MENTAL MATHS COMPETITION 2016

: Organised by :

GLOBAL MATHS SCIENCE EDUCATION®

in association with

Math Vision PTE Ltd., Singapore

MOCK TEST

Name : _____

School : _____ Std. : **9**

Mob.No. : (Mother) _____ (Father) _____

Instructions for the Competition

Total Marks : 200 **Total No of questions: 75**

1. Time : 1½hr
2. Students can use HB Pencil for marking answers in OMR sheet.
3. Questions are arranged according to 3 difficulty level to provide pupils with optimum explosure to Mental Maths.
4. [Section 1] In this section, there are 40 questions help to build calculation skills. Each question carries 2 marks.
5. [Section 2] It is related with 20 questions to test fundamental concept covered in topic listed below. Each question carries 3 marks.
6. [Section 3] Here questions are challanging & required high order thinking skills. Each question carry 4 marks. Students are requested to practice extra question given alongwith the Mock paper. Any 15 questions can be asked from given question format in mock paper & extra practice questions.

Topics Included.

(1) Q. No. 1 to 50 are based on basic. Calculation questions related to Addition, Subtraction, Multiplication and Division, doubling and halving.
(2) Student should know multiplication tables from 2 to 30.
(3) Number pattern. Doubling & Halving.
(4) Mixed operations (BODMAS), Decimal Fraction, Fractions, time
(5) L.C.M & H.C.F., divisibility of 2, 3, 4, 5, 6, 8, 9, 10, 11
(6) Integers (Add, Subtract, Multiply, Divide) Mixed sums
(7) Find day and date in a given calender year.
(8) Calculation of percentage, Average, Ratio, simple equation, discount, profit & Loss percentage, speed distance
(9) Square and Square root from 1 to 50, Cubing a number from 1 to 20 & cuberoots.
(10) Surds, Identities and expansion
(11) Area and perimeter of square and rectangle. Angles of a triangle, circumference of a circle.

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SECTION 1
(Mental Maths Calculation)

