

# MBMT Number Theory Round — Abel

March 8, 2026

Full Name \_\_\_\_\_

Student ID Number \_\_\_\_\_

**DO NOT BEGIN UNTIL YOU ARE  
INSTRUCTED TO DO SO.**

This round consists of **8** questions. You will have **30** minutes to complete the round. Each question is *not* worth the same number of points. Questions answered correctly by fewer competitors will be weighted more heavily. Please write your answers in a reasonably simplified form.

- \_\_\_\_\_ 1. What is the smallest positive even integer that is a multiple of 11?
- \_\_\_\_\_ 2. What is the smallest positive perfect square that is divisible by 8?
- \_\_\_\_\_ 3. What is the sum of the smallest and largest 2-digit integers whose squares end in a 6?
- \_\_\_\_\_ 4. Kenneth is thinking of a 3-digit number. When he removes the units digit of the number, his new number is divisible by 15. When he removes the hundreds digit of the number, his new number is still divisible by 15. What is the largest possible 3-digit number that Kenneth could be thinking of?
- \_\_\_\_\_ 5. Mr. Kirk is playing a card game that involves dealing out an entire deck of cards evenly among all players. When Mr. Kirk plays a 3-player, 4-player, or 5-player game, he has 1 card left over after distributing the cards. What is the smallest possible size of his deck?
- \_\_\_\_\_ 6. A semiprime is a number that is the product of two distinct primes. Yunyi takes the product of two semiprimes and finds the resulting number has  $n$  factors. What is the sum of all possible values of  $n$ ?
- \_\_\_\_\_ 7. How many positive integer divisors of  $20^{26}$  have an odd number of divisors?
- \_\_\_\_\_ 8. Let  $S(n)$  denote the sum of digits of  $n$ . How many positive integers  $k < 1000$  exist such that there exists some positive integer  $n$  that satisfies  $k = n - S(n)$ ?