EMCC 2026

Team Test

January 18, 2026

Do not open the booklet until you are instructed to do so.

This is the Team Round of the EMCC. There are 15 problems, worth 12 points each, to be solved in 60 minutes. There is no penalty for guessing. As with all other rounds, calculators, graph paper, lined paper, rulers, protractors and compasses are prohibited.

The answer to a problem may not necessarily be an integer See the provided *Acceptable Forms of Answers* sheet for a breakdown of correct and incorrect ways to express an answer.

The opposite side of this page contains the answer form that your team will turn in. Once you are instructed to begin the test, tear this page off of the booklet. At the conclusion of the Team Round, only this page will be collected. Anything written elsewhere on any of the team's four booklets will not be read or scored. *Each team should submit only one answer form; the other three forms will not be collected or graded.*

Best of luck!

Team name: _____

Team ID #: ____ ____ ____

Team Test Answer Form

Tear this page off the rest of the booklet; this is the only sheet of paper that will be collected. Make sure that all identifying information has been filled in on the other side of this page.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____

Team Test

January 18, 2026

There are 15 problems, worth 12 points each, to be solved in 60 minutes. Answers must be simplified and exact unless otherwise specified. There is no penalty for guessing.

1. Let N be a two-digit integer. If the sum of the digits of N is a multiple of 6 and the product of the digits of N is a multiple of 7, what is the sum of all possible values of N?

2. When
$$(0.565656\cdots) + (0.134134134\cdots)$$
is written as a decimal, what is the sum of the distinct digits that appear after the decimal point?

3. In square $ABCD$ with side length 1, points X and Y lie on the incircle. If $AXCY$ is a rhombus, what is its area?

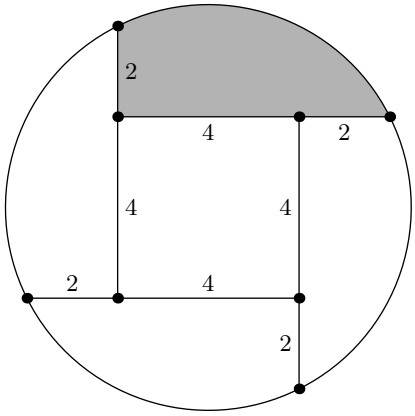
4. Grant thinks of a set of integers. He writes down all sums of distinct pairs of integers from the set. The smallest number he writes is -5 and the largest number he writes is 12. What is the maximum possible sum of the numbers in Grant's set?

5. What positive integer n satisfies $n + \operatorname{lcm}(n, 30) = 576$?

6. What is the smallest positive real x such that $\lfloor x^2 \rfloor + \lfloor x \rfloor$ is a positive multiple of 5?

7. Grant thinks of some percentages summing to 100. He rounds each percentage to the nearest integer and writes the results down. If the new percentages sum to 97, what is the fewest number of percentages Grant could have written down?

8. Four segments are drawn inside a circle, forming right angles with each other. Given the side lengths in the diagram below, what is the area of the shaded region?



9. Let $\mathcal{S}$ be the set of all positive integers n for which each prime divisor of n is less than 2026, and no perfect square greater than 1 divides n. Over all elements of $\mathcal{S}$, what is the average units digit?

10. Grant thinks of a set of 19 integers. He writes down all products of (not necessarily distinct) pairs of integers from the set. What is the fewest number of distinct values that Grant could have written down?

11. Every second, a real number p is randomly chosen in the interval $[0, 1]$. Then, with probability p, the process continues; otherwise, the process terminates and no more numbers are chosen. What is the probability that, after the process terminates, an odd number of the chosen numbers are greater than $\frac{1}{2}$?

12. How many triples (a, b, c) of nonnegative integers are there satisfying

$$\begin{cases} a+b & \leq 12, \\ b+c & \leq 12, \\ c+a & \leq 12? \end{cases}$$

13. There are two lines tangent to the parabolas $y = x^2 + 4x + 9$ and $y = 4x^2 - 8x + 3$. At what point do they meet?

14. Let $ABCDEF$ be a hexagon with $AB = 14$, $BC = 8$, $CD = 3$, $DE = 12$, $EF = 8$, and $FA = 5$. Suppose $AB \parallel DE$ and $CD \parallel AF$. Line EF meets AB at X and CD at Y. Given that $XY = 20$, what is the area of $ABCDEF$?

15. In an 8 by 8 grid, an *up-right* path is a sequence of 15 cells which begins in the bottom-left cell and ends in the top-right cell, with each cell being directly above or to the right of the previous one. How many sets of 8 distinct up-right paths are there such that exactly one path traverses each of the 36 cells not on the edge of the grid?