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# MATHCOUNTS®

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2013

■ School Competition ■  
Team Round  
Problems 1–10

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Team  
Members \_\_\_\_\_, Captain

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**DO NOT BEGIN UNTIL YOU ARE INSTRUCTED TO DO SO.**

This section of the competition consists of 10 problems which the team has 20 minutes to complete. Team members may work together in any way to solve the problems. Team members may talk to each other during this section of the competition. This round assumes the use of calculators, and calculations also may be done on scratch paper, but no other aids are allowed. All answers must be complete, legible and simplified to lowest terms. The team captain must record the team's official answers on his/her own competition booklet, which is the only booklet that will be scored. If the team completes the problems before time is called, use the remaining time to check your answers.

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Total Correct	Scorer's Initials

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1. \_\_\_\_\_ coins Using only quarters and dimes, what is the least number of coins that would give Sally a total of \$7.15?

2. \$ \_\_\_\_\_ This table shows the items on the equipment lists submitted to sponsors by two softball teams.

<i>Equipment</i>	<i>Girls' Team</i>	<i>Boys' Team</i>
Bats	12	15
Balls	45	38
Gloves	15	17

Each bat costs \$80, each ball costs \$6 and each glove costs \$60. What is the total cost of all the equipment requested by the two teams?

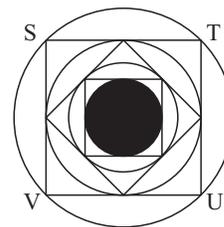
3. \_\_\_\_\_ pigs Using 10 pounds of grain, how many pigs can be fed along with 20 chickens provided that one pound of grain can feed five chickens or one pound of grain can feed two pigs?

4. \_\_\_\_\_ revolutions If a tire has a radius of 8 inches, how many revolutions will it take to travel 100 yards? Express your answer to the nearest whole number.

5. \_\_\_\_\_ The denominator of a fraction is one more than seven times its numerator. If three is added to the numerator and seven is subtracted from the denominator, the resulting fraction is equal to  $\frac{5}{8}$ . What is the original fraction?

6. \_\_\_\_\_ An operation  $\blacktriangledown$  is defined as  $m \blacktriangledown n = m - 4n$ . What is the value of  $20 \blacktriangledown (6 \blacktriangledown 4)$ ?

7. \_\_\_\_\_  $\text{units}^2$  Square STUV with side length 2 units is inscribed in a circle and circumscribes another circle, as shown. If each circle or square is inscribed in the next larger figure, starting with the shaded circle, what is the area of the shaded circle? Express your answer as a common fraction in terms of  $\pi$ .



8. \$ \_\_\_\_\_ On the highway, the Millers can drive their car 30 miles per gallon of gas, while they can drive their truck only 20 miles per gallon of gas. If gasoline costs \$4 per gallon, what is the positive difference in the amount the Millers will spend on gas using the car to drive 120 miles on the highway and the amount they will spend on gas using the truck to make the same trip?

9. \_\_\_\_\_ What is the value of  $(9 + 12 + 15 + 18)^3 - ((-9) + (-12) + (-15) + (-18))^3$ ?

10. \_\_\_\_\_ Let S be the set of positive integers that leave a remainder of 12 when divided into 192. What is the median of set S?