 ÷ 5)] = _____.

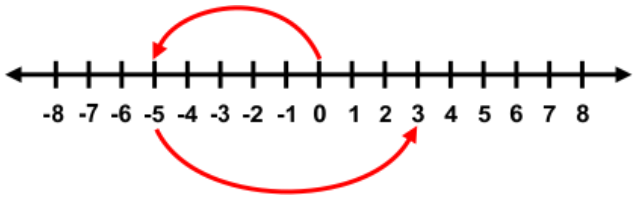
a. 134
b. 114
c. 10
d. 0

21. Fill the missing number:
_____ × 4 = 12 × 20

a. 70
b. 60
c. 65
d. 75

22. Use the number line and solve:
(−5) + 8

a.



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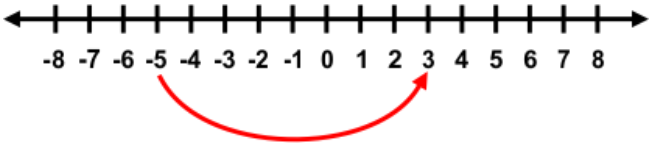

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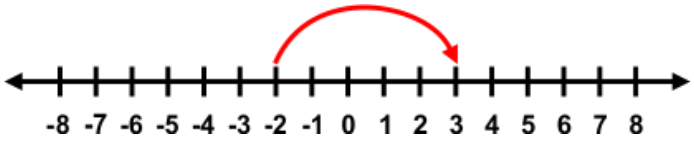

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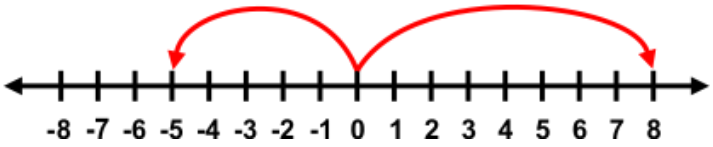
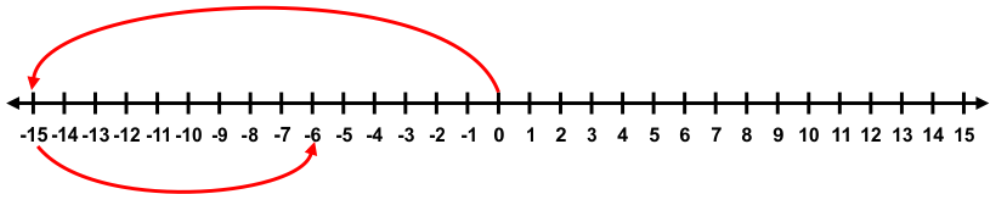


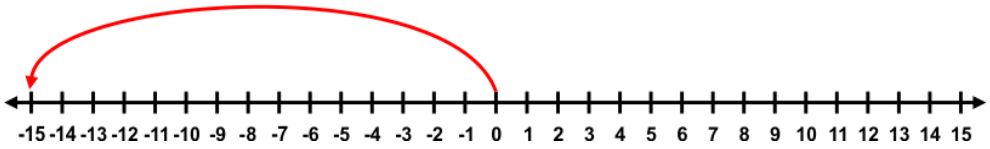
23. Use number line and add the following integers:

(-15) + 9

a.

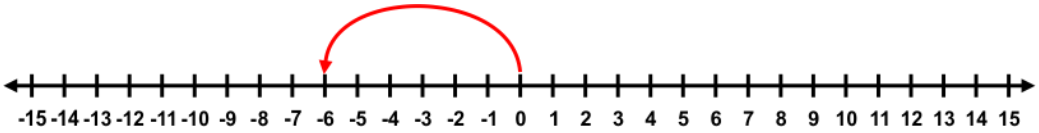


b.



c.

d.



