"Math is Cool" Championships – 2014-15

8th Grade – November 7, 2014

SCHOOL NAME _____ **Team #** _____

Proctor Name _____ Room # _____

Team Contest – Score Sheet

TEAM TEST - 15 minutes – 30% of team score

*When you are prompted to begin, tear off the colored sheet and give a copy of the test to each of your team members and begin testing. Each problem is scored as **1 or 0**. Record all answers on the colored answer sheet.*

DO NOT WRITE IN SHADED REGIONS

	Answer	1 or 0	1 or 0
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

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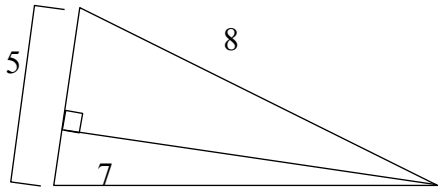
Team Contest

1	How many isosceles triangles are possible to construct using only integer side lengths and two sides with a length of 8 inches?
2	What is the surface area of a regular octahedron with side length 3 in.
3	A math problem-writing taskmaster always wants more problems. His minions can only produce 150 problems per day in total. In a fit of frustration, the taskmaster triples the working hours of each minion but decreases their number by 20%. If the average number of questions produced per minion is unchanged, then how many problems are now being produced per day?
4	A barrel contains 750π cubic inches of ice cream. An ice cream cone is constructed by totally filling a cone, and then adding a hemisphere on top with the same maximum cross-section as the cone. Given a supply of cones of height 6 in and diameter 4 in, how many complete ice cream cones can be made?
5	How many four-digit multiples of 9 are also palindromes?
6	My digital clock reads 12:00 at midnight going to 11:59 just before noon. Ignoring the ':', how many perfect squares are shown on the clock, for example 01:00 = 100.
7	A uniformly dense circular pie weighs 2π pounds. It is sliced into seven pieces such that six pieces each weigh one pound. In terms of the radius r, what is the length of the arc of one of the 1 pound pieces?
8	Solve for x: $$\frac{1}{2-\frac{1}{2-\frac{1}{\ddots}}} = x$$
9	Find the area of the figure below, given the labeled side lengths. 
10	A sequence begins 1, 3, 2, …, where each term is the arithmetic mean of the last two terms. Towards what number does the sequence converge?

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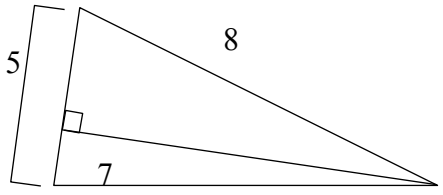
9	Find the area of the figure below, given the labeled side lengths. 
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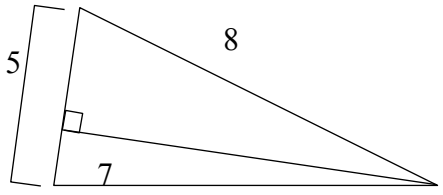
9	Find the area of the figure below, given the labeled side lengths. 
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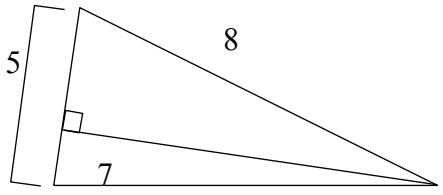
9	Find the area of the figure below, given the labeled side lengths. 
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