

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

Grade	Topic/Section	No. of Questions	Marks per Question	Total Marks
Grade 4	Basique	60	3	180
	Avance	20	6	120
Grand Total		80		300

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**Number and Number Names**

- Representation in expanded form (numbers less than 1000)
- Number names (numbers less than 1000)
- Representation in hundreds, tens and ones (numbers less than 1000)
- Pictorial representation using cubes (numbers up to 1000)
- Arranging the given numbers in ascending and descending order (numbers up to 1000)
- Identify and usage of signs $>$, $<$ and $=$ (numbers up to 1000)
- Abacus representation (numbers up to 1000)
- Step counting of numbers starting from any number (numbers up to 1000)
- Use of place value (numbers less than 1000)
- Play with patterns
- Games with numbers

Addition and Subtraction

- Three digit subtraction (Problems on pictorial representation, missing numbers & borrowing on numbers less than 1000)
- Three digit addition (Problems on pictorial representation, missing numbers, carry over & commutative property of addition on numbers less than 1000)
- Solve problems on number bonds (numbers less than 1000)

Multiplication and Division

- a. Use of multiplication tables to solve mathematical statements on multiplication and division (Tables from 2 to 20)
- b. Understanding division using grouping and pictorial representation
- c. Understanding of words doubles, half, thrice, three times, dozen, pair, score, century etc. to solve multiplication and division problems
- d. Use of number bonds to solve problems of multiplication and division
- e. Understanding and identifying factors and multiples of given numbers

Fractions

- a. Understanding fractions using pictorial representations (one-third, two-thirds, one-eighth, two-fifth etc.)
- b. Arrange given fractions in ascending or descending order
- c. Identification and usage of signs $>$, $<$ and $=$ for given fractions
- d. Like Fractions Addition with same denominator
- e. Like Fractions Subtraction with same denominator

Measurement

- a. Conversion of Unit of Measurement - (Length, Weight, Capacity, Time)
- b. Money
- c. Reading measurement in pictorial problems: Using a ruler, weighing balance, graduated container and clock

Geometry

- a. Identification of acute, obtuse, right and straight angles
- b. Identify and count the number of a particular 2-D shape in a figure (circle, triangle, rectangle and square, etc.)
- c. Identify 3-D shapes (cuboid, cube, cone, sphere, cylinder, etc.)
- d. Pattern recognition in a shapes series and identifying the next shape in the series

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

Basique (Each Question is 3 Marks)

1. Which of the following represents the correct expanded form for the number 406?

a. **600 + 4**

b. **400 + 6**

c. **400 + 60**

d. **600 + 40**

2. Which of the following numbers is the smallest?

a. **Five hundred five**

b. **Five hundred fifteen**

c. **Five hundred fifty**

d. **Five hundred fifty five**

3. Fill in the blank:

2 hundreds, 16 tens, 28 ones

a. **268**

b. **278**

c. **290**

d. **388**

4. Which of the following represents the correct descending order of numbers?

a. **626 > 645 > 538 > 557**

b. **645 > 626 > 557 > 538**

c. **626 < 645 < 538 < 557**

d. **645 < 626 < 557 < 538**

5. Fill in the blank:

3 hundreds 24 ones _____ 32 tens

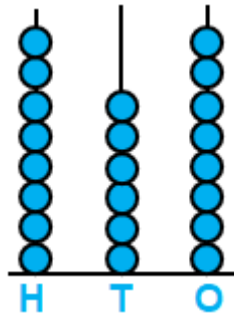
a. **>**

b. **<**

c. **=**

d. **Both B and C**

6. What is 100 more than the number shown on the abacus?



a. **768**

b. **868**

c. **878**

d. **968**

7. Fill in the blank:

122, 172, 222, _____

a. **252**

b. **262**

c. **272**

d. **282**

8. What is the sum of the place values of 0 in the numbers 640 and 108?

a. **0**

b. **10**

c. **100**

d. **101**

9. Fill in the blank:

2, 4, 8, 16, 32, _____

a. **48**

b. **64**

c. **72**

d. **78**

10. Fill in the blank:

Z0, Y3, X8, W15, _____

a. **V24**

b. **U24**

c. **V26**

d. **U26**

11. What is the greatest three-digit number that can be formed using the digits 1, 7, and 9 without repeating the digits?