1. $\frac{3}{25}$ = _____

(a) 0.102 (b) 0.12

(c) 0.1012 (d) 0.121

2. $125 \times 49 \times 8$ = _____

(a) 4900 (b) 5000

(c) 50000 (d) 49000

3. Average of 35, 37, 39, 41, 43 is _____

(a) 37 (b) 41

(c) 39 (d) 35

4. The L.C.M. of two number is 18. If one of the number is 6 then the other number is _____

(a) 18 (b) 3

(c) 2 (d) 7

5. 1009^2 = _____

(a) 1,081, 081 (b) 1,180,081

(c) 1,051,051 (d) 1,018, 081

6. 996^2 = _____

(a) 992, 016 (b) 982, 016

(c) 976, 016 (d) 991, 016

7. $\sqrt{0.0225}$ = _____

(a) 15 (b) 1.5

(c) 0.15 (d) 0.015

8. The bridge A is 0.486 km and bridge B is 1.28 km long. Find difference between their length.

(a) 0.794 (b) 79.4

(c) 0.749 (d) 0.793

9. $\square$ % of 90 = 63

(a) 30 (b) 40

(c) 60 (d) 70

10. How do you write $\frac{5}{20}$ as percentage.

(a) 5% (b) 50%

(c) 40% (d) 25%

11. What is a cube of 13

(a) 2917 (b) 2297

(c) 2197 (d) 2179

12. $297 + 103 = 40 \times \square$

(a) 10 (b) 20

(c) 15 (d) 12

13. By what length 50.4 km is longer than $47\frac{1}{2}$ km

(a) 2.8 km (b) 2.9 km

(c) 2.7 km (d) 2.6 km

14. Which of these numbers is multiple of 16 & 18 both 48, 126, 90, 144

(a) 48 (b) 126

(c) 90 (d) 144

15. $40 \times 2\frac{3}{4} = \square$

(a) 121 (b) 110

(c) 50 (d) 111

16. $7^3 - 7^2 = \square$

(a) 7 (b) 49

(c) 680 (d) 294

17. The sum of two integers is – 9 is one is 4, find the other.

(a) 13 (b) – 13

(c) 5 (d) – 5

18. If x = 2, y = 3

$(-x)^y + (y)^x = \square$

(a) – 1 (b) 2

(c) 1 (d) – 2

19. Which decimal number is the same as $\frac{3}{4}$

(a) 0.34 (b) 0.51

(c) 0.75 (d) 3.4

20. A man buys a radio for ₹ 600 and sells it at profit of 25%. He sold the radio for _____

(a) ₹ 700 (b) ₹ 750

(c) ₹ 900 (d) ₹1000

21. The sum of 1.8, 16.3 and 72.985 is

(a) 91.85 (b) 9108.5

(c) 91.085 (d) 9.1085

22. 180 km/h = _____ m/s

(a) 10 m/s (b) 50m/s

(c) 200 m/s (d) 500 m/s

23. (–12) + (–3) × (4) × (– 6) =

(a) – 60 (b) – 360

(c) 360 (d) 60

24. 12 : 3 :: x : 1

Value of x is _____

(a) $\frac{1}{4}$ (b) 1

(c) 4 (d) 5

25. When number is reduced by 4 it becomes 80% of itself. Find the number

(a) 20 (b) 30

(c) 40 (d) 50

26. If $\frac{5}{7}$ of 49 + 20% of 130 = x + 49 then x = _____

(a) 10 (b) 12

(c) 16 (d) 18

27. Which number is greater then $\frac{1}{2}$?

(a) 0.7 (b) 0.25

(c) 0.48 (d) 0.299

28. $\frac{5}{10} + \frac{3}{1000} =$ _____

(a) 53 (b) 0.53

(c) 0.530 (d) 0.503

29. $95 - \square = 400$

(a) 305 (b) 205

(c) –205 (d) – 305

30. 4 times of 32 – 6 times of 16

(a) 23 (b) 32

(c) 48 (d) 0

31. $\frac{7}{\sqrt{10} + \sqrt{3}} =$

(a) $(\sqrt{10} + 3)^2$ (b) $7(\sqrt{10} - \sqrt{3})$

(c) $\sqrt{10} - \sqrt{3}$ (d) None

32. If $a + b = 7$, $a^2 + b^2 = 25$ find $a \times b$

(a) 12 (b) 13

(c) 7 (d) 25

33. $\frac{1}{2}$ of 256 – $\frac{1}{3}$ of 96 =

(a) 256 (b) 32

(c) 96 (d) 54

34. In what times will ₹ 72 becomes ₹ 81 at 6¼% p.a.

(a) 1½ years (b) 2½ years

(c) 2 years (d) None

35. $\frac{3}{4} x + 8 = 17$, $x = \square$

(a) – 12 (b) 36

(c) 12 (d) – 36

36. What is a percentage of change from 5,00,000 to 20,000

(a) 122% increase (b) 122% decrease

(c) 96% increase (d) 96% decrease

37. A number 40 is divided into two parts in the ratio 3:2. Find the product of the numbers

(a) 384 (b) 354

(c) 394 (d) 374

38. 12.5% of 96 = 4 × $\square$

(a) 12 (b) 3

(c) 2 (d) 4

39. Area of square is 625 sq.m. Its perimeter is _____

(a) 100 m (b) 125 m

(c) 50 m (d) 25 m

40. Cirumference of circle = πd. Find the circumference when π = 3.14 and d = 5cm

(a) 15.8 cm (b) 15.6 cm

(c) 15.9 cm (d) 15.7 cm

SECTION 2
(Mental Maths Concepts)

41. What is a distance travelled in 15 min at 72 km/hr.

(a) 36 km (b) 18 km

(c) 30 km (d) 19 km

42. Which of these numbers is equivalent to $\frac{9}{8}$

(a) $\frac{45}{32}$ (b) $\frac{45}{40}$

(c) $\frac{40}{45}$ (d) $\frac{32}{45}$

43. 20 tins of sweetcorn are bought for ₹300 and sold at ₹18 per tin. Find profit after selling all the tins.

