

Mathematical Aptitude

Number System

Skill Based Questions

Q.1. Multiple choice questions:

Directions: Read the following questions and choose the answer that best answers the questions.

1. $(12ABC7)^x$ ends in 1. The remainder, if D 121 is divided by x (if A, B, C, D and x are all single digit distinct positive integers) is
(a) 0 (b) 1 (c) 0 or 1 (d) Data insufficient
2. The last digit of 2137 753 is
(a) 9 (b) 7 (c) 3 (d) 1

Q.2. Subjective questions:

1. The value of IBM stock went down $2\frac{3}{8}$ points on July 30. On July 31 and August 1 it went up $\frac{3}{8}$ of a point each day. Find the net change in IBM stock over this three-day period.

Ans.
.....
.....

2. A boy multiplied 423 by a certain number and obtained 655 89 as his answer. If both the fives are wrong, but the other figures are right, find the correct answer.

Ans.
.....
.....

3. Dinesh counted all the young monkeys in his jungle. When Dinesh finished counting, he gave these clues: *There were more than 25. *There were fewer than 40. *I said the number when I counted by fives. *didn't say the number when I counted by tens. How many young monkeys did Dinesh count?

Ans.
.....
.....

4. Mrs. Chauhan has a new way of giving homework problems. If the date is divisible by 2, she gives 2 problems.
If the date is divisible by 3, she gives 3 problems. If the date is divisible by 5, she gives 5 problems. Otherwise she doesn't give any problems on that day. On the 6th of the June, she gave 5 problems, since 6 is divisible by both 2 and 3. How many problems did she assign on the 10th? On which dates would there be no problems assigned?

Ans.
.....
.....

5. Manish gets on the elevator in a very tall building. Manish is carrying five pizzas. He goes up to the 8th floor, gets off the elevator; and delivers a pizza. He gets back on the elevator; goes down 4 floors, and delivers another pizza. He gets back on the elevator; goes up 11 floors, and delivers another pizza. He gets back on the elevator and goes up 5 floors to the top floor of the building. He delivers his last 2 pizzas on that floor. How many floors are there in the very tall building?

Ans.
.....
.....

6. The number 907 is prime: it has no factors other than itself and 1. To prove that 907 is prime, you must check to see that it is not divisible by any prime number, beginning with 2, 3, 5, and so on. The question is, how far do you need to go before you can conclude that 907 is in fact prime?

Ans.
.....
.....

7. The equations below are already true, provided you understand the languages involved. The first one, in Roman numerals, means $51 + 51 = 102$. The second one, in Spanish, means that $2 + 2 + 3 = 7$. By replacing each letter with a number, can you make the resulting numerical equations also true? The standard rules are as follows: (1) Once a number is substituted for a letter it must stand for each appearance of that letter, (2) different letters must be assigned different numbers, and (3) none of the leftmost digits are zero.

$$\begin{array}{r}
 \text{LI} \\
 +\text{LI} \\
 \hline
 \text{CII} \\
 \text{DOS} \\
 \text{DOS} \\
 +\text{TRES} \\
 \hline
 \text{SIETE}
 \end{array}$$

Ans.

.....

.....

8. Four men have to cross a deep river at night. There is a bridge across the river, but it is old and rickety and can only support the weight of two men at a time. They have one flashlight to use among them, and since they need the light to see their way across, if two men cross at the same time, they must travel at the speed of the slower man. The fastest man of the group takes one minute to cross the bridge, the next fastest two minutes, the third fastest takes five minutes, and the slowest man takes 10 minutes to cross the bridge.

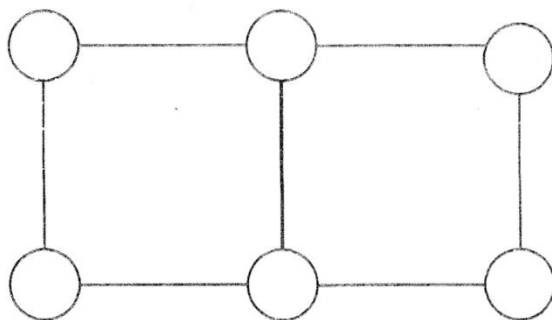
What is the shortest amount of time in which all four men can get across the river? Don't forget that the men need the flashlight to see their way across, so someone must bring the flashlight back if there's anyone left to cross the bridge.

Ans.

.....