a. **179**

b. **719**

c. **917**

d. **971**

12. Which of the following number statements shows subtraction of 342 from 671?

a. **342 - 671**

b. **671 - 342**

c. **671 + 342**

d. **342 + 671**

13. What is the sum of 312, 439, and 157?

a. **798**

b. **808**

c. **868**

d. **908**

14. What is the result when 100 is subtracted from 359?

a. **159**

b. **259**

c. **369**

d. **459**

15. Fill in the blank:

$$742 - 219 = 412 + \underline{\quad}$$

a. 104

b. 111

c. 128

d. 147

16. Find the value of X + Y:

$$\begin{array}{r} 6X9 \\ - 45Y \\ \hline 155 \end{array}$$

a. 1

b. 3

c. 4

d. 6

17. What is X - Y?

$$\begin{array}{r} 23X \\ + 1Y7 \\ \hline 376 \end{array}$$

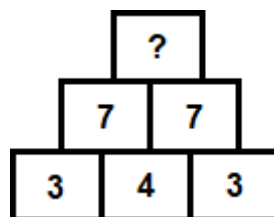
a. 6

b. 8

c. 9

d. 11

18. What will come in place of the question mark (?) in the number bond?



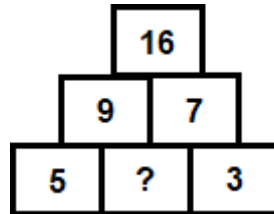
a. **0**

b. **14**

c. **49**

d. **64**

19. What will come in place of the question mark (?) in the number bond?



a. **2**

b. **3**

c. **4**

d. **5**

20. Fill in the blank:

$$72 \div 12 = \underline{\hspace{2cm}}$$

a. **6**

b. **7**

c. **8**

d. **9**

21. Fill in the blank:

$$363 = \underline{\hspace{2cm}} \times 7 + 6$$

a. **45**

b. **51**

c. **57**

d. **59**

22. How many groups of 7 locks are there?



a. **2**

b. **3**

c. **4**

d. **5**

23. Six times a number is 48. What is the number?

a. **5**

b. **6**

c. **7**

d. **8**

24. How much greater is double of 6 than double of 4?

a. **2**

b. **4**

c. **8**

d. **16**

25. Fill in the blank:

$$\begin{array}{r} 69 \\ 4 _ 4 \\ - 36 \\ \hline 54 \\ - 54 \\ \hline 0 \end{array}$$