(a) 20% (b) 30%

(c) 40% (d) 10%

44. A boy's walking pace measures 60 cm. How may meter has he walked after taking 50 paces.

(a) 300 m (b) 30 m

(c) 3 m (d) 30000 cm

45. An angle is one third of its supplement find its measure

(a) 135° (b) 45°

(c) 60° (d) 30°

46. Half of a number is added to 18 then the sum is 46. The number is ☐

(a) 92 (b) 56

(c) 65 (d) 0

47. An article costing ₹ 720 is reduced by $\frac{1}{20}$. For cash payment price is _____

(a) ₹ 36 (b) ₹ 674

(c) ₹ 654 (d) ₹ 684

48. The area of hall is $60m^2$. Its length is 8 m find its perimeter

(a) 31 m (b) 15.5 m

(c) 30 m (d) 15 m

49. Ratio of Radii of two circles is 4:9. Their circumference's ratio is _____

(a) 9:4 (b) 4:9

(c) 8:18 (d) 16:81

50. Two sums of money are in the ratio 2:5, If the second sum is ₹ 95, the first sum is _____

(a) ₹ 28 (b) ₹ 21

(c) ₹ 42 (d) ₹ 38

51. In $\frac{a}{8} + \frac{a}{4} = 6$, the value of a is _____

(a) 122 (b) – 16

(c) 16 (d) 0

52. In a Δ ABC AB + BC = 10 cm BC + CA = 12 cm, CA + AB = 16 cm. The perimeter of Δ ABC is _____

(a) 19 cm (b) 17 cm

(c) 38 cm (d) none

53. A sum of 3 consecutive odd numbers is 201, find the smallest of them

(a) 69 (b) 67

(c) 65 (d) 63

54. $\left(m^{\frac{1}{2}} \times m^{\frac{1}{3}}\right)^6 = m^{\square}$

(a) 5 (b) 6

(c) 12 (d) 18

55. $24 - [10 - \{3 - (1 - 4 - 6)\}] =$

(a) 26 (b) 24

(c) 23 (d) 5

56. Value of X in $\frac{x}{4} + \frac{1}{2} = 4$

(a) 28 (b) – 28

(c) 14 (d) – 14

57. In what time a sum will become double of itself at 20% p.a.

(a) 10 yrs (b) 4 yrs

(c) 5 yrs (d) 20 yrs

58. The three even consecutive integers whose sum is 90. The smallest of them is ___

(a) 26 (b) 24

(c) 38 (d) 28

59. 5 taps can fill a tank in 8 hrs. How much time will be required for 4 tap to fill the tank.

(a) 6 hrs (b) 5 hrs

(c) 10 hrs (d) 12 hrs

60. Find the vertex angle of an isosceles triangle if its base angle is 75°

(a) 50° (b) 30°

(c) 25° (d) 115°

SECTION 3 (Mental Maths Challenge)

61. A students has to secure 35% marks to pass. He got 80 marks and failed by 60 marks. Find the maximum marks.

(a) 100 (b) 200 (c) 300 (d) 400

62. ₹ 4800 are distributed among A, B and C in the ratio of 6:5:4; the difference between the shares of A and C is _____

(a) ₹ 450 (b) ₹580 (c) ₹640 (d) ₹1260

63. $\frac{1}{5}$ of flagpole is black, $\frac{1}{4}$th is white and the remaining 3m is painted yellow. Find the length of flag pole.

(a) $5\frac{5}{11}$ m (b) $\frac{60}{11}$ cm (c) 5 km (d) None

64. There were only two candidates who participated in an election. One contestant got 62% votes and was elected by a margin of 144 votes. The total number of votes were _____

(a) 500 (b) 600 (c) 700 (d) 800

65. 4 is added to a number and the sum is multiplied by 5, If 20 is subtracted from the product and the difference is divided by 8, the result is equal to 10. Find the number.

(a) 16 (b) 12 (c) 8 (d) 20

66. If a : b = 3 : 5 then a – b : a + b =

(a) $\frac{-1}{4}$ (b) $\frac{1}{4}$ (c) – 4 (d) 4

67. The difference between circumference and radius of a circle is 37 m. The circumference of that circle is _____

(a) 7 m (b) 44 m (c) 154 m (d) none of this

68. The difference between the length and breadth of a rectangle is 23 m. If the perimeter is 206m, then the area is _____

(a) 1520 m^2 (b) 2520m^2 (c) 2420 m^2 (d) none of this

69. What is the missing term in the following product

$(2a^3 - 3)\quad(5a^3 - 2) = 10a^6 + \square + 6$

(a) 19 a^3 (b) – 19a^3 (c) 16a^3 (d) – 16a^3

70. Simplify $\sqrt{300} - \sqrt{48} + \sqrt{75} - \sqrt{147}$

(a) $2\sqrt{3}$ (b) $\sqrt{3}$ (c) $4\sqrt{3}$ (d) None of this

71. Simplify $(32)^{\frac{-2}{5}} \div (125)^{\frac{-2}{3}}$

(a) $\frac{4}{25}$ (b) $\frac{25}{4}$ (c) $\frac{3}{5}$ (d) $\frac{8}{5}$

72. Simplified value of

$2\frac{1}{2} + 3\frac{5}{7} \times \frac{3}{13} - \frac{1}{2} \div 4$ is $\square$