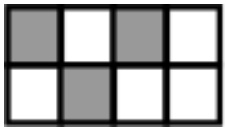
24. What will be the product 7 x (-6)?

a. 42
b. -42
c. -32
d. -24

25. Which integer when divided by -1 gives 101?

a. 101
b. -101
c. 100
d. -100

26. What fraction of the picture represents the shaded portion?



a. 3/8
b. 2/3
c. 4/5
d. 1/8

27. What is half of a right angle?

a. 90^o
b. 45^o
c. 180^o
d. 65^o

28. Arrange in ascending order:

a. 343.239 < 343.243 < 343.231 < 343.233
b. 343.239 < 343.233 < 343.231 < 343.243
c. 343.231 < 343.233 < 343.239 < 343.243
d. 343.231 < 343.243 < 343.239 < 343.233

29. Which of the fractions is the greatest fraction?

a. $\frac{3}{5}$
b. $\frac{3}{6}$
c. $\frac{3}{4}$
d. $\frac{3}{7}$

30. What is the place value of the digit 8 in the number 27260.08?

a. Tenths
b. Hundredths
c. Ones
d. Hundred

31. What is the decimal form of 3 tenths + 3 hundredths?

a. 33
b. 33.3
c. 0.33
d. 3.3

32. Solve:
425.041 = 425 + _____/1000

a. 41
b. 41.23
c. 41.25
d. 0.41

33. Identify the variable in the equation:
m - 2 = 6

a. -2
b. 6
c. m
d. m - 2

34. Identify the constant in the equation:
2x + 3y - 4z = 12

a. 2x
b. 3x – 4z
c. 12
d. 3y

35. Write the expression for the following:
Five times x added to 6.

a. (5x + 6)
b. (5x + 6x)
c. (5x - 6)
d. (5 + 6)

36. Simplify the expression:
2(x + 3) - 4(x + 3)

a. (-2x - 6)
b. 2x
c. 6x
d. (-2x) + 6

37. Write down the common factors of:
16, 49.

a. 9
b. 3
c. 4
d. 1

38. What is the product of the least multiples of 55 and 19?

a. 1400
b. 1100
c. 1050
d. 1045

39. How many endpoints do a line segment have?

a. Two
b. Three
c. One
d. Four

40. Fill in the blank:
The smallest odd composite number is _____.

a. 10
b. 3
c. 8
d. 9

41. Which is the least prime number that is greater than 32?

a. 38
b. 37
c. 34
d. 35

42. Which of the following numbers is divisible by 8?
572, 5500, 12159, 31795072

a. 5500
b. 12159
c. 31795072
d. 572

43. Find the prime factorisation of the number 546.

a. 2 x 3 x 7 x 13
b. 2 x 3 x 3 x 7 x 13
c. 2 x 3 x 7 x 7 x 13
d. 2 x 2 x 3 x 7 x 7 x 13

44. Find the prime factorisation of the number 675.

a. 25 x 3 x 3 x 3 x 3
b. 25 x 3 x 3 x 3
c. 25 x 2 x 3 x 3 x 3
d. 5 x 2 x 3 x 3 x 3

45. Find the prime factorisation of the number 7084.

a. $2^2 \times 7 \times 11 \times 23$
b. $2 \times 3 \times 7 \times 11 \times 23$
c. $2 \times 3 \times 3 \times 11 \times 23$
d. $2 \times 3 \times 11 \times 11 \times 23$

46. Write HCF and LCM of 2^3 x 3 and 3 x 5.

a. HCF = 3, LCM = 2^3 x 5
b. HCF = 3 x 5, LCM = 2^3 x 5
c. HCF = 3 x 5, LCM = 2^3 x 5 x 5
d. HCF = 3, LCM = 2^3 x 3 x 5

47. What is the greatest common factor of 12, 15 and 18?

a. 4
b. 6
c. 3
d. 2

48. What comes next?
3, 5, 7, 11, ____.

a. 15
b. 11
c. 13
d. 17

49. What number should be put in the blank to complete the series?
629, 627, 625, _____.

a. 623
b. 635
c. 632
d. 621

50. How many end points does a ray have?

a. Two
b. Three
c. One
d. Four

51. Classify the following pairs of angles as supplementary or complementary angles:
(i) 20°, 70°
(ii) 110°, 70°

a. (i) Supplementary angles
(ii) Supplementary angles
b. (i) Complementary angles
(ii) complementary angles
c. (i) Complementary angles
(ii) Supplementary angles
d. (i) Supplementary angles
(ii) Complementary angles

