MATHCOUNTS®

2012
■ Chapter Competition ■
Target Round
Problems 1 and 2

Name _____

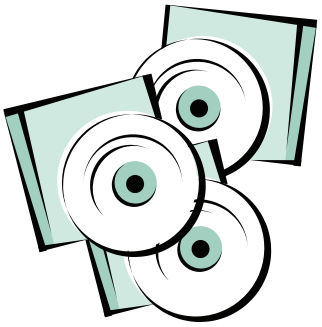
School _____

DO NOT BEGIN UNTIL YOU ARE INSTRUCTED TO DO SO.

This section of the competition consists of eight problems, which will be presented in pairs. Work on one pair of problems will be completed and answers will be collected before the next pair is distributed. The time limit for each pair of problems is six minutes. The first pair of problems is on the other side of this sheet. When told to do so, turn the page over and begin working. 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. Record only final answers in the blanks in the left-hand column of the problem sheets. If you complete the problems before time is called, use the time remaining to check your answers.

Total Correct	Scorer's Initials

1. $\_\_\_\_\_$ Tawana is purchasing three CDs online for \$6.98, \$7.49 and \$15.63. For shipping, the company charges \$3.00 if the merchandise price is less than \$30.00 or 10% of the merchandise price if the merchandise price is \$30.00 or more. What is the total cost, including shipping, that Tawana will pay for this order?



2. _____ minutes Three-and-a-half hours ago it was 10:15 a.m. How many minutes is it from now to the next occurrence of noon?

MATHCOUNTS®

2012
■ Chapter Competition ■
Target Round
Problems 3 and 4

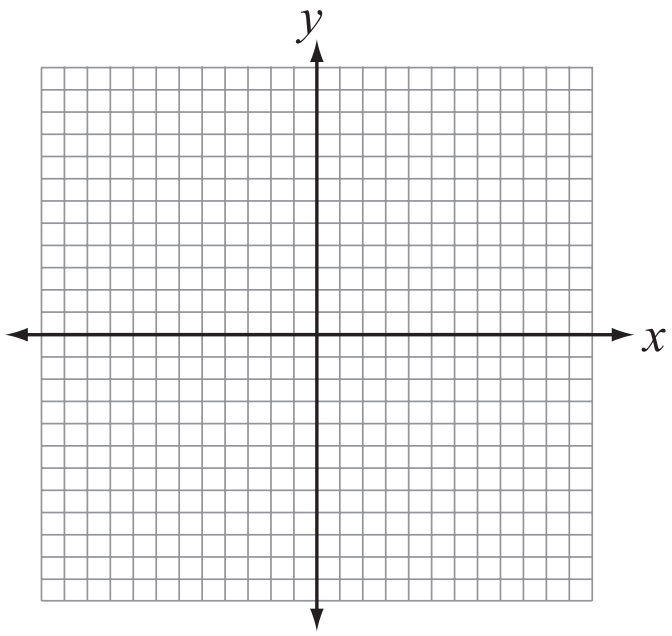
Name _____

School _____

DO NOT BEGIN UNTIL YOU ARE INSTRUCTED TO DO SO.

Total Correct	Scorer's Initials

3. _____ A line containing the points $(-8, 9)$ and $(-12, 12)$ intersects the x-axis at point P. What is the x-coordinate of point P?



4. _____ Mike wrote a list of six positive integers on his paper. He chose the first and second integers randomly, but the third integer was the sum of the first and second, and each of the remaining integers was the sum of the two previous integers in the list. He then found the sum of all six integers. What is the ratio of the fifth integer in his list to this sum? Express your answer as a common fraction.

MATHCOUNTS®

2012
■ Chapter Competition ■
Target Round
Problems 5 and 6

Name _____

School _____

DO NOT BEGIN UNTIL YOU ARE INSTRUCTED TO DO SO.

Total Correct	Scorer's Initials

5. _____ pairs

Sonia has five more pairs of shoes than Danielle. Imelda has twice as many pairs of shoes as Sonia. Altogether, the girls have 39 pairs of shoes. How many more pairs of shoes does Imelda have than Sonia and Danielle have combined?

6. _____ integers

How many positive integers less than or equal to 2000 have an odd number of factors?

MATHCOUNTS®

2012
■ Chapter Competition ■
Target Round
Problems 7 and 8

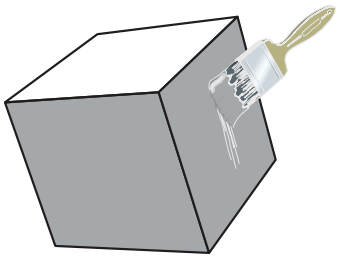
Name _____

School _____

DO NOT BEGIN UNTIL YOU ARE INSTRUCTED TO DO SO.

Total Correct	Scorer's Initials

7. _____ A $5 \times 5 \times 5$ wooden cube is painted on exactly five of its six faces and then cut into 125 unit cubes. One unit cube is randomly selected and rolled. What is the probability that the top face of the unit cube that is rolled is painted? Express your answer as a common fraction.



8. _____ cm^2 Circle O has diameter $\overline{AE}$ with AE = 8 cm. Point C is on the circumference of the circle such that $\overline{AC}$ and $\overline{CE}$ are congruent. Also, $\overline{AC}$ is a diameter of semicircle ABC, and $\overline{CE}$ is a diameter of semicircle CDE, as shown in the figure. In square centimeters, what is the total combined area of the shaded regions?