(a) $\frac{188}{56}$ (b) $-\frac{181}{56}$ (c) $-3\frac{13}{56}$ (d) $3\frac{13}{56}$

73. 20 years ago, when my parents got married, their average age was 23 years, now the average age of my family consisting of my parent & me only is 35 years. My present age is _____

(a) 17 years (b) 19 years (c) 18 years (d) 16 years

74. A number of apples are distributed among A, B and C in the ratio 5:7:8. If A gets 45 apples, then total number of apples is

(a) 180 (b) 300 (c) 200 (d) none of this

75. A person travelled $\frac{5}{8}$th of the distance by train, $\frac{1}{4}$ th by bus and remaining 15 km by boat. The total distance travelled by him was _____ km.

(a) 90 km (b) 120 km (c) 150 km (d) 180 km

(Extra Practise Question)

1. A fort has enough food for 720 soldiers for 35 days. If after 5 days 120 soldiers left the fort, how long will the food last now?

(a) 36 days (b) 42 days (c) 44 days (d) 32 days

2. A big pipe can fill an aquarium in $\frac{1}{2}$ hr. A small pipe takes $1\frac{3}{4}$ hr to fill the same aquarium. How long will both pipe take to fill the aquarium together.

(a) 25 min (b) $\frac{1}{2}$ hrs (c) $23\frac{1}{3}$ min (d) 40 min

3. When 15 is added to $2\frac{1}{3}$ of a number, the answer is 4 times the number. Find the number.

(a) 7 (b) 8 (c) 9 (d) 10

4. Numbers 60, 50, 42, 35, 5x + 10, 2x – 8, 12, 11, 8, 6 are written in descending order and if their median is 25, then x equal to _____

(a) 10 (b) 12 (c) 14 (d) 16

5. If A:B = 2:3, B:C = 2:1 and C:D = 2: 5 the A:D equal to _____

(a) 2:15 (b) 2:5 (c) 1:5 (d) 8:15

6. The largest box of shoes contains 459 pieces. The next size box contains 153 pieces. They also sell a box with 51 pieces and one smallest box. Based on this pattern, how many pieces are there in the smallest box?

(a) 15 (b) 37 (c) 27 (d) 17

7. A man borrows ₹1000 and agrees to repay with a total interest of ₹ 140 in 12 installments. Each installment being less than the preceding by ₹ 10. What should be his first installment?

(a) ₹ 120 (b) ₹ 140 (c) ₹ 150 (d) ₹180

8. 50 circular plates each of radius 7 cm and thickness $\frac{1}{2}$ cm are placed one above another to form a right circular cylinder. Find total surface area of the cylinder so formed?

(a) 1230 cm^3 (b) 1332 cm^2 (c) 1408 cm^2 (d) 1560 cm^3

9. What should comes in place of the question marks in the following number series.

6, 7, 16, 51, 208, , ☐ , 6276

(a) 1045 (b) 941 (c) 836 (d) 1254

10. In a soccer tournament the average of 8 goals scored in first 5 games was 6.4. The average of his next four games was 6.5. If there were 9 goals scored in the tenth game. What was the overall average?

(a) 7.6 (b) 6.7 (c) 9.2 (d) 4.8

11. If a tyre rotates at 150 revolutions/ min when the truck is travelling at 40 km/hr. What is the circumference of tyre?

(a) 0.0044 km (b) 0.5 km (c) 3.44 km (d) 0.66 km

12. If the numerator of a fraction is increased by 200% and the denominator of the fraction is increased by 150%, the resultant fraction is $\frac{9}{35}$. Find the fraction.

(a) $\frac{3}{10}$ (b) $\frac{2}{5}$ (c) $\frac{3}{14}$ (d) $\frac{2}{17}$

13. In a series 2, 5, 8, 11, ... what will be 15^{th} term.

(a) 41 (b) 42 (c) 43 (d) 44

14. Mania and Sania graduated from university together. Sania has earned half what Mania earned for 5 years. Mania spent 1/3 of money, Sania spent 1/4 every for those 5 years. Sania has ₹ 90000 after 5 years. How much mania has after 5 years.

