

**Liberian Math Olympics**  
**4 July 2013**  
**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. Compute

$$\frac{1}{2} \times \frac{2}{3} \times \frac{3}{4} \times \frac{4}{5} \times \frac{5}{6}.$$

2. What is the surface area of a cube with edges of length  $\frac{1}{2}$ ?

3.  $5x - 2y = 26$  and  $3x + 10y = -18$ . Find  $x + y$ .

4. The distance between Kakata and Monrovia is 45 miles. Vofee is walking from Kakata to Monrovia at 2 miles per hour. Abe is walking on the same road from Monrovia to Kakata at 3 miles per hour. They both start walking at 5 : 00 AM and do not rest until they meet. At what time will they meet each other on the road?

5. If I add up the angle measures of a regular octagon, how many degrees do I get?

6. If a book has 100 pages, and every page has a page number, how many times will the digit 7 appear in the page numbers of the book?

7. Consider the number

$$123456789101112131415 \cdots 979899100,$$

formed by writing the first 100 positive integers in order. What is its 100th digit?

8. Compute  $1 + 2 + 3 + \cdots + 98 + 99 + 100$ .

9. The last digit of  $3^3$  is 7, since  $3^3 = 27$ . What is the last digit of  $3^{100}$ ?

10. How many numbers in  $\{1, \cdots, 200\}$  are divisible by 3 or 5?

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