MENTAL ABILITY

1. In the digits in the number 25673948 are arranged in ascending order from left to right, what will be the sum of the digits which are fourth from the right and third from the left in the new arrangement?

(1) 10 (2) 9

(3) 4 (4) 6

2. The clinic of a doctor faces the West. From the backside of his clinic, he walks straight 100 metres then turn to the left and walks 100 metres again. Finally, he turns towards right and stops after walking 50 metres. Now in which direction is doctor from the starting point?

(1) South-West

(2) North-East

(3) South-East

(4) North-West

3. If BJP is coded as DMK, how can RSS be written in that code?

(1) CPI

(2) TVN

(3) SJP

(4) TDP

4. Find out the wrong term in the given series.

24, 27, 31, 33, 36

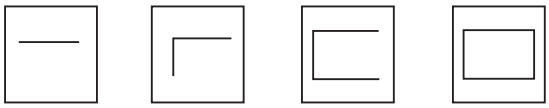
(1) 24

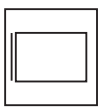
(2) 27

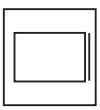
(3) 31

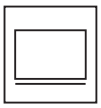
(4) 33

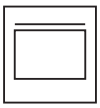
5. In the given patterns find the next one:



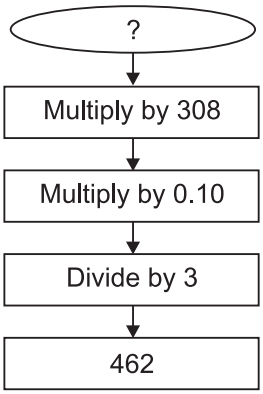
(1) 

(2) 

(3) 

(4) 

6. What is the number you started with?



(1) 5

(2) 45

(3) 56

(4) 25

7. A man is facing north-west. He turns 90° in the clockwise direction and then 135° in the anti-clockwise direction. Which direction is he facing now?

(1) East

(2) West

(3) North

(4) South

8. If X φ Y means X is the wife of Y, X $ Y means X is the son of Y and X ψ Y means X is sister of Y, which of the following would mean that is the daughter of B?

(1) A$C ψD

(2) Aϕ C$DψB

(3) AψCϕD$B

(4) AψC$DϕB

9. Find the next in the series 5, 2, 17, 4, (?), 6, 47, 8, 65

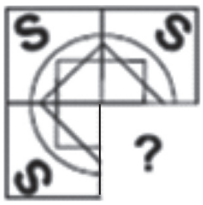
(1) 29

(2) 30

(3) 31

(4) 32

10. Select a figure from the four options, which when placed in the blank space of the figure (X) would complete the pattern.



(1) 

(2) 

(3) 

(4) 

MATHEMATICS

11. 200 kg of a sugar was purchased at the rate of ₹ 15 per kg and sold at a profit of 5%. Compute the selling price per kg.

(1) ₹ 18.25

(2) ₹ 13.85

(3) ₹ 15.75

(4) ₹ 31.5

12. Find the average of the middle two rational numbers when $\left(\frac{1}{2}\right), \left(\frac{-9}{5}\right), \left(\frac{-2}{15}\right), \left(\frac{-8}{30}\right)$ are arranged in ascending order.

(1) $\left(\frac{-29}{15}\right)$

(2) $\left(\frac{-6}{15}\right)$

(3) $\left(\frac{-8}{15}\right)$

(4) $\left(\frac{-31}{15}\right)$

13. Four fifth of a number is more than three fourth of the number by 4. Find the number.

(1) 90

(2) 75

(3) 80

(4) 65

14. Arjun is twice as old as Shriya. Five years ago his age was three times Shriya's age. Find their present ages.

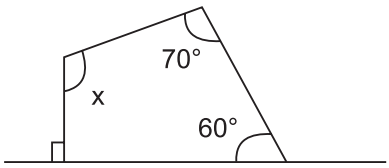
(1) 20

(2) 25

(3) 30

(4) 35

15. Find the angle measure x in the following figure.



(1) 120°

(2) 130°

(3) 140°

(4) 150°

16. The relation between F, V and E are represented by Euler's formula as follows:

(1) F – V + E = 0

(2) F + E + V = 1

(3) F + V – E = 2

(4) F – V + E = 2

17. $(1.02)^2 - (0.98)^2$ are equal to:

(1) 0.04

(2) 0.08

(3) 0.8

(4) 2

18. Which of the following numbers are not perfect cubes?

(1) 216

(2) 128

(3) 1000

(4) 46656

19. Arun bought a pair of skates at a sale where the discount given was 20%. If the amount he pays is ₹ 1600, find the marked price.

