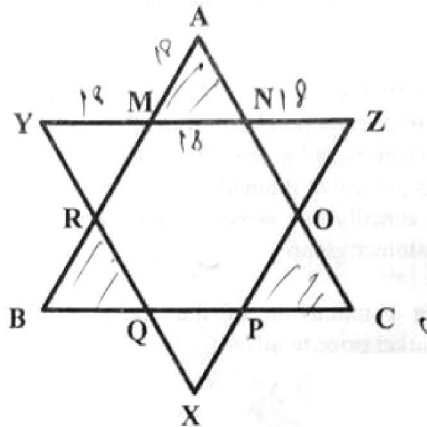


XAT PAPER: (03-01-2016)

Quantitative Ability and Data Interpretation

50. $\triangle ABC$ and $\triangle XYZ$ are equilateral triangles of 54 cm sides. All smaller triangles like $\triangle ANM$, $\triangle OCP$, $\triangle QPX$ etc. are also equilateral triangles. Find the area of the shape MNOPQRM.



TCYonline

51. Akhtar plans to cover a rectangular floor of dimensions 9.5 meters and 11.5 meters using tiles. Two types of square shaped tiles are available in the market. A tile with side 1 meter costs ₹100 and a tile with side 0.5 meters costs ₹30. The tiles can be cut if required. What will be the minimum cost of covering the entire floor with tiles? TCYonline.com

- A. 243√3 sq. cm.
- B. 486√3 sq. cm.
- C. 729√3 sq. cm.
- D. 4374√3 sq. cm.
- E. None of the above

52. Anita, Biplove, Cheryl, Danish, Emily and Feroze compared their marks among themselves. Anita scored the highest marks, Biplove scored more than Danish. Cheryl scored more than at least two others and Emily had not scored the lowest.

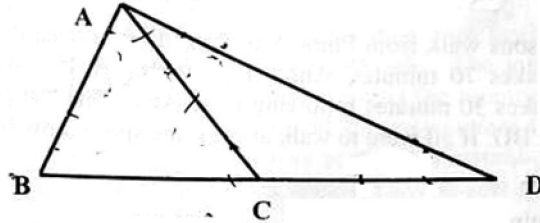
Statement I: Exactly two members scored less than Cheryl.
Statement II: Emily and Feroze scored the same marks.

Which of the following statements would be sufficient to identify the one with the lowest marks?

- A. Statement I only.
- B. Statement II only.
- C. Both Statement I and Statement II are required together

- D. Neither Statement I nor Statement II is sufficient.
 E. Either Statement I or Statement II is sufficient.

53. In the figure below, $AB = AC = CD$. If $\angle ADB = 20^\circ$, what is the value of $\angle BAD$?



- A. 40°
 B. 60°
 C. 70°
 D. 120°
 E. 140°

54. In an amusement park along with the entry pass a visitor gets two of the three available rides (A, B and C) free. On a particular day 77 opted for ride A, 55 opted for B and 50 opted for C; 25 visitors opted for both A and C, 22 opted for both A and B, while no visitor opted for both B and C. 40 visitors did not opt for ride A or B, or both. How many visited with the entry pass on that day?

- A. 102
 B. 115
 C. 130
 D. 135
 E. 150

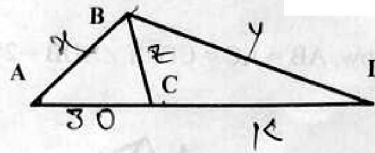
55. Rani bought more apples than oranges. She sells apples at ₹23 apiece and makes 15% profit. She sells oranges at ₹10 apiece and makes 25% profit. If she gets ₹653 after selling all the apples and oranges, find her profit percentage.

- A. 16.8%
 B. 17.4%
 C. 17.9%
 D. 18.5%
 E. 19.1%

56. Consider the set of numbers $\{1, 3, 3^2, 3^3, \dots, 3^{100}\}$. The ratio of the last number and the sum of the remaining numbers is closest to

- A. 1
 B. 2
 C. 3
 D. 50
 E. 99

57. Study the figure below and answer the question:



Four persons walk from Point A to Point D following different routes. The one following ABCD takes 70 minutes. Another person takes 45 minutes following ABD. The third person takes 30 minutes following route ACD. The last person takes 65 minutes following route ACBD. If all were to walk at the same speed, how long will it take to go from point B to point C?