(a) ₹ 2,40,000 (b) ₹ 16,000 (c) ₹ 215000 (d) ₹ 1,60,000

15. Five glasses of juice be extracted from half a watermelon. If two glasses can hold 400 ml of juice, how many watermelons are needed to make eight liters of juice?

(a) 10 (b) 8 (c) 4 (d) 40

16. Three times a number is 225 more than 50% of the same number. What is this number.

(a) 337.5 (b) 150 (c) 90 (d) 45.5

17. There are 5900 people in a town in the beginning of 2003. Each year, there is 15% increases in the population as new babies are born. At the same times $\frac{1}{20}$ of the population passes away each year. Find the population in the beginning of 2005.

(a) 7080 (b) 6785 (c) 6000 (d) 7139

18. On a farm, there are 40% as many ducks a goats and twice as many cows as ducks. If all the animals have a total of 400 legs, how many ducks ar there on the farm?

(a) 20 (b) 30 (c) 40 (d) 50

19. Ben, Bala and Jack took part in a race. They drove at speeds of 96 km/hr, 1.5 km/min and 1650 m/min. How much faster was the speed of the winner than the person who came third, in km/hr.

(a) 3 km/hr (b) 6 km/hr (c) 9 km/h (d) 12 km/hr

20. The sum of two numbers is 2x. If one number is $\frac{2}{3}$ of the other. Find the value of bigger number.

(a) $\frac{2x}{3}$ (b) $\frac{x}{6}$ (c) $\frac{6x}{5}$ (d) $\frac{5x}{6}$

21. The value of a numerator is 9 less than its denominator. When 5.5 is subtracted from its denominator, the value of fraction becomes $\frac{2}{3}$. What is a original fraction.

(a) $\frac{16}{7}$ (b) $\frac{9}{16}$ (c) $\frac{4}{16}$ (d) $\frac{7}{16}$

22. 840 people attended Global International Maths Competition. 75% of them were students. 70% were Europians students and rest of the students are either indian or chinese.The ratio of number of Indian student to the number of chinese students was 1:2 how many chinese students were there.

(a) 441 (b) 189 (c) 126 (d) 130

23. Mr. Prabhu travels 390 km in 6 hrs. How long will he take to travel 0.65 km.

(a) 3.6 seconds (b) 36 seconds (c) 3.6 minutes (d) 36 minutes

24. A square has an area of 8100 cm^2. If a triangle of base 0.24 m and height 0.34m is cut from it, find the area of remaining part of square.

(a) 6792 cm^2 (b) 6972cm^2 (c) 7296cm^2 (d) 7692cm^2

25. A tin of oil has a mass of 4 kg when it $\frac{3}{4}$ full. It has a mass of 3.25 kg when it is $\frac{3}{5}$ full. Find the mass of the tin.

(a) 500 grm (b) 250 grm (c) 50 grm (d) 5 kg

Answer Sheet

1	b
2	d
3	c
4	a
5	d
6	a
7	c
8	a
9	d
10	d
11	c
12	a
13	b
14	d
15	b
16	d
17	b
18	c
19	c
20	b
21	c
22	b
23	d
24	c
25	a

26	b
27	a
28	d
29	d
30	b
31	c
32	a
33	c
34	c
35	c
36	d
37	a
38	b
39	a
40	d
41	b
42	b
43	a
44	b
45	b
46	b
47	d
48	a
49	b
50	d

51	c
52	a
53	c
54	a
55	a
56	c
57	c
58	d
59	c
60	b
61	d
62	c
63	a
64	b
65	a
66	a
67	b
68	b
69	b
70	c
71	b
72	d
73	b
74	a
75	b

Answers for extra practice questions

1	a
2	c
3	c
4	b
5	d
6	d
7	c
8	c

9	a
10	b
11	a
12	c
13	d
14	d
15	c
16	c

17	d
18	a
19	c
20	c
21	d
22	b
23	b
24	d
25	b

Section 3 (Solution)

61. $\frac{35}{100}\ x = 80 + 60$

$x = 140 \times \frac{100}{35}$

$x = 400$

62. Let A = 6x B = 5x C = 4x

15 x = 4800, x = 320

A – C = 6x – 4x

= 2x

= 2(320) = ₹640

63. Let length of the flagpole = x

$x - \left(\frac{x}{5} + \frac{x}{4}\right) = 3$

$\therefore \frac{11x}{20} = 3 \qquad \therefore x = 5\frac{5}{11}$ units

64. Elected candidate got $\frac{62x}{100}$ votes

other candidate got $\frac{38x}{100}$ votes.