52. What is the angle name for one-fourth revolution?

a. Straight Angle
b. Right Angle
c. Complete Angle
d. Acute angle

53. What is the shape of the book?

a. Cube
b. Cuboid
c. Square
d. Rectangle

54. Give the name of a polygon with three sides.

a. Square
b. Triangle
c. Rhombus
d. Circle

55. What is the name of a 3D shape with 6 square faces?

a. Cone
b. Cube
c. Cylinder
d. Square

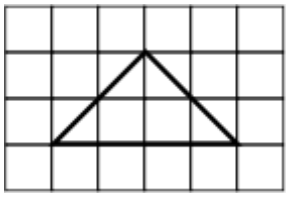
56. Find the perimeter of rectangle whose length = 5 cm, breadth = 50 cm.

a. 55 cm
b. 50 cm
c. 105 cm
d. 110 cm

57. Calculate the perimeter of the square of side 0.01 m.

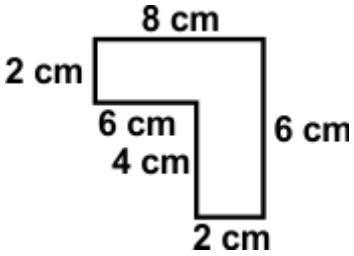
a. 0.04 m
b. 0.01 m
c. 0.1 m
d. 0.0001 m

58. Find the area of the figure by counting squares:



a. 16 units
b. 4 units
c. 9 units
d. 12 units

59. Find the perimeter of the figure: -



a. 35 cm
b. 43 cm
c. 28 cm
d. 18 cm

60. What is the area of a rectangle whose length is 4 m and breadth is 10 cm?

a. 0.4 m^2
b. 0.48 m^2
c. 0.14 m^2
d. 0.38 m^2

61. The area of a square is 16 cm^2. Find the length of a side.

a. 4 cm
b. 8 cm
c. 12 cm
d. 10 cm

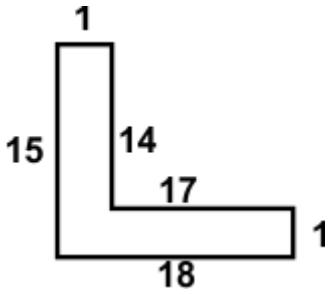
62. Find the length of the rectangle which has an area of 88 cm^2 and a breadth of 8 cm.

a. 12 cm
b. 10 cm
c. 20 cm
d. 11 cm

63. A man covers 88 m while going round a square park twice. What is the length of a side of the park?

a. 16 m
b. 13 m
c. 18 m
d. 11 m

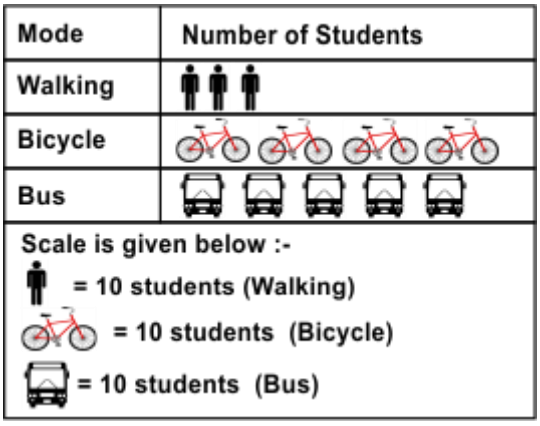
64. Split each of the following figure into rectangles and hence find their areas (taking the unit in cm).



a. 32 cm^2
b. 37 cm^2
c. 33 cm^2
d. 39 cm^2

65. The modes of traveling to school by 120 students are given below.
From the pictograph answer the following questions.

i. How many students travel by bus?
ii. How many students go on walking?

