

## GMAT IR Practice Paper 12

Brown University is one of the most famous Engineering colleges in the U.S. Mr. James is the head of the Electronics Department and Mr. John is the head of the Computer Science Department.

The Electronics Department has 100 students and the Computer Science Department has 90 students in the final semester. The final semester students have to work in batches under their respective project heads. Mr. James has to decide the optimum batch size for the Electronics students and similarly Mr. John has to decide the optimum batch size for the Computer Science students.

Both Mr. James and Mr. John want to look at all the possible batch sizes before deciding the optimum batch size.

**1.** Find the possible number of different batches for the final semester Electronics students if it is known that the number of students in each batch is the same, none of the batches has less than 10 students and also all the students are included.

- A. 2
- B. 3
- C. 4
- D. 5
- E. None of these

**2.** Find the possible number of different batches for the final semester Computer Science students if it is known that the number of students in each batch is the same, none of the batches has less than 10 students and also all the students are included.

- A. 3
- B. 4

C. 5

D. 6

E. None of these

Now, Jr. James and Mr. John decide to have the same batch-size for both Electronics and Computer Science Departments.

**3.** Out of all the possible batch sizes that they have worked out for their Electronics and Computer Science department respectively, which maximum batch-size should they prefer?

A. 40, 60

B. 50, 45

C. 45, 50

D. 30, 30

E. None of these

The Semester starts from day 1 and lasts for 150 days including Sundays and Public Holidays. Computer Science students have laboratory classes on every 3rd day and Electronics students have laboratory classes on every 4th day. Apart from these departments, correspondence students also have to use the laboratory on every 5th day.

While preparing the schedule for the laboratory classes, James and John realize that there will be certain days when all three batches (Electronics, Computer Science & Correspondence) will be having laboratory classes. In order to avoid a clash, they decide that on such days the students from Electronics and Computer Science Departments will submit a 'project update' to the respective Head of Departments. Therefore on those specific days the correspondence students will be using the laboratory.

**4.** On which days would the Electronics and Computer science students respectively submit their project updates to their respective H.O.D.'s?

- A. 50, 37
- B. 37, 50
- C. 60, 90
- D. 90, 120
- E. None of these

In the Hogwarts School of Witchcraft and Wizardry, Professor Remus Lupin teaches Defence against Dark arts to the students of Grade 3 class. During the lectures, the students have to practice combats in groups. The professor decides the groups according to the efficiency of the students in combat. As the lectures proceed, Lupin assigns each student a number called "Lupin-number". Lupin himself has a Lupin number of zero. Any student who has participated in a combat with Lupin gets a Lupin number of 1. For other students in the class, a calculation of their Lupin number is illustrated below :

Suppose a student 'Y' has participated in combat with several other students. Suppose that among them, student 'X' has the smallest Lupin-number, say 'x'. Then the Lupin number of 'A' is 'x + 1'. Hence, any student with no combat chain connected to Lupin has a Lupin number of infinity. For the annual wizardry event, Lupin selected a group of eight third grade students, viz A, B, C, D, E, F, G and H. At the beginning of the event, A was the only participant who had an infinite Lupin number. Nobody had a Lupin number less than that of F.

- On the first day of the event, F participated in a combat jointly with A and C. This reduced the average Lupin number of the group of eight students to 3. The Lupin numbers of B, D, E, G and H remained unchanged with this combat. Further, no combat among any three members would have reduced the average Lupin number of the group of eight to as low as 3.

- At the end of the first day, five members of this group had identical Lupin numbers while the other three had Lupin numbers distinct from each other.
- On the second day, E participated in a combat with F. This reduced the group's average by 0.5. The Lupin numbers of the remaining six students were unchanged with this combat.
- No other combat took place during the event.

**5.** If Harry has participated in a combat with Lupin, what will be his Lupin number?

- A. 1
- B. 2
- C. 3
- D. 4
- E. 5

**6.** If Ron has participated in a combat with Harry but not with Lupin, what will be his Lupin number?

- A. 4
- B. 2
- C. 6
- D. 8
- E. 1

**7.** If Neville has never participated in a combat, what will be his Lupin number?

- A. 8
- B. 5
- C. 11
- D. 13
- E. 17

**8.** The Lupin number of 'A' is more than that of 'B', 'C' and 'F' before the event.

- A. True
- B. False
- C. Neither A nor B
- D. Cannot be determined
- E. None of these

**9.** What is the sum of the Lupin numbers of the eight students at the end of the first day of the event?

- A. 24
- B. 26
- C. 28
- D. 30
- E. None of these

**10.** What is the average of the Lupin numbers of the eight students at the end of the second day of the event?

- A. 2
- B. 2.5

- C. 3.5
- D. 4
- E. None of these

**11.** If F's Lupin number is  $x$ , then:

A's Lupin number at the end of first day =

- A.  $x + 1$
- B.  $x - 1$
- C.  $2x + 1$
- D.  $2x - 1$
- E. None of these

**12.** If F's Lupin number is  $x$ , then:

C's Lupin number at the end of the first day =

- A.  $x + 1$
- B.  $x - 1$
- C.  $2x + 1$
- D.  $2x - 1$
- E. None of these

**13.** If F's Lupin number is  $x$ , then:

E's Lupin number at the end of second day =

- A.  $x + 1$
- B.  $x - 1$

- C.  $2x + 1$
- D.  $2x - 1$
- E. None of these

**14.** If F's Lupin number is  $x$ , then:

Decrease in E's Lupin number on the second day =

- A. 4
- B. 5
- C. 6
- D. 8
- E. None of these

**15.** If F's Lupin number is  $x$ , then :

E's Lupin number at the end of first day =

- A.  $x + 3$
- B.  $x + 5$
- C.  $5x + 1$
- D.  $5x - 1$
- E. None of these

**16.** The Lupin number of C at the end of the event was:

- A. 1
- B. 2
- C. 3

D. 4

E. 5

**17.** How many students (amongst the eight) had the same Lupin number at the beginning of the event?

A. 2

B. 3

C. 4

D. 5

E. Cannot be determined

**18.** The Lupin number of E at the beginning of the event was :

A. 2

B. 5

C. 6

D. 7

E. 8

**19.** How many students did not change their Lupin number during the event?

A. 2

B. 3

C. 4

D. 5

E. Cannot be determined

**20.** The student having the largest Lupin number at the end of the event must have had Lupin number (at that time):

- A. 5
- B. 7
- C. 9
- D. 14
- E. 15