CREST Mental Maths Olympiad (CMMO)

Previous Year Paper

Class 7

Time Allowed: 60 minutes **Maximum Marks: 120**

- There are a total of **100 questions** in this booklet comprising **2 sections** namely the **Basique and Avance** consisting of **80 questions (1mark each) & 20 questions (2 marks each),** respectively.
- There is **only ONE correct option** to a given question.
- No candidate is allowed to carry any textual material, printed or written, bits of paper, any electronic device, etc. inside the examination hall.
- The use of unfair means may result in the cancellation of the exam. Any such instances may be reported at **+91-98182-94134** or **info@crestolympiads.com**

DO NOT OPEN THIS BOOKLET UNTIL ASKED TO DO SO

FILL IN THE DETAILS

Candidate Name: _____

Class: _____Section: _____

CREST ID:_____

Basique (Each Question is 1 Mark)

1. What is the measurement of the side of a square coffee table that has an area of 196 inches^2?

a. 12 inches
b. 14 inches
c. 16 inches
d. 18 inches

2. What is the length of one side of a square desktop with an area of 324 square inches?

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

3. What is the cube root of 729?

a. 7
b. 8
c. 9
d. 11

4. In a certain school, there are 240 boys and 360 girls. What is the ratio of boys to girls?

a. 1 : 3
b. 2 : 3
c. 3 : 4
d. 1 : 2

5. After starting to write 24 pages, Ashu completed 25% of his work by evening. How many pages does he still need to write?

a. 12 pages
b. 14 pages
c. 16 pages
d. 18 pages

6. What will come in place of question mark (?) in the number series?
8, 9, 20, 63, 256, 1285, ?

a. 7345
b. 7456
c. 7716
d. 7834

7. What is the average of 122, 128, 146, 124, 136, 142?

a. 128
b. 133
c. 139
d. 145

8. A car is traveling at a speed of 50 km/h. How long will it take to cover a distance of 400 km?

a. 6 hours
b. 7 hours
c. 8 hours
d. 9 hours

9. A jeep has wheels of diameter 140 m. How many revolutions can the wheel complete in 40 minutes if the jeep is travelling at a speed of 220 m/s?