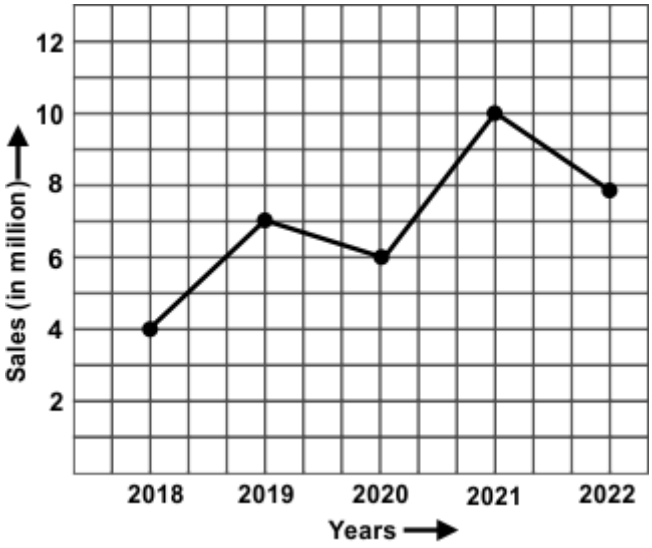


a. i – 100, ii - 40
b. i – 50, ii - 50
c. i – 50, ii - 80
d. i – 50, ii - 30

66. The line graph shows the yearly sales figure for a manufacturing company. What were the sales in (i) 2018 (ii) 2022?

a. i – 2 million, ii - 6 million
b. i – 1 million, ii - 3 million
c. i – 4 million, ii - 8 million
d. i – 8 million, ii - 3 million

67. The line graph shows the yearly sales figures of a manufacturing company. What were the sales in 2021?



a. 5 million
b. 8 million
c. 10 million
d. 7 million

68. Study the given pictograph and answer the questions:

a. Which school has the greatest number of children?

b. How many children in all are there in four schools?

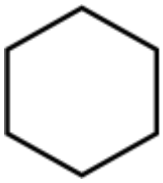
a. a – school 1, b – 2200 children

b. a – school 2, b – 1200 children

c. a – school 4, b – 2200 children

d. a – school 3, b – 220 children

69. Find the number of lines of symmetry shape:



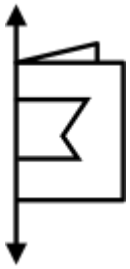
a. 6 lines

b. 4 lines

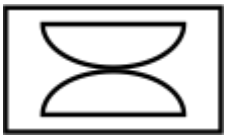
c. 8 lines

d. 2 lines

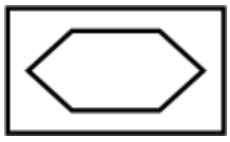
70. Given here is a figure of a folded sheet and a design drawn about the fold. Select the complete figure that would be seen when the design is cut off.



a. 

b. 

c. 

d. 

71. A bus takes 3 hours to travel a distance of 180 km. What is the speed of the bus?

a. 70 km/h

b. 50 km/h

c. 90 km/h

d. 60 km/h

72. A man covers a distance of 144 km in 12 hours. What is his speed?

a. 12 km/h
b. 16 km/h
c. 14 km/h
d. 18 km/h

73. A shopkeeper bought a bicycle for $3250 and sold the same for $4000. How much was his profit?

a. $750
b. $700
c. $650
d. $650

74. The Jesica Women's Saving Group (WSG) bought raw materials worth $8000 for making Crackers. They sold the crackers for $12050. How much profit did the WSG make?

a. $4,000
b. $4,025
c. $4,050
d. $4,500

75. The sum of the ages of the two brothers is 44 years. The elder brother is 6 years older than the younger brother. What is age of the younger brother?

