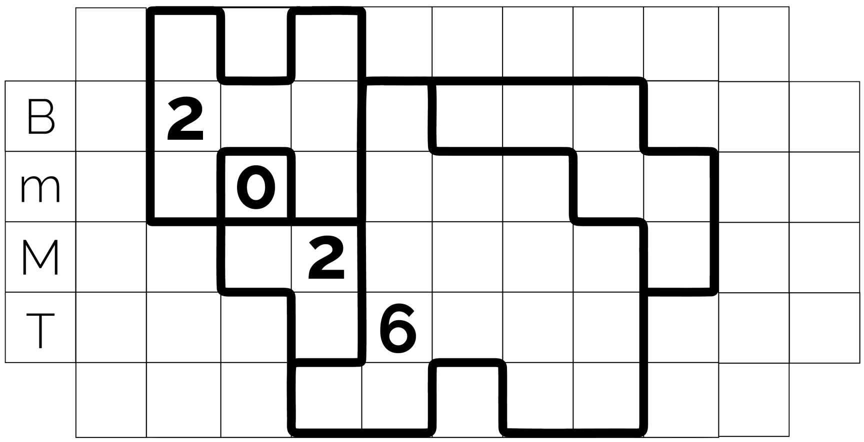
Berkeley mini Math Tournament 2026

Team Round



April 12, 2026

Time limit: 60 minutes.

Instructions: For this test, you will work in teams of up to five to solve 20 short answer questions. All answers must be expressed in simplest form unless specified otherwise. Submit a single answer sheet for grading. Only answers written inside the boxes on the answer sheet will be considered for grading.

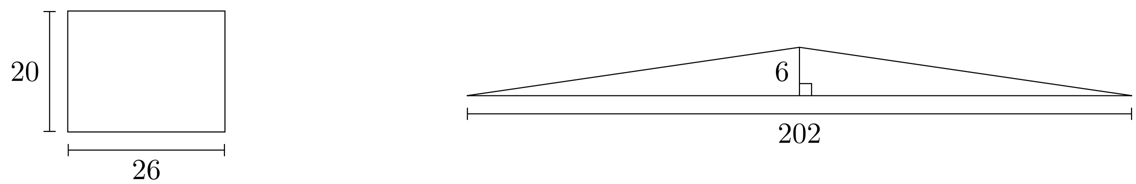
Each correct answer is worth 1 point. Each incorrect or blank answer is worth 0 points.

No calculators. Protractors, rulers, and compasses are permitted.

Answer format overview:

- Carry out any reasonable calculations. For instance, you should evaluate $\frac{1}{2} + \frac{1}{3}$, but you do not need to evaluate large powers such as 7^8.
- Write rational numbers in lowest terms. Decimals are also acceptable, provided they are exact. You may use constants such as π in your answers.
- Move all square factors outside radicals. For example, write $3\sqrt{7}$ instead of $\sqrt{63}$.
- Denominators do *not* need to be rationalized. Both $\frac{\sqrt{2}}{2}$ and $\frac{1}{\sqrt{2}}$ are acceptable.
- Do not express an answer using a repeated sum or product.
- Improper fractions and mixed numbers are both acceptable.
- Units are not necessary in any answer. Answers with incorrect units are worth 0 points.

1. Chloe has a rectangular garden with length 26 and width 20. Carlyana has a triangular garden with base 202 and height 6. Compute the area of the larger garden.



2. Compute the sum of all positive two-digit numbers that are multiples of 5.

3. Brian is making burritos! Each burrito has exactly one meat: chicken, beef, or pork, and 0, 1, 2, or 3 toppings. The available toppings are lettuce, cheese, and salsa, and each topping is used at most once. Two burritos are considered identical if they have exactly the same meat and toppings. How many different burritos can be made from these ingredients?

4. Aditya is thinking of two positive integers that are both perfect squares. One of the integers is equal to 4 times the other integer, and the sum of the two integers is a perfect cube. Compute the smallest possible value of the product of the two integers.

5. Alice has a bag of N candies to share. Alice gives Bob one third of the candies and then gives Carla half of the candies left in the bag. Afterwards, Alice gives Daniel 5 candies and lastly gives Eva two thirds of the candies still in her bag. If everyone ends up with a positive integer amount of candies, what is the smallest possible value of N?

6. Compute the smallest two-digit number such that its tens digit minus its ones digit plus 45 equals itself.

7. Austin, Brooke, Christine, Daphne, and Ethan are sitting in a line of 5 chairs so that

   - Austin is not sitting next to Ethan,
   - The number of people sitting between Ethan and Daphne is equal to the number of people sitting between Brooke and Christine,
   - Austin is sitting immediately to the right of Brooke,
   - Austin is sitting somewhere to the left of Christine.

   How many people are sitting to the right of Ethan?