- A. 10 min.
- B. 20 min.
- C. 30 min.
- D. 40 min.
- E. Cannot be answered as the angles are unknown.

58.

Each day on Planet M is 10 hours, each hour 60 minutes and each minute 40 seconds. The inhabitants of Planet M use 10 hour analog clock with an hour hand, a minute hand and a second hand. If one such clock shows 3 hours 42 minutes and 20 seconds in a mirror what will be the time in Planet M exactly after 5 minutes? TCYonline.com

- A. 6 hours 18 minutes 20 seconds
- B. 6 hours 22 minutes 20 seconds
- C. 6 hours 23 minutes 20 seconds
- D. 7 hours 17 minutes 20 seconds
- E. 7 hours 23 minutes 20 seconds

59.

a, b, c are integers. $|a| \neq |b| \neq |c|$ and $-10 \leq a, b, c \leq 10$. What will be the maximum possible value of $[abc - (a+b+c)]$?

- A. 524
- B. 693
- C. 731
- D. 970
- E. None of the above

60.

Two numbers in the base system B are 2061_B and 601_B . The sum of these two numbers in decimal system is 432. Find the value of 1010_B in decimal system.

- A. 110
- B. 120
- C. 130
- D. 140
- E. 150

61.

A water tank has M inlet pipes and N outlet pipes. An inlet pipe can fill the tank in 8 hours while an outlet pipe can empty the full tank in 12 hours. If all pipes are left open simultaneously, it takes 6 hours to fill the empty tank. What is the relationship between M and N? TCYonline.com

- A. M: N = 1:1
- B. M: N = 2:1
- C. M: N = 2:3
- D. M: N = 3:2
- E. None of the above

62.

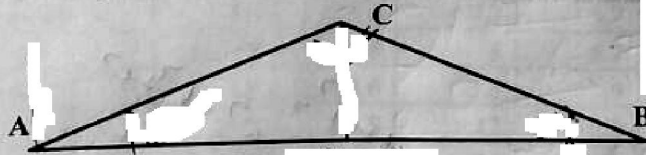
Company ABC starts an educational program in collaboration with Institute XYZ. As per the agreement, ABC and XYZ will share profit in 60:40 ratio. The initial investment of ₹100,000 on infrastructure is borne entirely by ABC whereas the running cost of ₹400 per student is borne by XYZ. If each student pays ₹2000 for the program find the minimum number of students required to make the program profitable, assuming ABC wants to recover its investment in the very first year and the program has no seat limits. TCYonline.com

- A. 63
- B. 84
- C. 105
- D. 157
- E. 167

63. f is a function for which $f(1)=1$ and $f(x) = 2x + f(x-1)$ for each natural number $x \geq 2$. Find $f(31)$.

- A. 869
- B. 929
- C. 951
- D. 991
- E. None of the above

64. A person standing on the ground at point A saw an object at point B on the ground at a distance of 600 meters. The object started flying towards him at an angle of 30° with the ground. The person saw the object for the second time at point C flying at 30° angle with him. At point C, the object changed direction and continued flying upwards. The person saw the object for the third time when the object was directly above him. The object was flying at a constant speed of 10 kmph. TCYonline.com



Find the angle at which the object was flying after the person saw it for the second time. You may use additional statement(s) if required.

Statement I: After changing direction the object took 3 more minutes than it had taken before.

Statement II: After changing direction the object travelled an additional $200\sqrt{3}$ meters.

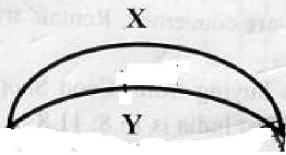
Which of the following is the correct option?

- A. Statement I alone is sufficient to find the angle but statement II is not.
- B. Statement II alone is sufficient to find the angle but statement I is not.
- C. Statement I and Statement II are consistent with each other.