a. 1200
b. 1300
c. 1400
d. 1500

10. A wall clock has its minute hand of length 21 cm. What area will it swept in covering 30 minutes?

a. 678 cm^2
b. 693 cm^2
c. 711 cm^2
d. 727 cm^2

11. Simplify: $12 \times 12^2 - 3^2$

a. 136
b. -1367
c. 1687
d. 1719

12. Solve: $(9 + 4)^2 + 6^5 / 36^2$

a. 175
b. 185
c. 1187
d. 1346

13. Solve: $9^3 \times 9 + 11^7/11^4$

a. 6860
b. 7892
c. 8142
d. 9273

14. If the ratio of two numbers A and B is 5 : 6 and their LCM is 480, what is their HCF?

a. 12
b. 14
c. 16
d. 18

15. If the supplement of an angle is equal to three times its complement, what is the measure of the angle?

a. 45^o
b. 50^o
c. 55^o
d. 60^o

16. Find a rational number between 2/3 and 3/4.

a. 87/110
b. 91/110
c. 87/120
d. 91/120

17. Find a rational number between -3/4 and 5/6.

a. 6/24
b. 5/28
c. 9/29
d. 2/5

18. Form an equation:
5 added to twice a number is 135.

a. $2x + 135 = 5$
b. $2x + 5 = 135$
c. $5x + 135 = 2$
d. $2x = 5 + 135$

19. Identify the coefficients of $3x^2$ in the algebraic expression:
$3x^2 – 2zy$

a. $3 - 2z$
b. $3x^2$
c. $-2zy$
d. $3 - 2zy$

20. If $x = 3$ and $y = 5$, find $x^2 + y^2$.

a. 34
b. 36
c. 29
d. 30

21. Find the value of m:
$24(m + 12) = 144$

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

22. John's father's age is 5 years more than three times John's age. Find John's age, if his father is 44 years old.

a. 14
b. 12
c. 13
d. 16

23. Find: $\sqrt[3]{729}$

a. 0.3
b. -0.03
c. -0.09
d. -0.9

24. Solve: $(8 \times 16)^3$

a. 2^{21}
b. 2^{23}
c. 2^{22}
d. 2^{19}

25. Solve: $(0.3)^3$

a. 0.027
b. 0.09
c. 0.00027
d. 0.27

26. Which of the following numbers are not a perfect cube?

a. 216
b. 512
c. 1331
d. 1521

27. Solve: $11^3 + (-8^3)$

a. 719
b. 819
c. 619
d. 919

28. The cost of 6 pens is $72. What would be the cost of 10 such pens?

a. $130
b. $120
c. $140
d. $90

29. In a mixture of 60 L, the ratio of milk and water is 7 : 3. How many litres of milk are there in the mixture?

a. 20 L
b. 36 L
c. 6 L
d. 42 L

30. How many boys are there in the class if there are 40 students and 70% of them are girls?

a. 12
b. 14
c. 16
d. 10

31. A and B invest in a business in the ratio of 3 : 5. How much does A invest if B invests $12,000?

a. $7,550
b. $7,200
c. $7,000
d. $7,050

32. Two people invested $15000 and $25000 respectively to start a business. They decided to share the profits in the ratio of their investments. If their profit is $12000, how much does 2nd person get?

a. $7,500
b. $7,550
c. $7,600
d. $7,450

33. A train travels a distance of 360 km at a speed of 60 km/h. How much time does the train need to travel this distance?

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

34. A shopkeeper bought a watch for $40 and sold it for $60. What is his profit?

a. $62
b. $14
c. $36
d. $20

35. A shopkeeper bought a book for $150 and sold it for $200. What is his profit or loss?

a. $50 profit
b. $10 loss
c. $55 profit
d. $40 loss

36. A person borrows $5000 at an interest rate of 7% for 3 years. What would be the simple interest amount?

a. $1,120
b. $1,050
c. $1,120
d. $1,150

37. If you deposit $1000 in a savings account that pays 3% interest per year, how much will be in the account after 5 years?

a. $1,159.27
b. $1,623.23
c. $1,352.20
d. $1,131.10

38. The sum of the present ages of Jack and John is double the difference between their present ages. Four years ago, this ratio was one and a half times. Find the ratio of their ages after 12 years.

a. 5 : 4
b. 5 : 9
c. 4 : 5
d. 9 : 5

39. A father is 3 times as old as his son. After 5 years, the father will be two and a half times as old as his son. Find the present age of the father.

a. 15
b. 30
c. 45
d. 20

40. A family of 8 persons has food for 26 days. After 5 days, 1 person went away. How many days will the remaining food last?

a. 36
b. 24
c. 35
d. 28

41. 200 persons are needed to excavate a pond in 25 days. How many additional persons are needed if the pond is to be excavated in 20 days?

a. 50
b. 42
c. 22
d. 34

42. The average age of 24 men and 1 woman is equal to 35 years. If 1 woman left, the average becomes 34 years. Find the age of woman who left the class.

a. 69
b. 24
c. 59
d. 60

43. Find the missing number in the given pattern:
1 + 3 = 31
4 + 6 = 64
7 + 9 = 97
10 + 12 = ?

a. 1220
b. 1012
c. 1210
d. 1020

44. Find the missing number:
2, 3, 4, 9, 8, 27, 16, (?)

a. 32
b. 81
c. 54
d. 49

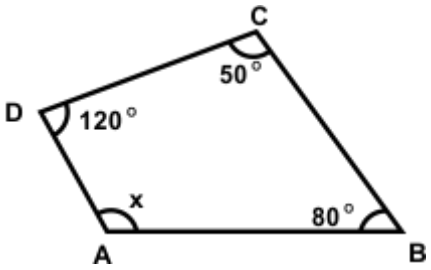
45. If the parallel sides have lengths 5 cm and 9 cm, and the height is 8 cm, the area would be:

