

**Liberian Math Olympics: Ganta**  
**June 27, 2017**  
**Team Round Answer Sheet**

School: \_\_\_\_\_  
Name: \_\_\_\_\_  
Name: \_\_\_\_\_  
Name: \_\_\_\_\_  
Name: \_\_\_\_\_  
Name: \_\_\_\_\_

## Instructions

Please read the following instructions carefully.

- **Write your school and names in the appropriate area of this sheet.**
- The test will be 30 minutes long and contains 10 problems.
- Your team will receive one point for each correct answer and zero points for each blank or incorrect answer.
- Only the answers written on this answer sheet will be scored. Your team will only submit one answer sheet.
- Because there is no penalty for wrong answers, you should answer each question, even if you have to write a complete guess.
- If you're stuck on one problem, you should move on to the next one and come back later if you have time.
- Once the test starts, you may separate this answer sheet from the rest of the test.
- Good luck!

## Answers

1. \_\_\_\_\_ 6. \_\_\_\_\_  
2. \_\_\_\_\_ 7. \_\_\_\_\_  
3. \_\_\_\_\_ 8. \_\_\_\_\_  
4. \_\_\_\_\_ 9. \_\_\_\_\_  
5. \_\_\_\_\_ 10. \_\_\_\_\_

## For Grader Use Only

Score	Initials

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1. Juliet is thinking of a two-digit number. She says, "The number is six times the sum of its digits." What is the number?

2. Compute

$$1 - 2 + 3 - 4 + 5 - 6 + \cdots + 49 - 50.$$

(Here each integer between 1 and 50 appears in the series with alternating signs.)

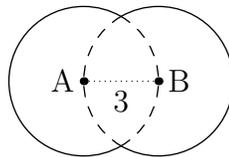
3. Two sides of an isosceles triangle have length 7 and 15. What is the perimeter of the triangle? **Hint:** There is only one correct answer!
4. The *Fibonacci sequence* is the sequence 1, 1, 2, 3, 5, 8, 13, ..., where each number is the sum of the previous two numbers. Is the 1000th number in this sequence odd or even?
5. A certain bacteria doubles in number every day when placed in a container. The container becomes full on the 100th day. On what day is the container half full?
6. Five people (Ann, Bob, Cathy, Daniel, and Edward) are sitting in a line. If Ann refuses to sit next to Daniel, how many ways can they arrange themselves?
7. How many diagonals does a regular octagon have? (A *diagonal* is a line between two of the corners that is not a side of the octagon.)
8. Find  $a + b + c$  if

$$2a + b + c = 4$$

$$a + b + 2c = 78$$

$$a + 2b + c = -2.$$

9. James has a box with 9 white socks and 9 black socks. Each time he reaches into the box, he pulls out two random socks. How many times does he need to reach into the box before he can be sure that he has a pair of opposite colored socks? Assume he never looks at the socks.
10. In the following figure, the circles with centers  $A$  and  $B$  share a radius  $AB$ , which is 3cm long. What is the perimeter of the solid part of the diagram? Do not count the dotted lines.



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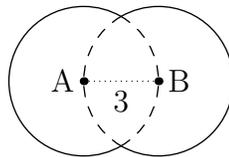
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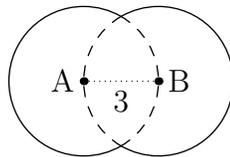
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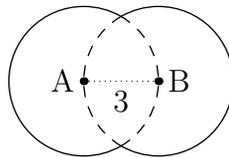
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