- D. Statement I and Statement II are inconsistent with each other.
 E. Neither Statement I nor Statement II is sufficient to find the angle.
65. For two positive integers a and b , if $(a+b)^{(a+b)}$ is divisible by 500, then the least possible value of $a \times b$ is:
- A. 8
 B. 9
 C. $\frac{10}{12}$
 D. $\frac{10}{12}$
 E. None of the above
66. Pradeep could either walk or drive to office. The time taken to walk to the office is 8 times the driving time. One day, his wife took the car making him walk to office. After walking 1 km, he reached a temple when his wife called to say that he can now take the car. Pradeep figured that continuing to walk to the office will take as long as walking back home and then driving to the office. Calculate the distance between the temple and the office. TCYonline.com
- A. 1
 B. $\frac{7}{3}$
 C. $\frac{9}{7}$
 D. $\frac{16}{7}$
 E. $\frac{16}{9}$
67. A square piece of paper is folded three times along its diagonal to get an isosceles triangle whose equal sides are 10 cm. What is the area of the unfolded original piece of paper?
- A. 400 sq. cm.
 B. 800 sq. cm.
 C. $800\sqrt{2}$ sq. cm.
 D. 1600 sq. cm.
 E. Insufficient data to answer
68. The difference between the area of the circumscribed circle and the area of the inscribed circle of an equilateral triangle is 2156 sq. cm. What is the area of the equilateral triangle?
- A. $686\sqrt{3}$
 B. 1000
 C. $961\sqrt{2}$
 D. $650\sqrt{3}$
 E. None of the above
69. If a , b and c are 3 consecutive integers between -10 to $+10$ (both inclusive), how many integer values are possible for the expression $\frac{a^3 + b^3 + c^3 + 3abc}{(a+b+c)^2}$? TCYonline.com
- A. 0
 B. 1
 C. 2
 D. 3
 E. 4

70. ABCD is a quadrilateral such that $AD = 9$ cm, $BC = 13$ cm and $\angle DAB = \angle BCD = 90^\circ$. P and Q are two points on AB and CD respectively, such that $DQ:BP = 1:2$ and DQ is an integer. How many values can DQ take, for which the maximum possible area of the quadrilateral PBQD is 150 sq. cm? TCYonline.com
- A. 14
 B. 12
 C. 10
 D. 9
 E. 8

71. In the figure below, two circular curves create 60° and 90° angles with their respective centres. If the length of the bottom curve Y is 10π , find the length of the other curve.



- A. $15\pi/\sqrt{2}$
 B. $20\pi\sqrt{2}/3$
 C. $60\pi/\sqrt{2}$
 D. $20\pi/3$
 E. 15π

Study the data given in the table below and answer the questions 72-74 that follow:

Shop Type	Region	North	East	West	South	All India
Grocers		34.7	32	32.2	30.2	32.4
Pan Bidi		7.1	21.2	13.1	19.1	14.6
Food Shops		11.8	7.9	14.8	12	11.6
General stores		12.4	9.1	12	6.6	10.1
Electrical Hardware		8.3	5.6	7.7	5.7	6.7
Chemists		6	5.8	5	5.7	5.7
Cosmetic Stores		3.8	3.6	3.3	3.9	3.7
Others		15.8	14.8	12	16.8	15.2
Total		100	100	100	100	100

All figures are in percentage

Based on a survey of 'shop types' Kamath categorized Indian states into four geographical regions as shown in the table above. His boss felt that the categorization was inadequate since important labels were missing. Kamath argued that no further labels are required to interpret the data. TCYonline.com

72. A consultant observing the data made the following two inferences:

Inference I: The number of Grocers per-thousand-population is the highest in North India.
Inference II: The number of Cosmetic per-thousand-population is the highest in South India.

Which of following options is DEFINITELY correct?

- A. Inference I alone is correct.
- B. Inference II alone is correct.
- C. Either of the inferences is correct.
- D. Neither of the inferences is correct.
- E. Inference I will be correct only if inference II is correct.

73. The average size of Food Shops in East India was twice that of Food Shops in West India. Which of the following cannot be inferred from the above data?

- A. As far as 'Food Shops' are concerned, customers in East India prefer spatial surroundings compared to customers in the West India.
- B. As far as 'Food Shops' are concerned, Rentals are very high in West India compared to East India.
- C. The ratio of customers buying from 'Food Shops' in East India to customers buying from 'Food Shops' in West India is 15.8: 11.8.
- D. There are 740 'Food Shops' in West India.
- E. There are 240 'Food Shops' in South India.