$\therefore \frac{62x - 38x}{100} = 144$

$\therefore x = 600$

65. Let the number be x

$\therefore \frac{(x+4)\times 5 - 20}{8} = 10$

$\therefore 5x + 20 - 20 = 80$

$\therefore x = 16$

66. Let a = 3x , b = 5x

$\therefore \frac{a-b}{a+b} = \frac{3x-5x}{3x+5x} = \frac{-2x}{8x} = -\frac{1}{4}$

67. $2\Pi r - r = 37$

$\therefore r(2\Pi - 1) = 37$

$r = \frac{37}{2\Pi - 1}$

$= \frac{37}{2\times\frac{22}{7} - 1} = \frac{37}{\frac{44}{7} - 1} = 37 \times \frac{7}{37} = 7m$

$\therefore C = 2\ \Pi r$

$= 2 \times \frac{22}{7} \times 7 = 44$ m

68. Let b = x metre $\therefore l = x + 23$

$\Theta \frac{\text{Perimeter}}{2} = l + b \qquad \therefore \frac{206}{2} = x + x + 23$

$\therefore 103 = 2x + 23$

$\therefore x = 40$

Length = 40, breadth = 63, Area = 2520 sqm

69. $(2a^3 - 3)(5a^3 - 2)$

$= 10a^6 - 4a^3 - 15a^3 + 6$

$= 10a^6 - 19a^3 + 6$

70. $\sqrt{300} - \sqrt{48} + \sqrt{75} - \sqrt{149}$

$= \sqrt{100\times 3} - \sqrt{16\times 3} + \sqrt{25\times 3} - \sqrt{49\times 3}$

$= \sqrt{3}\ (10 - 4 + 5 - 7)$

$= 4\sqrt{3}$

71. $(32)^{\frac{-2}{5}} \div (125)^{\frac{-2}{3}}$

$(2)^{5\times\frac{-2}{5}} \div (5)^{3\times\frac{-2}{3}}$

$2^{-2} \div 5^{-2} \qquad = \left(\frac{2}{5}\right)^{-2} = \left(\frac{5}{2}\right)^{2} = \frac{25}{4}$

72. $2\frac{1}{2} + 3\frac{5}{7} \times \frac{3}{13} - \frac{1}{2} \div 4$

$= \frac{5}{2} + \frac{26}{7} \times \frac{3}{13} - \frac{1}{2} \times \frac{1}{4}$

$= \frac{5}{2} + \frac{6}{7} - \frac{1}{8} = \frac{140 + 96 - 14}{56} = \frac{222}{56}$

73. Sum of the age of parent 20 years back =

$23 \times 2 = 46$

Sum of one present age of My parent

= 46 + 20 + 20

= 86 yrs

Let my present agebe x

$\therefore$ Average Presentage = $\frac{86 + x}{3}$

$35 \times 3 = 86 + x$

$\therefore x = 105 - 86$

$x = 19$ yrs

74. let A = 5x, B = 7x , C = 8x

$5x = 45 \quad \therefore x = 9$

$\therefore 5x + 7x + 8x = 20x$

$= 20(9)$

$= 180$

75. Let total distance be x km

$\therefore x - \left(\frac{5x}{8} + \frac{x}{4}\right) = 15$

$\therefore x - \frac{7x}{8} = 15$

$\therefore x = 120$ km

Extra Practice Questions (Solution)

1.

Soliders	Days
720	30
600	x

Inverse variation

$600 \times x = 720 \times 30$

$x = \frac{720 \times 30}{600} = 36$ days

2. Tank filled by big pipe in 1 hr = $\frac{1}{1/2} = 2$

Tank filled by small pipe in 1 hr = $\frac{1}{7/4} = \frac{4}{7}$

Tank filled by both pipes together = $2 + \frac{4}{7} = \frac{18}{7}$

Time required by both pipes = $\frac{1}{18/7} = \frac{7}{18}$ hr

$= \frac{7}{18} \times 60 = 23\ \frac{1}{3}$

3. Let the number be x

$\frac{7}{3}x + 15 = 4x$

$4x - \frac{7x}{3} = 15$

$5x = 45$

$x = 9$

4. $\frac{2x + 10 + 2x - 8}{2} = 25$

$4x + 2 = 50$

$4x = 48$

$x = 12$

5.