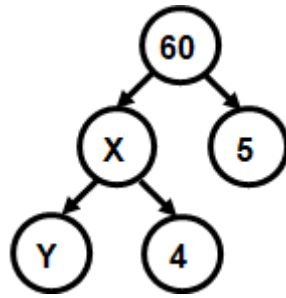
a. **1**

b. **2**

c. **3**

d. **4**

26. What will come in place of X?



a. **5, 2**

b. **6, 3**

c. **9, 2**

d. **12, 3**

27. What is the HCF of 18 and 24?

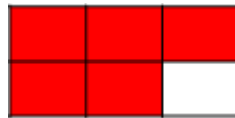
a. **2**

b. **3**

c. **6**

d. **9**

28. What fraction of the figure is shaded?



a. **$\frac{1}{6}$**

b. **$\frac{1}{3}$**

c. **$\frac{5}{6}$**

d. **$\frac{1}{4}$**

29. What is the mixed fraction shown in the figure?



a. $\frac{1}{4}$

b. $\frac{3}{4}$

c. $3\frac{3}{4}$

d. $3\frac{1}{4}$

30. Which of the following fractions is correctly arranged in ascending order?

a. $\frac{11}{17}, \frac{11}{19}, \frac{11}{21}, \frac{11}{23}$

b. $\frac{11}{17}, \frac{11}{21}, \frac{11}{19}, \frac{11}{23}$

c. $\frac{11}{17}, \frac{11}{21}, \frac{11}{23}, \frac{11}{19}$

d. $\frac{11}{23}, \frac{11}{21}, \frac{11}{19}, \frac{11}{17}$

31. Which of the following statements is correct?

a. $\frac{7}{33} > \frac{7}{29}$

b. $\frac{7}{17} > \frac{7}{11}$

c. $\frac{7}{19} > \frac{7}{23}$

d. $\frac{7}{45} > \frac{7}{23}$

32. Fill in the blank:

$$\frac{7}{13} + \frac{4}{13} - \frac{5}{13} = \underline{\hspace{2cm}}$$

a. $\frac{5}{13}$

b. $\frac{6}{13}$

c. $\frac{9}{13}$

d. $\frac{11}{13}$

33. Bella ate three-eighth of a cake. What fraction of cake is left?

a. $\frac{1}{4}$

b. $\frac{1}{8}$

c. $\frac{5}{8}$

d. $\frac{7}{8}$

34. Fill in the blank:

$$16 \text{ km } 56 \text{ m} = \underline{\hspace{2cm}} \text{ m}$$

a. 72

b. 1656

c. 16056

d. 16560

35. Fill in the blank:

$$3408 \text{ cm} = \underline{\hspace{2cm}} \text{ m } \underline{\hspace{2cm}} \text{ cm}$$

a. 3, 408

b. 34, 8

c. 340, 8

d. 340, 80

36. How many millimeters make 100 cm?

a. **10 mm**

b. **100 mm**

c. **1000 mm**

d. **10000 mm**

37. Convert 10 kg 305 g into g.

a. **10305 g**

b. **10350 g**

c. **10530 g**

d. **13050 g**

38. How many grams make 45 kg?

a. **450 g**

b. **4500 g**

c. **45000 g**

d. **450000 g**

39. How many millilitres make 102 litres?

a. **1020 ml**

b. **10200 ml**

c. **102000 ml**

d. **1020000 ml**

40. Convert 20 l 350 ml into ml.

a. **2305 ml**

b. **23035 ml**

c. **20305 ml**

d. **20350 ml**

41. The height of a box is 45 cm 7mm. If another box of height 32 cm 5 mm is stacked above it, what is the total height?

- a. **76 cm 8 mm** b. **77 cm 8 mm**
c. **77 cm 2 mm** d. **78 cm 2 mm**

42. A cake of weight 5 kg 375 g was bought. 3 kg 475 g of the cake was distributed among children. How much cake was left?

- a. **1 kg 600 g** b. **1 kg 900 g**
c. **2 kg 600 g** d. **2 kg 900 g**

43. For a party, 2 l 500 ml of apple juice and 4 l 750 ml of orange juice were used. What is the total amount of juice consumed at the party?

- a. **7 l 250 ml** b. **7 l 750 ml**
c. **8 l 350 ml** d. **8 l 500 ml**

44. Which of the following represents the correct descending order of numbers?

$$3 \text{ hrs } 40 \text{ min} = \underline{\quad\quad} \text{ min}$$

- a. **220** b. **235**
c. **250** d. **260**

45. The summer holidays are for 49 days. How many weeks is it summer holidays?

- a. **5 Weeks** b. **6 Weeks**
c. **7 Weeks** d. **8 Weeks**

46. The cost of a toy car and a teddy bear is \$7.45 and \$18.20. How much money will have to be paid to buy the two toys?

a. **\$24.55**

b. **\$25.65**

c. **\$25.85**

d. **\$26.25**

47. Jimmy has \$23.50 in his wallet. He spends \$9.70 in the school canteen. How much money is left with him?

a. **\$12.60**

b. **\$12.80**

c. **\$13.80**

d. **\$14.20**

48. What time will it be 2 hours 20 minutes from the time shown on the clock?



a. **11:40**

b. **12:00**

c. **11:00**

d. **11:20**

49. What is the actual time if the given clock is running 15 minutes fast?



a. **2:05**

b. **2:15**

c. **2:30**

d. **2:35**

50. Tim started his homework at 7:05 pm and finished it by 8:15 pm. How much time did it take him to finish his homework?

