mathleague.org

Elementary School Team Test 11021

Problems 1-10

Team Name: _____
School: _____
Team Members: (Captain)_____
_____
_____
_____

SCORE: _____

Scorer's Initials: _____ Scorer's Initials: _____

DO NOT BEGIN UNTIL YOU ARE INSTRUCTED TO DO SO

This round of the competition consists of 10 problems, which the team has 20 minutes to complete. Team members may work together in any way to solve the problems. Team members may talk during this section of the competition. This round allows the use of calculators, and calculations may also be done on scratch paper, but no other aids are allowed. All answers must be complete, legible, and simplified to lowest terms. The team captain must record answers on her/his own problem sheet. If the team completes the problems before time is called, use the remaining time to check your answers.

Scoring: Ten points will be awarded for each correct answer. No deduction is taken for incorrect answers or skipped problems.

1. Charlotte wrote down all the odd numbers between 1 and 200. How many times did the digit 3 appear in Charlotte's list? 1. _____

2. N is the 5-digit number 7A65B in which A and B are digits, and N is divisible by 36. What is the smallest number N can be? 2. _____

3. What is the value of the sum of the first 100 natural numbers (1 + 2 + 3 + 4 + ... + 100) minus the sum of the next 100 natural numbers (101 + 102 + 103 + 104 + ... + 200)? 3. _____

4. In October, Tocher convinced his parents to give him his allowance under a new system. Each day, they would give him double the amount they gave him the day before. So, on October 1 his parents gave him 1 cent. On October 2, they gave him 2 cents. On October 3, they gave him 4 cents. On October 4, they gave him 8 cents. This continued until the morning of October 12, when Tocher's parents realized that Tocher was very smart and had set up a great allowance system. How much total allowance had Tocher's parents given him from October 1 through October 11? 4. _____

5. Ingrid opens her book and notices that the sum of numbers of the two pages facing her is 489. What is the number of the very next page? 5. _____

6. A natural number X is greater than 10. When X is divided by 3, the remainder is 1. When X is divided by 4, the remainder is 1. When X is divided by 5, the remainder is 1. When X is divided by 6, the remainder is 1. When X is divided by 7, the remainder is 1. What is the smallest possible value of X? 6. _____

7. The cold water faucet of a bathtub can fill the tub in 12 minutes. The drain of the bathtub, when opened, can empty the full tub in 15 minutes. Suppose the tub is empty, the drain is open, and the cold water faucet is turned on. How long, in minutes, does it take to fill the bathtub?

7. _____

8. In the numbers ABCD and EFGH, different letters represent different digits, and neither of the digits A or E can be zero. If EFGH is subtracted from ABCD, what is the largest possible result?

8. _____

9. Arjun made a purchase for D dollars and C cents, and gave the cashier a $20 bill. The cashier incorrectly charged Arjun C dollars and D cents, and returned $6.85 in change. If the cashier had charged Arjun the correct price, what would the correct change have been?

9. _____

10. Jemaine and Bret have each taken 5 math contests. The score on each math contest was a whole number. Jemaine's average score on the five contests is 81.2, and Bret's average score is 86.8. If Bret scores 74 on the sixth math contest, what is the smallest possible score Jemaine can get on the sixth math contest so that he has a higher average score on the first six math contests than Bret?

10. _____