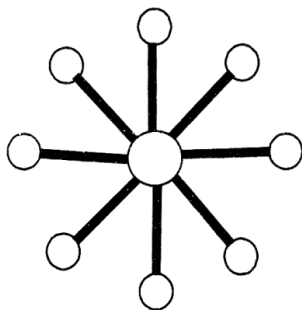
.....

9. The diagram you see consists of seven line segments and six circles. Place the numbers 1 through 13 on either a line or a circle in such a way that the number on each segment is the difference of the two numbers at its endpoints. There is more than one possible solution.



Ans.

10. Place the numbers 1 through 9 in the nine circles of the merry-go-round below in such a way that the sum of any three circles on the same line is the same and is a multiple of 4. What number goes in the center circle?



Ans.

11. Solve the following equation by substituting a digit (0, 1, 2, 3, 4, 5, 6, 7, 8, or 9) for each letter. As with all problems of this type, different letters must be given different digits. The three J's must be represented by the same digit. There is more than one possible solution.

$$\begin{array}{r} ABC \\ DEF \\ + GHI \\ \hline JJJ \end{array}$$

Ans.

.....

.....

12. In the local tennis tournament, the champion is to be determined from among 100 competitors by elimination. As soon as one of the competitors loses a match, he joins the ranks of the spectators. How many matches are needed in order to determine the winner?

Ans.

.....

.....

13. Due to a mistake in the manuscript of a math's textbook, some numbers have become illegible. The printer is under pressure and doesn't have time to check with the author or the publisher. Rahman, the printer's assistant, who is a whiz at math's will be able to fill in the blanks from the information on hand. How would he do it?

$$(1) \quad \begin{array}{r} 1** \\ ** \overline{) 4***} \\ \underline{28} \\ *56 \\ *** \\ *** \\ *** \\ \hline 0 \end{array}$$

$$(2) \quad \begin{array}{r} *** \\ ** \overline{) *****} \\ \underline{86} \\ * ** \\ 86 \\ *** \\ \underline{387} \\ 0 \end{array}$$

Ans.

.....

.....

- 14.** At the right is a magic square, which contains a clever and surprising combination of numbers. Fill in the empty squares and discover its secret.

	4	8	
2			14
1		6	
12	7	11	0

Ans.

- 15.** In the division problem below, only the middle number of the quotient is known. The asterisks represent unknown numbers, but you'll be able to reconstruct the problem easily, because you can see how many numerals there are: the dividend has eight; the divisor has three; and the quotient has five digits; which are obtained after only three steps. Find the unknown numbers.

Ans.

- 16.** On Monday, four students Jessica, John, Robin and Farah bought a gift for Nalini that cost Rs 2000. They shared the cost of the gift equally on Tuesday, Raman asked to join group. They agreed to share the cost of the gift five ways, instead of four. How much must Raman give each of the four students?

Ans.

- 17.** $\square \div \square + \square + \square \square \div \square = \square \square$

Fill from the 9 numbers: 1, 2, 3, 4, 5, 6, 7, 8, 9 into the boxes to make the equation correct. Put all the odd numbers on the left and even numbers on the right.

Ans.

- 18.** $10 + 10 + 10 = 30$, The expression shows the easiest way to get a target number, such as 30, from using a same number 3 times in an equation. Can you use a number 3 times to make a target number 20? The number you choose must be less than 11. You can use any mathematical operator as you want. You should be able to make 3 equations.

Ans.

Q.3. Passage based questions:

Directions: Use the given information to answer the following questions.

A professor keeps data on students tabulated by performance and sex of the student. The data is kept on a computer disk, but unfortunately some of it is lost because of a virus. Only the following could be recovered.

	Average		Performance Good	Excellent	Total
Male				10	
Female					32
Total			30		

Panic buttons were pressed but to no avail. An expert committee was formed, which decided that the following facts were self-evident: Half the students were either excellent or good. 40% of the students were females. One third of the male students were average.

- (i) How many students are both female and excellent?
 (a) 0 (b) 8 (c) 16 (d) 32
- (ii) What proportion of good students are male?
 (a) 0 (b) 73 (c) 0.4 (d) 1.0
- (iii) What proportion of female students are good?
 (a) 0 (b) 0.25 (c) 0.5 (d) 1.0

(iv) How many students are both male and good?

(a) 10

(b) 16

(c) 22

(d) 48

(v) Among average students, what is the ratio of male of female?

(a) 1 : 2

(b) 2 : 1

(c) 3 : 2

(d) 2 : 3