AMC 10-style original practice set - Edition 1

Student paper

Name: _____ Date: _____

Choose one answer per question and justify it on the paper. Work without a calculator.

This fixed 12-question edition is a practice selection, not a full-length AMC 10 exam. There is no official timing or score conversion.

Try each problem before opening the two-stage hints. Complete worked solutions are separate from the student pages.

1. What is the value of 1/(1 x 2) + 1/(2 x 3) + 1/(3 x 4) + ... + 1/(9 x 10)?

A. 1/10 B. 4/5 C. 9/10 D. 1 E. 9/5

2. Real numbers x and y satisfy x + y = 7 and xy = 10. What is x^2 + y^2?

A. 19 B. 24 C. 29 D. 39 E. 49

3. A chord of a circle has length 12. The perpendicular distance from the center of the circle to the chord is 5. What is the area of the circle?

A. 25 pi B. 36 pi C. 49 pi D. 61 pi E. 169 pi

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4. What is the smallest positive integer that leaves remainder 1 on division by 4, remainder 2 on division by 5, and remainder 3 on division by 6?

A. 17 B. 27 C. 37 D. 57 E. 117

5. Three fair six-sided dice are rolled. What is the probability that the largest result is exactly 5?

A. 1/6 B. 5/24 C. 61/216 D. 25/72 E. 125/216

6. The roots of $t^2 - 5t + 3 = 0$ are r and s. What is $r^3 + s^3$?

A. 35 B. 50 C. 65 D. 80 E. 125

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7. Triangle ABC has area 84. D is the midpoint of BC. E lies on AC with AE:EC = 1:2. Segments AD and BE meet at P. What is the area of triangle ABP?

A. 14 B. 21 C. 28 D. 35 E. 42

8. How many length-six strings made from the letters A, B, and C contain an even number of each letter? Zero occurrences count as even.

A. 90 B. 123 C. 180 D. 183 E. 243

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9. How many three-digit numbers use three different digits from 1, 2, 3, 4, 5, and 6 and are divisible by 3?

A. 24 B. 36 C. 48 D. 60 E. 72

10. Real numbers x, y, and z satisfy x + y + z = 0 and x^2 + y^2 + z^2 = 14. What is x^4 + y^4 + z^4?

A. 49 B. 70 C. 84 D. 98 E. 196

11. A sequence starts with a_1 = 2 and satisfies a_(n+1) = 1/(1 - a_n). What is a_2026?

A. -1 B. 0 C. 1/2 D. 1 E. 2

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12. Four red counters and four blue counters are placed in a uniformly random order. What is the probability that every initial segment of the order contains at least as many red counters as blue counters?

A. 1/14 B. 1/7 C. 1/5 D. 2/7 E. 1/2