A : B = 2:3 (×2)	A:C = 4:3 (×2)
B: C = 2:1 (×3)	C:D = 2:5 (×3)
A : B = 4:6	Θ A:C = 8: 6
B : C = 6:3	Θ C:D = 6:15
$\therefore$ A :C = 4:3	Θ A:D = 8: 15

6. $459 = 17 \times 3^3$

$153 = 17 \times 3^2$

$51 = 17 \times 3^1$

$\therefore$ Smallest box will contain = $17 \times 3^\circ = 17 \times 1 = 17$ shoes

7. P =1000, Interest = 140 A = 1000 + 140 = 1140

let the first installment be x.

$\therefore x + x - 10 + x - 20 + x - 30 + \ldots\ldots + x - 110 = 1140$

(x + x + ...12 times) – (10 + 20 + 30 + ... + 110) = 1140

$12x - 660 = 1140$

$12x = 1140 + 660$

$12x = 1800$

$x = \frac{1800}{12} = 150$

8. r = 7 cm, height of cylinder = $50 \times \frac{1}{2} = 25$ cm

T.S.A. of cylinder = $2 \Pi r (r + h)$

$= 2 \times \frac{22}{7} \times 7 (7 + 25)$

$= 44 \times 32$

$= 1408 \text{ cm}^2$

9. $\underline{6 \times 1 + 1 = 7}$, $\underline{7 \times 2 + 2 = 16}$, $\underline{16 \times 3 + 3 = 51}$

$51 \times 4 + 4 = 208$

$\therefore 208 \times 5 + 5 = 1045$

10. $\frac{(6.4 \times 5) + (6.5 \times 4) + 9}{10} = \frac{67}{10} = 6.7$

11. No. of revolutions in 1 hr = $150 \times 60 = 9000$

distance travelled in 1 hr = 40 km = 40000 m

distance travelled in 1 revolution = $\frac{40}{9}$

$\therefore$ circumference = $\frac{40}{9}$ m = 4.44 km

$\frac{4.44}{1000} = 0.044 \text{ km} = 0.0044 \text{ km}$

12. let the original fraction be $\frac{x}{y}$

$$\frac{x + \frac{200}{100} \times x}{y + \frac{150}{100} \times y} = \frac{9}{35}$$

$$\frac{x + 2x}{y + 1.5y} = \frac{9}{35}$$

$$\frac{3x}{2.5y} = \frac{9}{35}$$

$$\frac{x}{y} = \frac{9}{35} \times \frac{2.5}{3}$$

$$\frac{x}{y} = \frac{9}{35} \times \frac{25}{30}$$

$$\frac{x}{y} = \frac{3}{14}$$

13. To get 4th term apply 3n – 1

$\therefore 15^{th}$ term n = 15

$\therefore 3(15) - 1 = 45 - 1 = 44$

14. Let Sania earn ₹ × every year

$\therefore$ She spend $\left(\frac{1}{4} \times x\right)$

She Saves $\left(\frac{3}{4} x\right)$

$\therefore$ In 5 years she saved 5 = 90000

$\therefore x = 24000$

Mania earns = $24000 \times 2 = 48000$ per month

in 5 years Mania earn = $5 \times 48000 = 2,40,000$

Spent by Maria = $\frac{1}{3} \times 24000 = 80000$

Remaining amount = 1,60,000

15. 8 l = 8000 ml

1 glass = 200 ml

8000 ml of juice can fill = 40 glasses.

Glasses	Watermelon
5	$\frac{1}{2}$
40	?