a. 19
b. 20
c. 18
d. 17

76. A father's age is 5 times that of his son. If the total of their ages is 36, find the age of the father.

a. 36
b. 30
c. 28
d. 32

77. The heights of Koli, Donis, Poly, Molly, and Lily are respectively 123 cm, 131 cm, 135 cm, 126 cm, and 130 cm. What is their average height?

a. 128 cm
b. 129 cm
c. 139 cm
d. 138 cm

78. Find the average of first ten even numbers.

a. 10
b. 11
c. 12
d. 14

79. What is the ratio of?
1 hour to 60 minutes

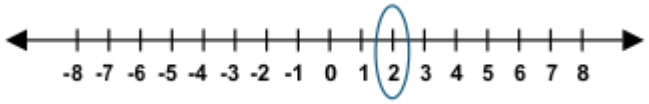
a. 1 : 1
b. 5 : 1
c. 11 : 3
d. 9 : 5

80. The number of men and women in an office is 2000 and 1800 respectively. Express the ratio of the number of men to that of women in the simplest form.

a. 10 : 9
b. 12 : 11
c. 14 : 11
d. 20 : 8

Avance (Each Question is 2 Marks)

81. What number is mid-point between -3 and 7 on a number line?

a.


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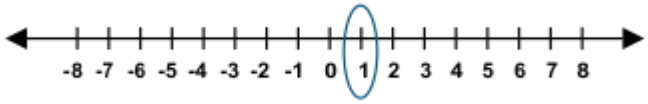

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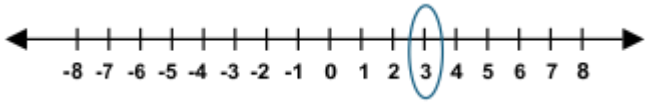
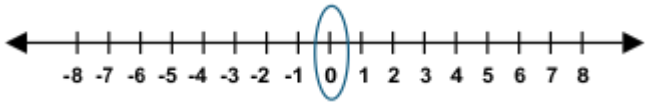


d.


82. What is the average speed of the airplane, if it covers a distance of 1001 km in 14/5 hours?

a. 189.5 km/h
b. 235.5 km/h
c. 287.5 km/h
d. 357.5 km/h

83. 80% of a class of 40 students passed the final exam. How many students failed the exam?

a. 8
b. 10
c. 12
d. 14

84. The sum of four numbers is 468520. The first two numbers are 73584 and 64209. The third number is less than the first number by 9485. What is the fourth number?

a. 266282
b. 266628
c. 262866
d. 283322

85. Find the value of:
[63 / (-21)] x 2

a. -9
b. 9
c. 6
d. -6

86. Compare the values of the following fractions, use symbols to indicate the result:

$$\frac{2}{3}, \frac{2}{5}, \frac{2}{9}$$

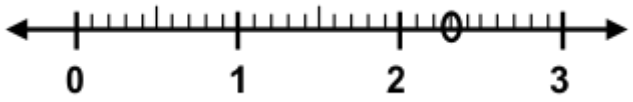
a. $\frac{2}{3} > \frac{2}{5} > \frac{2}{9}$

b. $\frac{2}{3} < \frac{2}{5} > \frac{2}{9}$

c. $\frac{2}{3} < \frac{2}{5} < \frac{2}{9}$

d. $\frac{2}{3} > \frac{2}{5} = \frac{2}{9}$

87. Choose the correct decimal from the given number line:



a. 2.3
b. 4.5
c. 2.7
d. 2.4

88. Fill in the blank:
The quotient of x and y added to four times the product of x and y is _____.

a. x/y + 4y
b. 2x/y + 34
c. x + 6y
d. x/y + 4xy

89. Which of the following numbers is divisible by 11?
37468, 21358, 354872, 82907

a. 354872
b. 37468
c. 21358
d. 82907

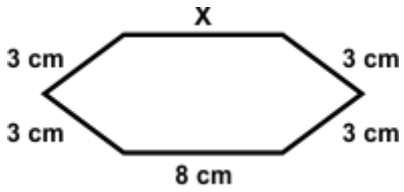
90. If the measurements of sides are 2 cm, 2 cm, 2 cm, and measure of angles of the triangle are 60^o, 60^o, and 60^o then what type of triangle is this?