(1) 2000

(2) 2500

(3) 1500

(4) 3000

20. What is the value of x in the given equation?

$(3x - 8)(3x + 2) - (4x - 11)(2x + 1) = (x - 3)(x + 7)$

(1) 2

(2) 4

(3) 3

(4) 5

21. The lateral surface area of a hollow cylinder is 4224 cm^2. It is cut along its height and formed a rectangular sheet of width 33 cm. Find the perimeter of the rectangle sheet.

(1) 311 cm

(2) 402 cm

(3) 352 cm

(4) 322 cm

22. The value of $(5^\circ + 7^{-1})*7$ are:

(1) 35

(2) 36

(3) 8

(4) 84

23. If the weight of 12 sheets of thick paper is 40 grams, how many sheets of the same paper would weigh $2\left(\frac{1}{2}\right)$ kilograms?

(1) 750

(2) 775

(3) 800

(4) 720

24. Factorise: $3 - 12(a - b)^2$

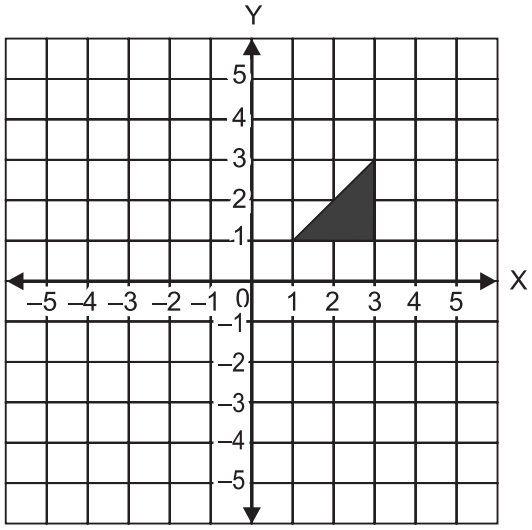
(1) $3(1 + 2a + 2b)(1 - 2a + 2b)$

(2) $3(1 - 2a - 2b)(1 + 2a - 2b)$

(3) $3(1 + 2a - 2b)(1 - 2a + 2b)$

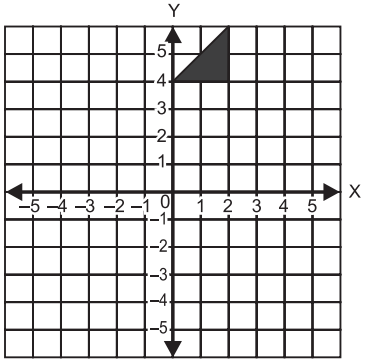
(4) $3(1 - 2a - 2b)(1 - 2a - 2b)$

25. The figure shows a triangle on a coordinate plane.

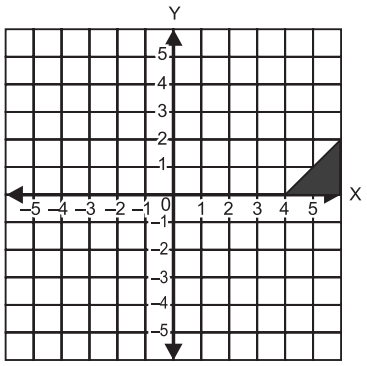


Which of the following shows the triangle translated 3 units to the right and 1 unit down?