No of watermelons = $40 \times \frac{1}{2} \div 5$

Ans = 4

16. Let the no. be x

$3x - 0.5 x = 225$

$2.5 x = 225$

$\therefore \quad x = \frac{225 \times 10}{25} = 90$

17. Increase = 15% decrease = $\frac{1}{2} \times 100 = 5\%$

Actual population increase = (15 – 5)% = 10%

$\therefore$ Population in the beginning of year 2004

= 5900 + 590 = 6490

$\therefore$ Population in the beginning of year 2005

= 6490 + 649 = 7139

18. Let No. of Goat = x

No of ducks = $\frac{40}{100} \times x = \frac{2}{5}x$

No of cows = $2 \times \frac{2x}{5} = \frac{4x}{5}$

Total no. of legs = $4(x) + 2\left(\frac{2x}{5}\right) + 4\left(\frac{4x}{5}\right)$

$400 = \frac{4x + 4x + 16x}{5}$

$400 = \frac{40x}{5}$

$\therefore \quad x = 50$

$\therefore$ No. of duck = 20

19. Ben's speed = 96 km/hr

Balia's speed = (1.5 × 60) km/hr

Jack's speed = (1.650 × 60) km/hr

= 99 km/hr

$\therefore$The difference = 99 – 90 = 9 km/hr

20. $y + \frac{2}{3}y = 2x$

$\frac{5y}{3} = 2x$

$y = 2x \times \frac{3}{5}$

$y = \frac{6x}{5}$

21. Let original fraction be $\frac{x-9}{x}$.

$\frac{x-9}{x-5.5} = \frac{2}{3}$ | $2x = 32$

$\frac{2x-18}{2x-11} = \frac{2}{3}$ | $x = 16$

$6x - 54 = 4x - 22$ | $\therefore$ Original fraction is $\frac{7}{16}$

22. No. of students = $\frac{75}{100} \times 840 = 630$

No. of Europen students = $\frac{70}{100} \times 630 = 441$

Remaining students = 630 – 441 = 189

No. Chinese students = $\frac{2}{3} \times 189 = 126$

23. Speed = 390 = 65 km/hr | 0.65 km = 650 m

$= \frac{65 \times 1000}{3600}$ m/s | time = $\frac{\frac{650}{325}}{18}$

$= \frac{325}{18}$ | $= \frac{650 \times 18}{325}$

= 36 second

24. Area of triangle = $\frac{1}{2} \times 24 \times 34$

= 408 cm²

Remaining area = 8100 – 408 = 7692 cm²

25. Let weight of tin be x kg
Let weight of oil tin can accommodate by y kg.

$\frac{3}{4}y + x = 4$

$\frac{3}{5}y + x = 3.25$

$\frac{3y}{20} = 0.75$

$y = \frac{0.75 \times 20}{3}$

y = 5.

$\therefore$ x = 0.25 kg = 250 gm.

MENTAL MATHS COMPETITION 2016®

Date : _____

Name of Student in Full (IN CAPITAL LETTERS) :-

_____
Name

_____
Father's Name

_____
Surname

School Name _____

Mobile No. _____

Std. _____ Centre _____

INSTRUCTIONS

1. Use HB Pencil only on this sheet
2. Darken the ovals fully.
3. Erase completely to change responses.
4. Do not make any stray mark on this sheet.

Incorrect way of shading

Ⓐ Ⓑ Ⓒ Ⓓ

Ⓐ Ⓑ Ⓒ Ⓓ

Ⓐ Ⓑ Ⓒ Ⓓ

Correct way of shading

Ⓐ Ⓑ Ⓒ Ⓓ

For Office Use Only				
Section			Mark	Marks Scored
1			x 2	
2			x 3	
3			x 4	
Total				

Remark :

ANSWERS

Section - I

1.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	21.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
2.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	22.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
3.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	23.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
4.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	24.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
5.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	25.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
6.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	26.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
7.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	27.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
8.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	28.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
9.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	29.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
10.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	30.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
11.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	31.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
12.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	32.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
13.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	33.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
14.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	34.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
15.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	35.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
16.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	36.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
17.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	37.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
18.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	38.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
19.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	39.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
20.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	40.	Ⓐ	Ⓑ	Ⓒ	Ⓓ

Section - II

41.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	61.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
42.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	62.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
43.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	63.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
44.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	64.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
45.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	65.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
46.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	66.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
47.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	67.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
48.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	68.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
49.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	69.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
50.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	70.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
51.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	71.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
52.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	72.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
53.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	73.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
54.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	74.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
55.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	75.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
56.	Ⓐ	Ⓑ	Ⓒ	Ⓓ					
57.	Ⓐ	Ⓑ	Ⓒ	Ⓓ					
58.	Ⓐ	Ⓑ	Ⓒ	Ⓓ					
59.	Ⓐ	Ⓑ	Ⓒ	Ⓓ					
60.	Ⓐ	Ⓑ	Ⓒ	Ⓓ					

Section - III

MENTAL MATHS COMPETITION 2016