a. Right angle triangle
b. Isosceles triangle
c. Scalene triangle
d. Equilateral triangle

91. In triangle ABC, angle A measures 60^0 and angle B measures 90^0. What is the measure of angle C?

a. 60^o
b. 40^o
c. 30^o
d. 45^o

92. The perimeter of the given figure is 26 cm. Find the length of x.

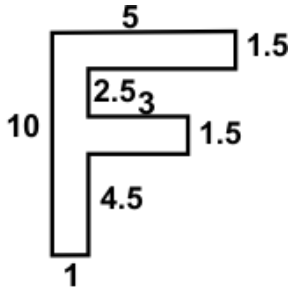


a. 8 cm
b. 6 cm
c. 9 cm
d. 11 cm

93. The side of a square tile is 10 cm. How many tiles can be fixed on one side of a wall which is 300 cm long and 200 cm high?

a. 800
b. 700
c. 900
d. 600

94. Find the area of the figure (taking the unit in cm).

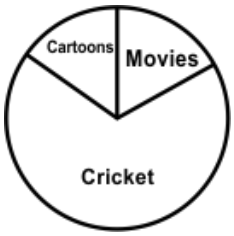


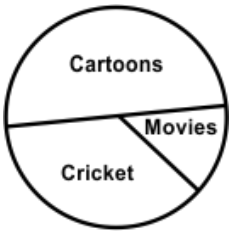
a. 20.5 cm^2
b. 24 cm^2
c. 23.1 cm^2
d. 23.23 cm^2

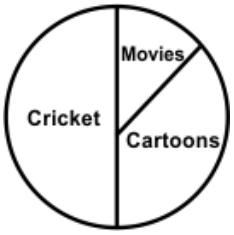
95. Name the figure which has six faces and equal edges.

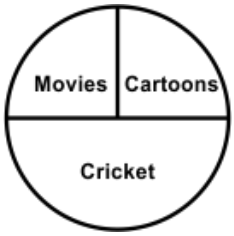
a. Cylinder
b. Cone
c. Cuboid
d. Cube

96. A class has 40 students. Half of the students enjoy watching cricket. Half of the remaining students enjoy watching movies and rest of the students like to see cartoons. Which of the following pie charts represents the above information suitably?

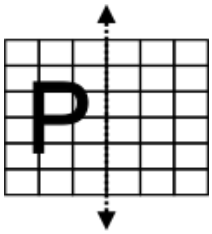
a. 

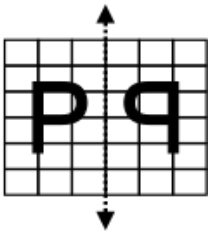
b. 

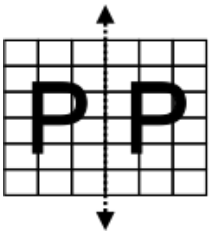
c. 

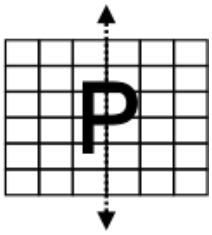
d. 

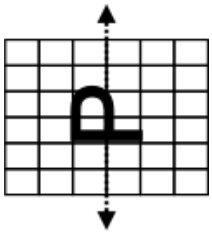
97. Find which letter looks the same after reflection:



a. 

b. 

c. 

d. 

98. A train covers 39 km in 3 hours. How far does the train go in 30 minutes?

a. 7.5 km
b. 6.5 km
c. 9.5 km
d. 3.5 km

99. The cost price of a trouser is $250. At what price must it be sold to make 20% profit?

a. $200
b. $250
c. $225
d. $300

100. A certain amount of food serves 45 persons for 20 days. How many persons will that food serve for 25 days?

a. 26
b. 28
c. 36
d. 40

Answer Key

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