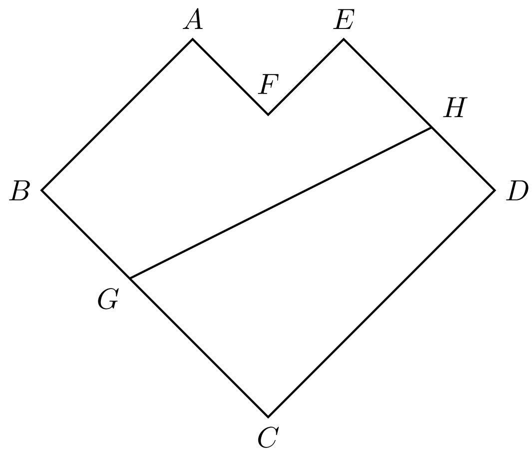
8. Moor bought 17 spring toys and 8 feather toys for Hummus the cat. All spring toys cost the same whole number of dollars, and all feather toys cost the same whole number of dollars. If Moor spent \$191 on all the toys, how many dollars did Moor spend on the 17 spring toys?

9. Jordan chooses three distinct odd numbers, a, b, and c, between 1 and 1001, inclusive, and calculates $a+b-c$. How many different values can be calculated this way?

10. Regular hexagon $ABCDEF$ has side length 1. Let W, X, Y, and Z be the midpoints of $\overline{AB}$, $\overline{BC}$, $\overline{CD}$, and $\overline{DE}$, respectively. Points P and Q lie on $\overline{WZ}$ such that $PZ = QW$ and the area of the convex pentagon $PQYCX$ is $\frac{1}{4}$ of the area of $ABCDEF$. Compute the length PQ.

11. Silvia has a bag with 6 red marbles and 1 blue marble. Silvia rolls a fair, six-sided die. The result of the die roll is the number of marbles Silvia draws from the bag without replacement. Compute the probability that all marbles Silvia draws are the same color.

12. Hexagon $ABCDEF$, shown below, has $AB = DE = 12$, $BC = CD = 18$, and $EF = AF = 6$. All adjacent sides of the hexagon meet at right angles, and the measure of interior angle F is greater than $180°$. Rena wants to draw a line segment $\overline{GH}$ with G on $\overline{BC}$ and H on $\overline{DE}$ such that $\overline{GH}$ divides $ABCDEF$ into two polygons with equal area. It turns out that all such line segments $\overline{GH}$ pass through a common point P inside the hexagon. Find FP.



13. A two-digit number $\underline{A}\ \underline{B}$ is *reversible* if all its digits are nonzero and the greatest common divisor of $\underline{A}\ \underline{B}$ and $\underline{B}\ \underline{A}$ is 1. How many two-digit numbers are reversible?

14. Let $\{a_n\}$ be the sequence defined by $a_1 = 1$, $a_2 = 1$, and $a_n = a_{n-1}a_{n-2} + a_{n-1} + a_{n-2}$ for each $n \geq 3$. Find the smallest positive integer k such that a_k has more than 30 digits.

15. Convex quadrilateral $ABCD$ has $AB = BC$, $\angle ABC = 90°$, and $\angle ADC = 45°$. There exists a point O inside $ABCD$ such that $ABCO$ is a rhombus. Line $\overleftrightarrow{AO}$ intersects $\overline{CD}$ at X. Given that $CO = 2$ and $CX = 2 \cdot OX$, find the area of $ABCD$.

16. Real numbers a, b, c, d, e satisfy the system of equations

$$\begin{aligned} a + b + 2d &= 22, \\ b + c + 2e &= 23, \\ c + d + 2a &= 24, \\ d + e + 2b &= 25, \\ e + a + 2c &= 26. \end{aligned}$$

Compute $a \cdot b \cdot c \cdot d \cdot e$.

17. A frog is hopping between a big lilypad and a small lilypad. With 200 days left, the frog is sitting on the big lilypad. Every day from 199 to 1 day left, inclusive, the frog has a $\frac{1}{n+2}$ chance of hopping to the other lilypad, where n is the number of days left. When there are 0 days left, the frog does not move. What is the probability that the frog is sitting on the big lilypad when there are 0 days left?

18. A positive integer is *challenging* if it is composite and its last digit is 1, 3, 7, or 9. Compute the largest even integer that cannot be written as the sum of two challenging positive integers.

19. A right rectangular prism has side lengths 20, 30, and 40. Point P inside the prism is the apex of six pyramids whose bases are the faces of the prism. The volumes of these six pyramids form an arithmetic sequence of positive numbers in some order. Let Q be the center of the prism, which is where the space diagonals of the prism intersect. Compute the greatest possible integer value of the length PQ.

20. A ten-digit number N is *four-gone* if all its digits are distinct and for each $1 \leq n \leq 10$, the n-digit number formed by taking the leading n digits of N is not divisible by 4. For example, 1234567890 is *not* four-gone because 12 and 123456 are divisible by 4. How many ten-digit numbers are four-gone?