- a. **40 minutes** b. **1 hr 5 minutes**
c. **1 hr 10 minutes** d. **1 hr 15 minutes**

51. Bob went to sleep at 10:20 pm and slept for 9 hrs 30 min. At what time did he wake up?

- a. **6:50 am** b. **7:20 am**
c. **7:50 am** d. **7:20 pm**

52. Which of the following is true based on the lengths of the candles?



- a. **$M > R$** b. **$R < S$**
c. **$M = S$** d. **$M > S$**

53. Which of the following correctly shows increasing order of the capacity of the given containers?



- a. **$P < Q < R$** b. **$Q < P < R$**
c. **$P > Q > R$** d. **$P < R < Q$**

54. Which of the following is a right angle?

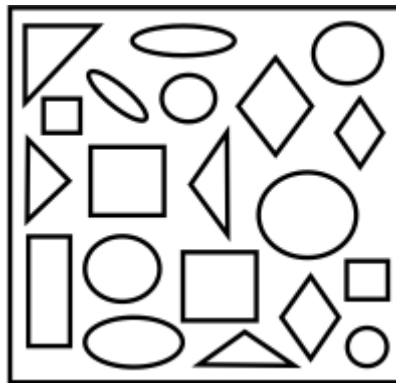


55. What type of angle is shown in the picture?



- a. **Acute angle** b. **Right angle**
c. **Obtuse angle** d. **Straight angle**

56. How many triangles are there in the figure?



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

57. "I have six faces.
All my faces are squares.
Who am I?"

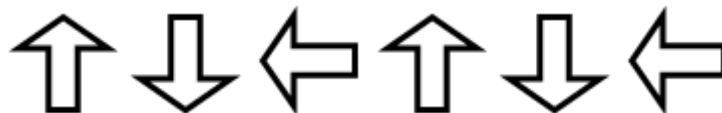
- a. Cube
- b. Cuboid
- c. Cone
- d. Cylinder

58. Which 3D shape does the given object resemble?



- a. Sphere
- b. Cone
- c. Cuboid
- d. Cylinder

59. What will be the next shape in the pattern?



- a. 
- b. 
- c. 
- d. 

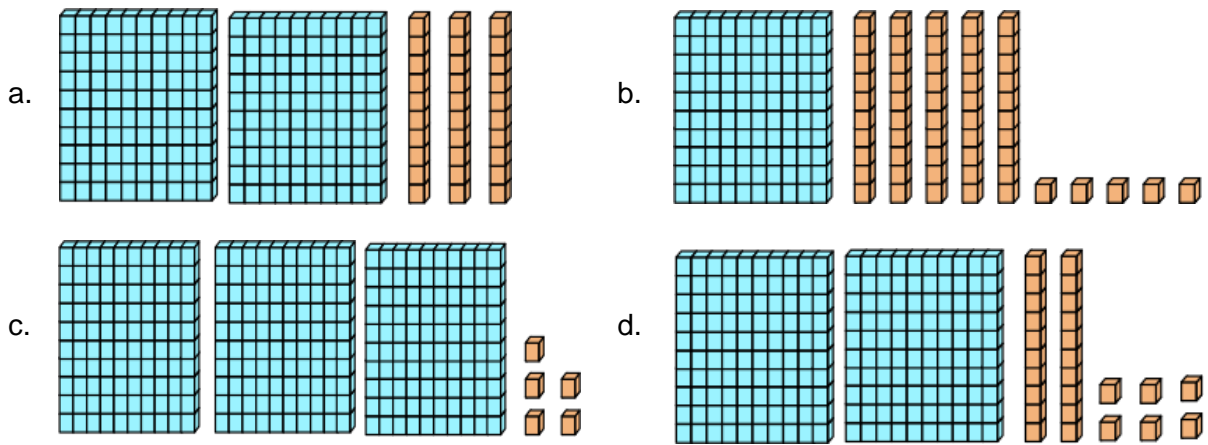
60. What will come in place of question mark in the given pattern?



- a. 
- b. 
- c. 
- d. 

Avance (Each Question is 6 Marks)

61. Which of the following numbers is the greatest?



62. Fill in the blank:

764, _____, _____, 731, 720

a. **753, 736**

b. **753, 742**

c. **750, 742**

d. **749, 750**

63. Fill in the blank:

1, 8, 27, 64, _____

a. **88**

b. **94**

c. **125**

d. **142**

64. Who am I?

- (a) My hundreds place digit is twice my ones place digit.
- (b) My ones place digit is the smallest prime number.
- (c) My tens place digit is 4 more than my ones place digit.