a. 40 cm^2
b. 72 cm^2
c. 56 cm^2
d. 45 cm^2

46. If the parallel sides have lengths 8 cm and 12 cm, and the height is 5 cm, the area would be:

a. 65 cm^2
b. 96 cm^2
c. 40 cm^2
d. 50 cm^2

47. ABCD is a quadrilateral. Find x.



a. 120°
b. 96°
c. 120°
d. 110°

48. Find the area of an equilateral triangle (approx.) with side length s = 6 cm.

a. 14 cm^2
b. 15 cm^2
c. 16 cm^2
d. 18 cm^2

49. If the surface area of a cube is 150 cm^2, what is its side length?

a. 4 cm
b. 5 cm
c. 8 cm
d. 6 cm

50. What is the surface area of a cylinder with a height of 7 cm and a diameter of 10 cm?

a. 372 cm^2
b. 379 cm^2
c. 377 cm^2
d. 370 cm^2

51. What is the surface area of a sphere with a radius of 5 cm (approx.)?

a. 312 cm^2
b. 318 cm^2
c. 314 cm^2
d. 320 cm^2

52. Find the volume of a hemisphere with a radius of 5 cm (approx.).

a. 262 cm^3
b. 242 cm^3
c. 226 cm^3
d. 224 cm^3

53. Find the height of the cylinder whose volume is 275 cm^3 and base area is 25 cm^2.

a. 15 cm
b. 11 cm
c. 13 cm
d. 16 cm

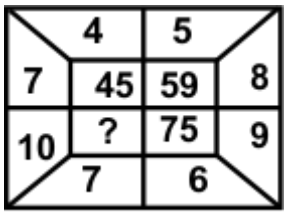
54. Which two signs should to interchanged to make the equation below true?
21 ÷ 3 × 2 - 8 + 5 = 8

a. – and +
b. x and /
c. / and +
d. - and /

55. If 11 × 13 × 15 = 246, 16 × 17 × 18 = 789, then 22 × 23 × 24 = ?

a. 465
b. 432
c. 234
d. 345

56. Find the missing number.



a. 90
b. 91
c. 93
d. 95

57. Which number is divisible by 11?
82513, 42165, 12547, 34255, 86394

a. 12547
b. 86394
c. 82513
d. 34255

58. Which number is divisible by 12?
34452, 32452, 21436, 56596

a. 32452
b. 34452
c. 21436
d. 56596

59. Which of the following pairs are divisible by 8?
(3476, 458), (1548, 684), (1656, 456), (2641, 3652)

a. (2641, 3652)
b. (1548, 684)
c. (3476, 458)
d. (1656, 456)

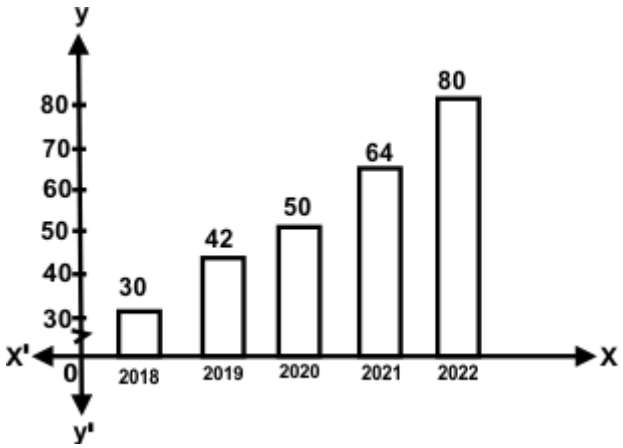
60. At intervals of 2, 4, 6, 8, 10, and 12 seconds, six bells start tolling simultaneously. How many times do they ring in unison in a 30-minute period?

a. 13
b. 14
c. 17
d. 15

61. What is the greatest number which divides 639, 1065 and 1491 exactly?

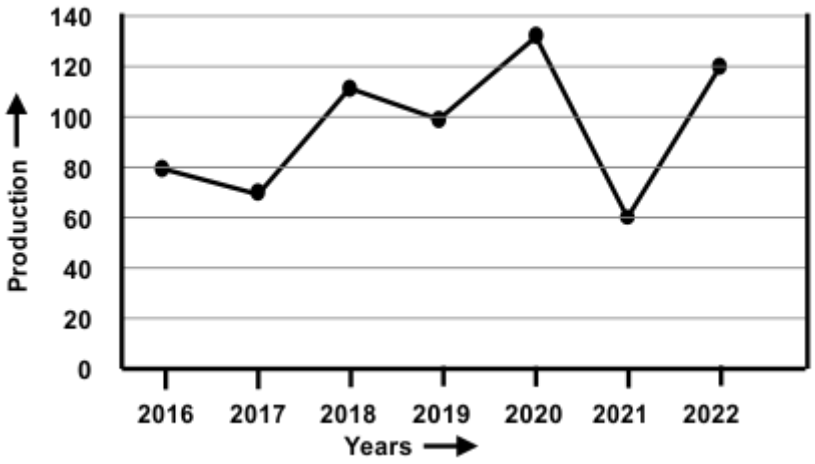
a. 214
b. 217
c. 213
d. 208

62. The bar graph shows the population of a country in various census (in million).
In which year there was maximum population?



a. 2019
b. 2022
c. 2020
d. 2018

63. The line shows the annual food grain production from 2016 to 2022. Refer to the graph & answer the question based on line graph as given below.
Which year's production, on average, was equivalent to that of 2019 and 2021?



a. 2016
b. 2017
c. 2019
d. 2018

64. Find the number of lines of symmetry in the given figure.

a. 2
b. 3
c. 4
d. 1

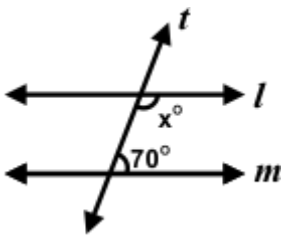
65. In the given figure, find the order of rotational symmetry.

