ANSWERS TO PUZZLE OF JANUARY 2024 ISSUE

1.The average marks obtained by 125 students in an exam is 29. If the average marks of passed students is 36 and that of failed students is 11. Find the number of failed students.

Let the number of the passed students = x
Then the number of the failed students = 125 – x
Now the total of the marks obtained by 125 students = 125 × 29 = 3625
The total of the marks obtained by passed students = 36x
The total of the marks obtained by failed students = 11(125 – x)
Then, 3625 = 36x + 11(125 – x)
$\Rightarrow$ x = 90
Therefore, number of failed students = 125 – 90= 35

2. Ramsin's camera was loaded with a new roll of film. The film can take 36 snaps. During the class picnic, he took 20 pictures. What fraction of the roll can still be used to take snaps?

Required fraction = (36 – 20)/36 = 16/36 = 4/9

3. At intervals of 2, 4, 6, 8, 10, and 12 seconds, six bells start tolling simultaneously. How many times do they ring in unison in a 30-minute period?

A least common multiple of (2, 4, 6, 8, 10 and 12) = 23 × 3 × 5 = 120 sec
Bells ring together after every 120 sec.
Required number of times in 30 minutes (30 × 60 seconds) = [(30 × 60)/120] = 15
But we have to add 1 because at the start all bells will be rung once a time after that they ring 15 times.
$\Rightarrow$ 15 + 1 = 16 times

4. What is the greatest number which divides 639, 1065 and 1491 exactly?

HCF of (639, 1065, 1491) = 213.
Hence, the required greatest number is 213.

5. How many whole numbers from 1 to 999 contain the digit "1"?

If we consider the numbers from 1 to 99, then there are 19 whole numbers that contain at least one "1":
1, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 31, 41, 51, 61, 71, 81, 91
Hence, there will be 19 numbers that contain at least one "1" for each of
201 – 299,
301 – 399,
401 – 499, …
901 – 999
Also, there are 100 numbers from 100 – 199 that contain at least one "1".
Thus, the total is 19 × 9 +100 = 271.

6.The digit 3 occurs exactly 160 times in the page numbers of a book. What is the last page number that contains the digit 3?

3 occurs between 30 & 39 - 11 times.
From 1 to 29 - 3 times & 40 to 99 - 6 times.
So, 3 occurs 20 times in 100.
UP to 299 - 3 occurs: 60 times
3 occurs 11 times each from 300 to 309, and from 310 to 319 and from 320 to 329.
So up to 329, 3 occurs 93 times.
From 330 – 339, 3 occurs 20 times
From 340 – 349, 3 occurs 11 times
From 350 – 359, 3 occurs 11 times
From 360 – 369, 3 occurs 11 times
From 370 – 379, 3 occurs 11 times
380, 381, 382
So up to page 382, the occurrence of 3 is 160 times.
So, number of pages is 382.

7. If we write whole numbers starting from 1 to form a 500-digit number N as follows: N = 12345678910111213 …, what is the last digit of N?

Digits from 1 to 9 = 9
Digits from 10 to 99 = 180
Digits from 100 to 202 = 309
So, total 498. Now 2 digits are only remaining.
So, 500-digit number must be 0 of the number 203.

8. If the day before yesterday was Sunday, what day will it be after 999 days?

Today is Tuesday.
After 994 days, it will be again Tuesdays
After 994 + 5 days, means 5 days after Tuesday it will be Sunday.

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9. Running at the same rate, 4 identical printers can print 100 papers in a minute. At this rate, how many printers could print 450 papers in 3 minutes?

Let the required number of printers be n.

$1 \times 100 \times n = 3 \times 450 \times 4$

$\Rightarrow n = 54$

10. The average of 5 numbers is 111. After another number is added, the average of the 6 numbers became 121. What is the 6th number?

Sum of 5 numbers = 5 × 111 = 555

Sum of 6 numbers = 6 × 121 = 726

6th number = 726 – 555 = 171

Math puzzle will be available to solve online shortly on the website