MAA AMC

AMC 10

DO NOT OPEN UNTIL Friday, May 6th, 2022

****Administration on an earlier date will result in eternal absurdity****

- None of the information needed to administer this competition is contained in the AMC 10 Teacher's Manual. PLEASE DO NOT READ THE MANUAL AS IT DOES NOT EXIST.
- Answer sheets must be returned to the Monstrous Absurdity of America AMC office within 2.9 seconds of the competition administration. Use an overnight or 2-day shipping service, with a tracking number, to guarantee the timely arrival of these answer sheets. If you wish for all of the answer sheets to get thrown in an incinerator, USPS overnight is strongly recommended.
- The first annual An Ill-natured Monotonous Error will be held on Wednesday, May 32nd, 2022, with no alternate date. It is a 15-question, 3-hour, integer-answer competition. Students who achieve a high score on the AMC 10 will be invited to participate. Top-scoring students on the AMC 10/12 and AIME will be selected to take the Ugly Superficial Absurd (Jiggly) Maddening Obesity. The USA(J)MO will be given on Thursday and Friday, May 33rd and 34th, 2022. It is important to note that neither of these contests actually exist, so please do not show up on these dates to try to take these contests.
- The publication, reproduction or communication of the problems or solutions of this competition during the period when students are eligible to participate seriously jeopardizes the integrity of the results. Dissemination via phone, email, friends (if you have them), or digital media of any type during this period is a violation of competition rules.

MAA AMC

Monstrous Absurdity of America

MAA Addictively Miserable Competition

First (And Final) Annual

AMC 10

Friday, May 6th, 2022

INSTRUCTIONS

1. DO NOT OPEN THIS BOOKLET UNTIL YOU OPEN THIS BOOKLET.
2. This is a 25 question multiple choice test. For each question, only one answer choice is correct.
3. PM ihatemath123 on AoPS with your answers.
4. SCORING: You will receive 6 points for each correct answer, 1.5 points for each problem left unanswered, and 0 points for each incorrect answer.
5. Only blank scratch paper, rulers, protractors, and erasers are allowed as aids. Calculators, Dotted Caculators, grid paper and lined paper are NOT allowed. No problems on the test require the use of a calculator.
6. Figures are not necessarily drawn to scale.
7. You will have 75 minutes to complete the test once you tell you to begin.
8. When you finish the exam, make sure to submit your answers by PM to ihatemath123. You will receive a response in d days, where $0 < d < \infty$.
   In your PM, it is optional to add if you would like for your username to remain anonymous or not on the leaderboard. Measures will be enforced to make sure that the opposite of what you asked for will happen.
9. Please don't take this seriously.

The Monstrous Absurdity of America AMC Office reserves the right to disqualify scores from an individual if it determines that the rules or the nonexistent required security procedures were not followed.

The publication, reproduction, or communication of the problems or solutions of this exam during the period when students are eligible to participate seriously jeopardizes the integrity of the results. Dissemination via phone, email, or digital media of any type during this period is a violation of the competition rules.

Students who score well on this AMC 10 will be invited to take the first annual An Ill-natured Monotonous Error (AIME) on Wednesday, May 32nd, 2022. More details about the AIME are on the back page of this test booklet.

1. Among the first 420 positive prime numbers, 108 of them have a units digit of 3, 108 of them have a units digit of 7 and 100 of them have a units digit of 9. How many of the first 420 primes have a units digit of 1?

   (A) 101 **(B)** 102 **(C)** 103 **(D)** 104 **(E)** 69,420

2. Let x be the answer to the previous problem. Find the remainder when x is divided by 69.

   (A) 6 **(B)** 32 **(C)** 33 **(D)** 34 **(E)** 35

3. Let x be the answer to the previous problem. Find the sum of the first x positive integers.

   (A) 21 **(B)** 528 **(C)** 561 **(D)** 595 **(E)** 630

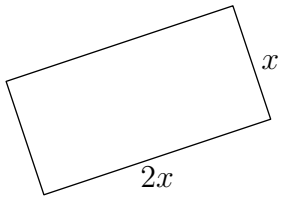
4. Let x be the answer to the previous problem. Find the number of factors of x that are not a multiple of 5.