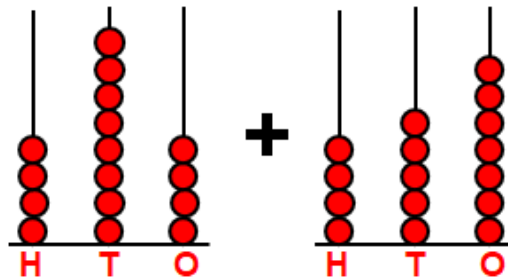
a. **246**

b. **264**

c. **462**

d. **642**

65. What is the sum of the given numbers in the abacuses?



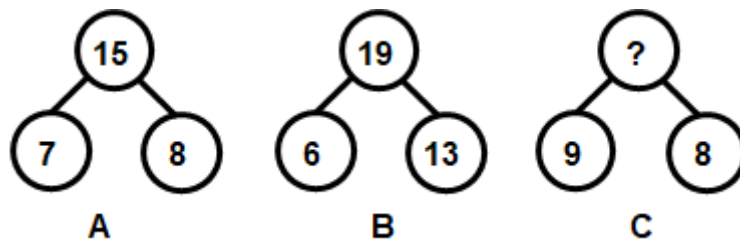
a. **831**

b. **841**

c. **879**

d. **941**

66. Based on number bonds A and B, find the missing number in number bond C?



a. **14**

b. **17**

c. **21**

d. **24**

67. 24 candles are packed into boxes containing 8 candles each. How many boxes were there?

a. **2**

b. **3**

c. **4**

d. **5**

68. A fruit seller packed 238 pineapples equally in 17 boxes. How many pineapples were there in each box?

a. **14**

b. **16**

c. **18**

d. **21**

69. What is the LCM of 12, 18 and 24?

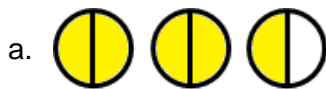
a. **24**

b. **72**

c. **144**

d. **216**

70. Which of the following is $2\frac{3}{4}$?



71. A pizza is made of 12 pieces. Sam and Linda ate 3 pieces each. What fraction of the pizza is remaining?

a. $\frac{1}{4}$

b. $\frac{1}{3}$

c. $\frac{5}{12}$

d. $\frac{1}{2}$

72. Fill in the blank:

$$20045 \text{ g} = \underline{\hspace{1cm}} \text{ kg } \underline{\hspace{1cm}} \text{ g}$$

- a. 2, 45
- b. 20, 45
- c. 20, 405
- d. 20, 450

73. Fill in the blank:

$$15037 \text{ ml} = \underline{\hspace{1cm}} \text{ l } \underline{\hspace{1cm}} \text{ ml}$$

- a. 1,5037
- b. 15, 37
- c. 15, 370
- d. 153, 70

74. A shirt is made from a piece of cloth of length 2 m 56 cm. How much cloth is used to make 5 such shirts?

- a. 11 m 60 cm
- b. 11 m 80 cm
- c. 12 m 60 cm
- d. 12 m 80 cm

75. Based on the given picture, find the capacity of the bottle.



- a. 250 ml
- b. 450 ml
- c. 500 ml
- d. 750 ml

76. How many minutes in 240 seconds?

a. **1**

b. **2**

c. **3**

d. **4**

77. How many quarters make 3 dollars?

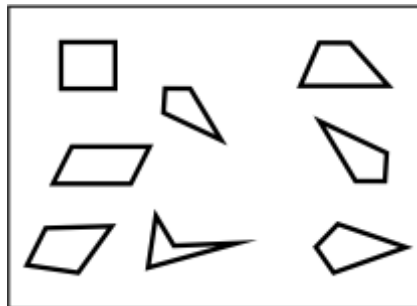
a. **4**

b. **6**

c. **8**

d. **12**

78. How many kites are there in the figure?



a. **2**

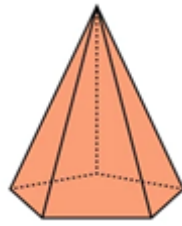
b. **3**

c. **4**

d. **5**

79. Fill in the blank:

The given figure has ___ vertices, ___ edges and ___ faces.



a. **5, 10, 5**

b. **6, 8, 6**

c. **6, 10, 6**

d. **6, 12, 8**

80. Fill in the blank:



a.  

b.  

c.  

d.  

Answer Key

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