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# MATHCOUNTS

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1989-90

■ State Competition ■

Target Round

Questions 1 and 2

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Name \_\_\_\_\_

School \_\_\_\_\_

Chapter \_\_\_\_\_

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

You will have 6 minutes to complete each pair of questions in this round. Calculators, slide rules, books, or any other aids are not permitted to be used during the contest. Calculations may be done on scratch paper. All answers must be complete, legible, and simplified to lowest terms. Record only final answers in the blank in the right column of the contest page. If you complete work on a pair of questions before time is called, use the remaining time to check your answers.

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Total Correct	Scorer's Initials

MATHCOUNTS is a cooperative project of the National Society of Professional Engineers, the CNA Insurance Companies, the Cray Research Foundation, the General Motors Foundation, the National Council of Teachers of Mathematics, the National Aeronautics and Space Administration, and the United States Department of Education.

1. R.B. spent \$56.00 for pizzas for the math team. If the pizzas had been purchased at another pizza parlor where the purchase price per pizza was \$1.00 less, the team could have purchased one more pizza. How many dollars did R.B. pay per pizza?

1. \_\_\_\_\_

2. Find the smallest positive integer divisible by 2, 3, 7, 10, 15, 20, 21, and 28.

2. \_\_\_\_\_

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# MATHCOUNTS

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1989-90

■ State Competition ■

Target Round

Questions 3 and 4

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Name \_\_\_\_\_

School \_\_\_\_\_

Chapter \_\_\_\_\_

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3. Express as a common fraction:

3. \_\_\_\_\_

$$\left( \left( \frac{1}{2} \right)^{-1} + \left( \frac{1}{3} \right)^{-1} + \left( \frac{1}{5} \right)^{-1} + \left( \frac{1}{7} \right)^{-1} \right)^{-1}$$

4. Given the operations:

4. \_\_\_\_\_

$$a \# b = 2a - b \quad \text{and}$$

$$a @ b = \frac{a + b}{b}$$

Evaluate:  $6 @ | 3 \# 9 |$

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# MATHCOUNTS

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1989-90

■ State Competition ■

Target Round

Questions 5 and 6

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Name \_\_\_\_\_

School \_\_\_\_\_

Chapter \_\_\_\_\_

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5. How many natural numbers that are not prime are factors of 8575?

5. \_\_\_\_\_

6. Five robots produce five automotive parts in five minutes. How many packages each containing one part could be made by ten robots in ten hours?

6. \_\_\_\_\_

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# MATHCOUNTS

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1989-90

■ State Competition ■

Target Round

Questions 7 and 8

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Name \_\_\_\_\_

School \_\_\_\_\_

Chapter \_\_\_\_\_

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7. How many 3-digit numbers can be written using no zeros and at least one 7?

7. \_\_\_\_\_

8. If triangle PQR has sides 40, 60, and 80, then the shortest altitude is K times the longest altitude. Find the value of K.

8. \_\_\_\_\_