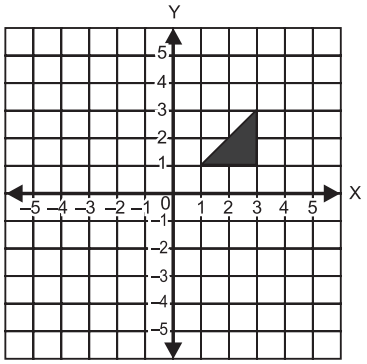
(1)



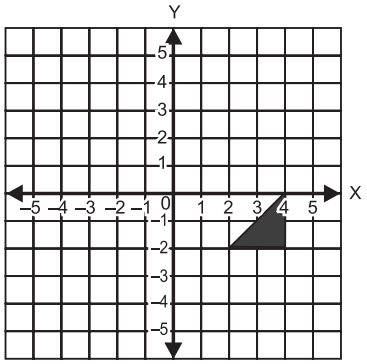
(2)



(3)



(4)



26. The sum of two numbers is 12 and their product is 35. What is the sum of the reciprocals of these numbers?

(1) 12/35 (2) 1/35

(3) 35/8 (4) 7/32.

(Q.27-28): Study the following table carefully to answer the following questions:

Marks Obtained by Five Students in Three Subjects out of 100			
Student	Subjects		
	Math	Science	English
Mohit	94	83	74
Sameer	72	88	68
Rachna	86	75	66
Purab	90	61	82
Mansi	68	67	71

27. What are the average marks obtained by all students in Maths?

(1) 137 (2) 82

(3) 75 (4) 98

28. What is the respective ratio of marks obtained by Mansi in Science and English together to the marks obtained by Rachna in the same subjects?

(1) 17:18

(2) 11:13

(3) 46:47

(4) 21:23

29. If $\frac{p}{q} = \frac{m}{n}$ then which of the following is always true?

(1) $p \times n = m \times q$ (2) $\frac{p}{q} = \frac{m}{n}$

(3) $\frac{n}{m} = \frac{p}{q}$ (4) $p \times m = nxq$.

30. The length of a rectangle exceeds its breadth by 4 cm. If the length and the breadth of each is increased by 3 cm, the area of the new rectangle will be 81 cm^2 more than that of the rectangle. Find the length of the given rectangle.

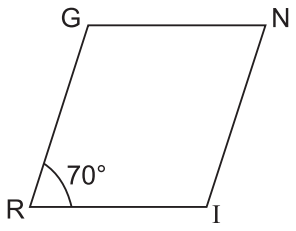
(1) 12

(2) 10

(3) 16

(4) 14

31. In a Parallelogram RING, if $\angle GRI = 70°$, find angle $\angle RGN$.



(1) 110° (2) 120°

(3) 70° (4) 90°

32. If any object has 20 faces, 12 vertices then find the value of edges by using Euler's formula.

(1) 26

(2) 10

(3) 30

(4) 32

33. The value of is $\sqrt{10+\sqrt{25+\sqrt{108+\sqrt{154+\sqrt{225}}}}}$ is _____ .

(1) 4

(2) 6

(3) 8

(4) 10

34. Find the smallest number by which 192 should be divided to obtain perfect cube:

(1) 2

(2) 3

(3) 4

(4) 6

35. Soha purchased an item for ₹ 9,600 and sold it for loss of 5 percent. From that money she purchased another item and sold it for a gain of 5 percent. What is her overall gain/loss?

(1) Loss of ₹ 36

(2) Profit of ₹ 24

(3) Loss of ₹ 24

(4) None of these

36. Find $\frac{-4}{5}\times\frac{3}{7}\times\frac{15}{16}\times\left(-\frac{14}{9}\right)$

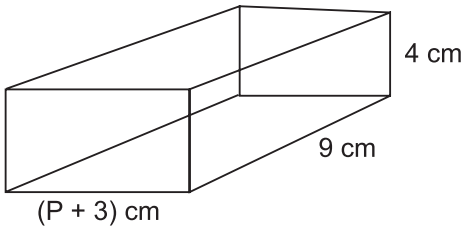
(1) –1/2

(2) –1

(3) 1

(4) 1/2.

37. The given figure shows a cuboid with a total surface area of 202 cm^2. Find the volume of cuboid



(1) 72 cm^3

(2) 36 cm^3

(3) 180 cm^3

(4) 200 cm^3

38. Find the value of m so that: $3^{m+1} \times 3^5 = 3^7$

(1) 1

(2) 2

(3) 4

(4) 3

39. The ages of Mira, Tina and Sania are in the ratio 6:4:7 respectively. If the sum of their ages is 34 years. What is Sania's age?

