

MathTime

January 26, 2007

1. Is there always an even number among four consecutive natural numbers? A number divisible by 3? By 4? By 5?
2. The sum of two numbers is even. Is their product odd or even? What if there were three numbers?
3. Is it possible that a number consisting of 4's, such as $44\dots 4$, would be divisible by a number consisting of 3's? Is it possible that a number consisting of 3's would be divisible by a number consisting of 4's?
4. A room has several three-legged stools and several four-legged chairs. After people sat down everywhere, there were 39 legs total. How many stools and chairs are there in the room?
5. John always boasted about his ability to multiply numbers in his head. Once Jane asked him to write down a number and multiply out its digits. "1210" John yelled out immediately. "No, you are incorrect" said Jane after thinking for a moment. How did she know it without seeing the number?
6. There are blue, red and green pencils in a box. The total number of pencils is 20. There are 6 times more blue pencils than green ones. There are less red pencils than blue ones. How many red pencils are there in the box?
7. Prof. Tester gives a series of quizzes and calculates the average score for each student. After finishing the last quiz, John understood that if he receives 97 points on it, his average will be 90, while if he receives only 73, his average will be 87. How many quizzes does Prof. Tester give?
8. Find all numbers whose remainder after division by 7 is equal to the quotient.
9. Ralph, Rick, and Ron regularly went to the movies. Ralph went every third day, Rick – every other day, and Ron – every fifth. Today all of them met at the theater. When will they all meet there next time?

10. Among the kids at a playground, there are as many girls wearing a hat as there are boys not wearing a hat. Are there more girls or kids without a hat?
11. Two classes with equal numbers of students in each had a test. After grading the papers, the strict teacher announced that there were 13 more F's than all other grades combined. Could this be possible?
12. Is the number $10^{2007} + 8$ divisible by 9?
13. Compute quickly the sum of all numbers in the table.

7	8	2	6	9	5	4	7	6	9	2	6	2	1	3
3	2	8	4	6	5	6	3	4	1	8	4	8	9	7
6	4	7	5	8	7	3	8	1	8	7	1	5	6	7
4	6	3	5	2	3	7	2	9	2	3	9	5	4	3
1	4	9	2	4	6	9	2	9	6	8	9	5	9	5
9	6	1	8	6	4	1	8	1	4	2	1	5	1	5

14. Write the number 203 as a sum of several numbers whose product is also 203.
15. A number m was divided by 13 and by 15. The quotients were equal, while the remainder of the first division was 8 and the remainder of the second one was zero. Find m .
16. Write the same digit to the left and the right of the number 10 so that the obtained 4-digit number would be divisible by 12.
17. Complete the magic squares.

16			
		11	
9			12
4			

15			
		16	
14			7
1			

18. Fill in empty cells of the magic hexagon with numbers $1, \dots, 19$ so that all sums of numbers in each vertical and in each diagonal are equal.