74. Bala collected the same data five years after Kamath, using the same categorization. His data is presented below:

	North	East	West	South	All India
Grocers	30	32	32.2	40	32.4
Pan Bidi	7.1	25	13.1	19.1	14.6
Food Shops	4	7.9	14.9	12	11.6
General stores	12.4	9.1	12	7	10.1
Electrical Hardware	15	5.8	7.6	5.7	6.7
Chemists	7	5.8	5	5.7	5.7
Cosmetic Stores	3.9	3.6	3.2	3.9	3.7
Others	20.6	10.8	12	6.6	15.2
Total	100	100	100	100	100

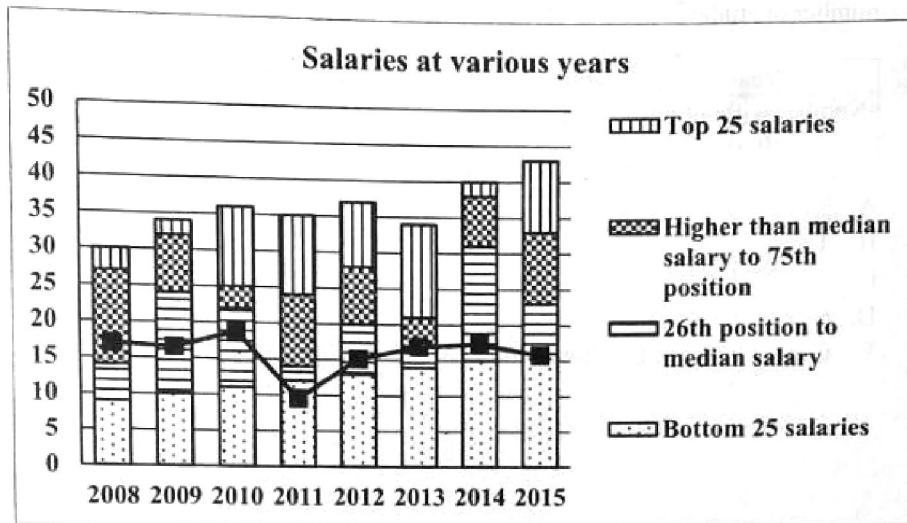
Which of the following statements can DEFINITELY be concluded?

- A. In the last four years the number of Electrical hardware shop types has increased in North India.
- B. In the last four years the number of Grocers shop types has increased in South India.
- C. For the last four years in All India the number of Chemists shop types has remained constant.
- D. In the four years in East India the number of 'others' shop type has decreased.
- E. As per the new survey conducted Pan Bidi shops in East India are next only to Grocers.

Study the graph below and answer the questions 75 – 78 that follows:

This graph depicts the last eight years annual salaries (in Rs. lacs) offered to students during campus placement. Every year 100 students go through placement process. However, at least one of them fails to get placed. The salaries of all unplaced students are marked zero.

and represented in the graph.



The bold line in the graph presents Mean salaries at various years.

75. In which year were a maximum number of students offered salaries between ₹20 to ₹30 lacs (both inclusive)? TCYonline.com

- A. 2008
 B. 2009
 C. 2010
 D. 2012
 E. Cannot be determined

76. Identify the years in which the annual median salary is higher by at least 60% than the average salary of the preceding year?

- A. 2009, 2010
 B. 2012, 2014
 C. 2009, 2010, 2012
 D. 2009, 2012, 2014
 E. 2009, 2010, 2012, 2014

77. Identify the number of years in which the difference between the average salaries of the top 25% and the bottom 25% is more than ₹20 lacs: TCYonline.com

- A. 0
 B. 1
 C. 2
 D. 3
 E. 4

78. If the average salary is computed excluding students with no offers, in how many years will

the new average salary be greater than the existing median salary? Refer the table below for number of students without offers. TCYonline.com

Year	2008	2009	2010	2011	2012	2013	2014	2015
Number without job offers	9	5	20	2	2	4	15	2

- A. 3
 B. 4
 C. 5
 D. 6
 E. Cannot be solved without additional information.

TCYonline