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

66. Two supplementary angles are in the ratio 3 : 7, find the angles.

a. 52, 121
b. 42, 128
c. 54, 126
d. 48, 132

67. l || m and t is a transversal, find x.



a. 120°
b. 124°
c. 138°
d. 110°

68. Subtract: (-6 x 12 + 13) - (10 x 13 -23)

a. 166
b. -166
c. 107
d. -59

69. Solve: (-8) * [(-2) + 7] = _____

a. -16
b. -72
c. -20
d. -40

70. Solve: (-11) * (-47) + (-23) * (-10)

a. 647
b. -747
c. 747
d. -647

71. Fill in the blank:
(-45) + (-42) = (-42) + ____

a. -45
b. 45
c. 87
d. -87

72. Solve: 3/7 + (-6/11) + (-8/21) + (5/22)

a. -135/362
b. 125/362
c. -125/462
d. 135/462

73. Ramsin camera was loaded with a new roll of film. The film can take 36 snaps. During the class picnic, he took 20 pictures. What fraction of the roll can still be used to take snaps?

a. 2/3
b. 5/9
c. 14/5
d. 8/7

74. A designer needs 3/5 th of a metre of cloth to make a fancy dress for children taking part in a dance performance. If 200 children are taking part, how much cloth will the designer need?

a. 180
b. 200
c. 1400
d. 120

75. Solve:

$0.3 \times 3\frac{1}{3} =$ ___

a. 12
b. 5
c. 3
d. 1

76. Find: $(11^2) - (9^2) + (18^2)$

a. 342
b. 364
c. 324
d. 346

77. Find: $(4^2)^2 - 17*8 + 14^2$

a. 392
b. 342
c. 256
d. 316

78. What is the missing digit in $(37)^2 = 136$?

a. 8
b. 9
c. 7
d. 4

79. Find the square root of 17.64.

a. 3.2
b. 4.2
c. 4.4
d. 3.5

80. Find: $\sqrt{1024} - \sqrt{900}$

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

Avance (Each Question is 2 Marks)

81. The diameter of the driving wheel of a lorry is 95 cm. How many revolution per minute must the wheel make in order to keep a speed of 75 km/h approximately?

a. 201
b. 204
c. 209
d. 215

82. $(52)^{x-3} = ((5)^3)^{123}$ find value of x.

a. 1
b. 2
c. 3
d. 4

83. Write the expression for the following:
A man has $x with him. He gave half to his wife, 1/3rd to his son and rest of $1500 to his daughter.

a. $\frac{x}{3}+\frac{x}{3}+1500=\frac{x}{3}$
b. $\frac{x}{3}+\frac{x}{2}+1500=\frac{x}{3}$
c. $\frac{x}{2}+\frac{x}{3}+1500=x$
d. $\frac{x}{3}+\frac{x}{2}+1500=\frac{x}{2}$

84. What should be added to twice the rational number -7/3 to get 3/7?

a. 21/21
b. 101/21
c. 110/21
d. 107/21

85. Find the cube root of 13824.

a. 22
b. 26
c. 24
d. 23

86. A bicycle travels a distance of 20 km in 1 hour. How long will it take to travel a distance of 80 km at the same speed?

a. 7 hrs
b. 3 hrs
c. 4 hrs
d. 1 hrs

87. If a shirt costs $30 and is on sale for 20% off, how much does it cost?

a. $37
b. $35
c. $24
d. $77

88. A book costs $20 and is on sale for 25% off. How much will the book cost during the sale?

a. $14
b. $34
c. $15
d. $16

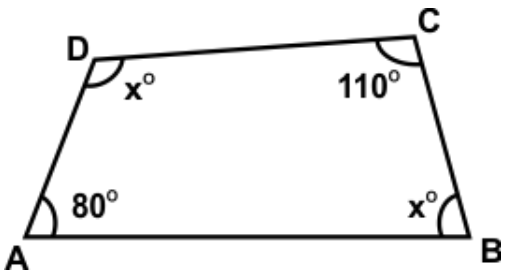
89. What is the compound interest on a principal of $10,000 at a rate of 8% per annum for 3 years, compounded annually?