(1) 12 years (2) 10 years

(3) 18 years (4) 14 years

40. Evaluate $(326541829)^2 - (326541833) \times (326541825)$

(1) 4

(2) 326541819

(3) 32651838

(4) 16

INTERACTIVE SECTION

41. What is the shape of the graph of the following data:

Sides of square (in cm)	2	3	4	5	6
Area (in cm^2)	4	9	16	25	36

(1) linear with a slope of 2

(2) parabola

(3) horizontal

(4) hyperbola

42. Consider the following statements.

If a money is loaned at the simple interest then the:

(i) Money gets doubled in 5 years if the rate of interest is $16\left(\frac{2}{3}\right)\%$

(ii) Money gets doubled in 5 years if the rate of interest is 20 %

(iii) Money gets four times in 10 years if it gets doubled in 5 years.

(1) (i) and (ii) are correct.

(2) (iii) alone is correct.

(3) (ii) alone is correct.

(4) None of these.

43. How many cars were sold in first quarter of the year?

(1) 60

(2) 90

(3) 50

(4) 105

44. Which of the following expressions shows that rational numbers are associative under multiplication?

(1) $\frac{2}{3}\times\left(\frac{-6}{7}\times\frac{3}{5}\right)=\left(\frac{2}{3}\times\frac{-6}{7}\right)\times\frac{3}{5}$

(2) $\frac{2}{3}\times\left(\frac{-6}{7}\times\frac{3}{5}\right)=\left(\frac{-6}{7}\times\frac{2}{3}\right)\times\frac{3}{5}$

(3) $\frac{2}{3}\times\left(\frac{-6}{7}\times\frac{3}{5}\right)=\left(\frac{3}{5}\times\frac{2}{3}\right)\times\frac{-6}{7}$

(4) $\left(\frac{2}{3}\times\frac{-6}{7}\right)\times\frac{3}{5}=\left(\frac{-6}{7}\times\frac{2}{3}\right)\times\frac{3}{5}$

45. I saved ₹ 5 on buying coconuts on sale. If I spent ₹ 20 on the coconuts, what is the percentage I saved?

(1) 10%

(2) 25%

(3) 20%

(4) 15%

46. Captain Ram has two pieces of rope. One piece of rope is 56 metres and the other is 98 meters. He plans to cut the rope into pieces of equal length, with none leftover. What is the greatest possible length of each piece?

(1) 7 meters (2) 21 meters

(3) 14 meters (4) 28 meters

47. The area of a rhombus is 240 cm^2 and one of the diagonal is 30 cm. Find the other diagonal.

(1) 15 cm (2) 20 cm

(3) 18 cm (4) 16 cm

48. Smallest angle of a triangle is equal to two-third the smallest angle of a quadrilateral. The ratio of the angles of quadrilateral is 3:4:5:6. Largest angle of the triangle is twice its smallest angle. What is the sum of second largest angle of the triangle and the largest angle of quadrilateral?

(1) 160°

(2) 180°

(3) 140°

(4) 170°

49. How many numbers between 77 and 177 are divisible by 8?

(1) 11 (2) 13

(3) 14 (4) 12

50. The sum of 11 consecutive integer numbers is 11. What is the largest number?

(1) 11 (2) 5

(3) 10 (4) 6

51. Anna is a member of a Greenland Velo's race team. This summer, she won only 6 out of 16 races. How many races she now win in a row to achieve a winning record of exactly 50% ?

(1) 10 (2) 8

(3) 6 (4) 4

52. Jaya is building birdhouses. It takes her 5(1/2) hours to build 4 build 4 birdhouses. Which of the following is an equivalent rate?