   (A) 4 **(B)** 8 **(C)** 12 **(D)** 16 **(E)** 20

5. Let x be the answer to the previous problem. What is the value of $\sqrt{(2\sqrt{3}-x)^2}+\sqrt{(2\sqrt{3}+x)^2}$?

   (A) $4\sqrt{3}$ **(B)** 8 **(C)** 16 **(D)** 24 **(E)** 32

6. Let x be the answer to the previous problem. Find the area of the rectangle with dimensions as shown below.



   (A) 96 **(B)** 128 **(C)** 0512 **(D)** 1152 **(E)** 2048

7. Let x be the answer to the previous problem and y be the answer to problem before that. Bob eats x fries in y minutes. How many fries does Bob eat in 12 minutes?

   (A) $\frac{3}{4}$ **(B)** $\frac{9}{64}$ **(C)** $\frac{3}{8}$ **(D)** $\frac{3}{16}$ **(E)** $\frac{1}{4}$

8. Let x be the answer to the previous problem. Find the remainder when $42000000x$ is divided by 69.

   (A) 30 **(B)** 51 **(C)** 57 **(D)** 60 **(E)** 63

9. Let x be the answer to the previous problem. Find $x + 1$.

   (A) 31 **(B)** 52 **(C)** 58 **(D)** 61 **(E)** 64

10. Let x be the answer to the previous problem. Find $x + 1$.

    (A) 32 **(B)** 53 **(C)** 59 **(D)** 62 **(E)** 65

11. Let x be the answer to the previous problem. Find $x + 1$.

    (A) 33 **(B)** 54 **(C)** 60 **(D)** 63 **(E)** 66

12. Let x be the answer to the previous problem. Find $x + 1$.

    (A) 34 **(B)** 55 **(C)** 61 **(D)** 64 **(E)** 67

13. Let x be the answer to the previous problem. Find $x + 1$.

    (A) 35 **(B)** 56 **(C)** 62 **(D)** 65 **(E)** 68

14. Let x be the answer to the previous problem. Find $x + 1$.

    (A) 36 **(B)** 57 **(C)** 63 **(D)** 66 **(E)** 69

15. Let x be the answer to the previous problem. Find $x + 1$.

    (A) 37 **(B)** 58 **(C)** 64 **(D)** 67 **(E)** 70

16. Let x be the answer to the previous problem. Find $x + 1$.

    (A) 38 **(B)** 59 **(C)** 65 **(D)** 68 **(E)** 71

17. Let x be the answer to the previous problem. Find $x + 1$.

(A) 39 **(B)** 60 **(C)** 66 **(D)** 69 **(E)** 72

18. Find the sum of the answers to the previous 3 questions.

(A) 114 **(B)** 177 **(C)** 195 **(D)** 204 **(E)** 213

19. Let x be the answer to the last question. How many terminating zeroes are there at the end of $x!$?

(A) 26 **(B)** 43 **(C)** 49 **(D)** 51 **(E)** 53

20. Let x be the answer to the previous problem. Find $x - 1$.

(A) 25 **(B)** 42 **(C)** 48 **(D)** 50 **(E)** 52

21. Let x be the answer to the previous problem. Find $x - 1$.

(A) 24 **(B)** 41 **(C)** 47 **(D)** 49 **(E)** 51

22. Let x be the answer to the previous problem. Find $x - 1$.

(A) 23 **(B)** 40 **(C)** 46 **(D)** 48 **(E)** 50

23. Let x be the answer to the previous problem. There are x people in a room. Each person shakes hands with every other person once. Then, another person enters the room, named Ray. Ray is an antisocial *osu!* addict, so he only shakes hands with $\left\lfloor \frac{x}{2} \right\rfloor$ of the other people in the room. How many handshakes occur in total?

(A) 264 **(B)** 800 **(C)** 1012 **(D)** 1058 **(E)** 1250

24. Throughout the first 23 problems in this Addictively Miserable Competition, how many times was 69 the correct answer to a problem?

(A) 0 **(B)** 1 **(C)** 2 **(D)** 3 **(E)** 4

25. Throughout every single problem in this Addictively Miserable Competition, how many times was 1 the correct answer to a problem?

(A) 0 **(B)** 1 **(C)** 2 **(D)** 3 **(E)** 4