a. $2,199
b. $2,179.82
c. $2,590.25
d. $2,597.12

90. The average marks obtained by 125 students in an exam is 29. If the average marks of passed students is 36 and that of failed students is 11. Find the number of failed students.

a. 67
b. 55
c. 96
d. 35

91. ABCD is a quadrilateral. Find x.



a. 85^o
b. 110^o
c. 105^o
d. 100^o

92. What is the surface area of a cuboid with length 4 cm, width 3 cm, and height 2 cm?

a. 54 cm^2
b. 51 cm^2
c. 48 cm^2
d. 52 cm^2

93. A lodge is in the form of a cuboid of measures 60 m x 40 m x 30 m. How many cuboidal boxes can be stored in it if the volume of one box is 0.08 m^3?

a. 60000
b. 40000
c. 80000
d. 90000

94. What would come at the place of "?" in the following figure?

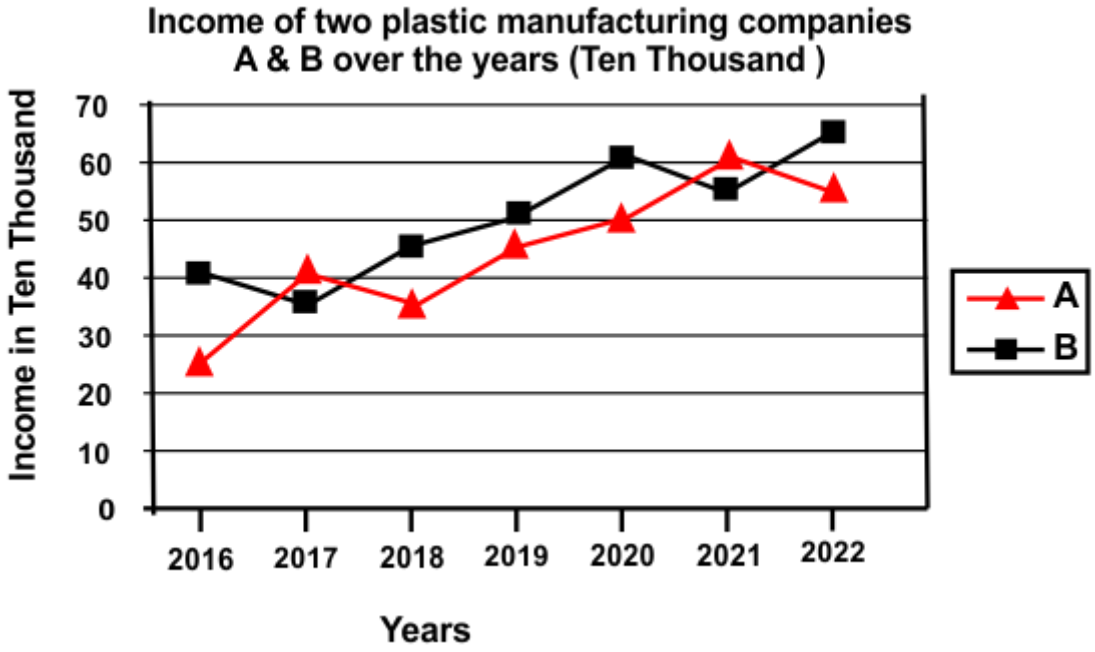
$$\begin{matrix} 64 & (100) & 144 \\ 4 & (?) & 36 \end{matrix}$$

a. 16
b. 25
c. 5
d. 12

95. What is the least perfect cube, which is divisible by 2, 3, 4 and 6?

a. 216
b. 512
c. 236
d. 552

96. Study the graph carefully and answer the question given below (Profit is taken as the % of expenditure.)
What would be the ratio of Company B's 2020 income to that of Company A's 2017 income?



a. 3 : 5
b. 4 : 5
c. 2 : 3
d. 3 : 2

97. How many lines of symmetry are there in the given figure?

a. three
b. two
c. one
d. none

98. Read the histogram and answer the questions.
a. What is the number of students in the marks group of 50–60?
b. In which group the number of students are maximum?

a. a – 10, b – 40-50
b. a – 8, b – 60-70
c. a – 8, b – 10-20
d. a – 5, b – 60-70

99. A lift descends into a mine shaft at the rate of 6 m/min. If the descent starts from 10 m above the ground level, how long will it take to reach -350 m?

a. 2 hrs
b. 3 hrs
c. 4 hrs
d. 1 hr

100. Find the least number that must be subtracted from 5607 so as to get a perfect square.

a. 166
b. 156
c. 131
d. 143

Answer Key

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