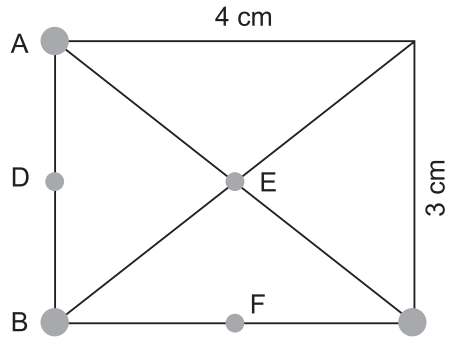
(1) 14 hours to build 18 birdhouses

(2) 28 hours to build 35 birdhouses

(3) 11 hours to build 8 birdhouses

(4) 22 hours to build 28 birdhouses

53. Three boys A, B, C, are at the corners of the rectangular field as shown.

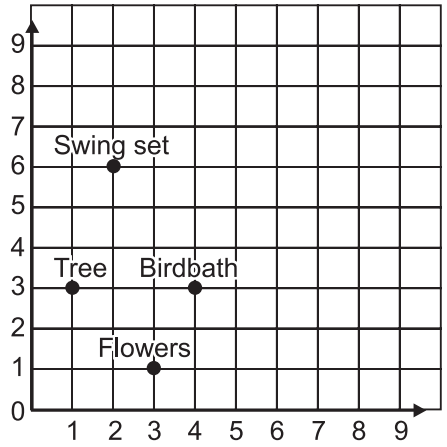


At which point should the boys meet so that the sum of the distances they walk to the point is minimized?

(1) F (2) D

(3) E (4) B

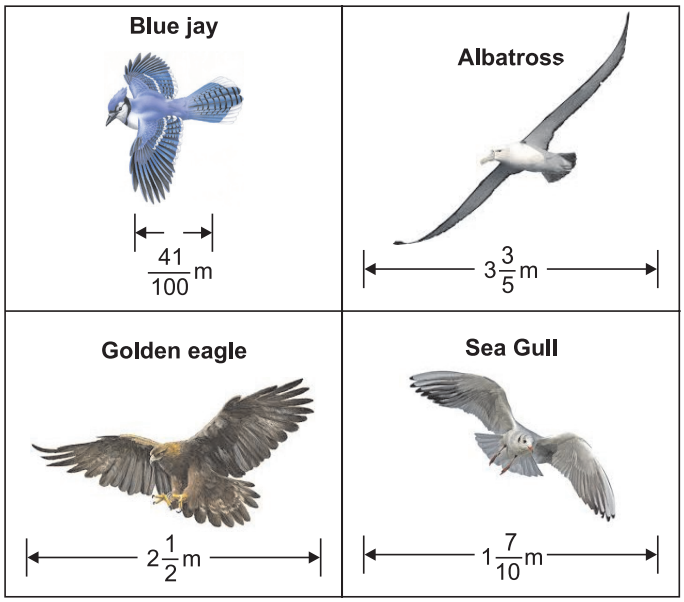
54. Jitu made the given grid to show some locations in his garden. Which ordered pair best represents the point on the grid labelled "Birdbath"?



(1) (2,6) (2) (3,4)

(3) (1,3) (4) (4,3)

55. The diagram shows the wingspan of different species of birds.



How much longer is the wingspan of an Albatross than the wingspan of a Sea gull?

(1) $1\left(\frac{3}{10}\right)$

(2) $1\left(\frac{7}{10}\right)$

(3) $1\left(\frac{9}{10}\right)$

(4) $1\left(\frac{3}{5}\right)$

56. Construction work commenced on both sides of a 450 meter tunnel. If a boring machine cuts through at a rate of 4 meters per day and another machine cuts through at 5 meters per day, what is the difference between the distances made by the two machines?

(1) 50 meters

(2) 40 meters

(3) 45 meters

(4) 55 meters

57. If six people can stand on a square meter of carpet, how many of them can stand in an elevator cab that is 2.1 meters by 1.2 meters and 2.2 meters high?

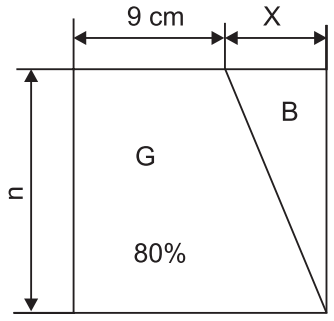
(1) 12

(2) 20

(3) 18

(4) 15

58. The G area "G" is 80% of the entire area of the rectangle. Find x



(1) 5 cm

(2) 9 cm

(3) 7 cm

(4) 6 cm

59. At a business meeting, each shakes hands with 7 other people. If there are 56 handshakes, how many people are there?

(1) 24

(2) 8

(3) 32

(4) 16

60. Fifty percent of a town's households have children and 20% have pets. If 10% have both, what percent have neither?

(1) 50%

(2) 40%

(3) 30%

(4) 20%

END OF THE EXAM