
MATHCOUNTS®

2016
■ Chapter Competition ■
Target Round
Problems 1 & 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.

Problem 1	Problem 2	Scorer's Initials

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1. \$ _____ George bought a season ski pass for \$395 instead of buying a ticket for \$40 each day he skied. He skied 38 days last winter. How many dollars did he save by purchasing the season pass?

2. _____ A string of numbers consists of one 1, two 2s, three 3s and so on, so that the number n appears n times consecutively as shown. What is the 50th digit in such a string?

1 2 2 3 3 3 4 4 4 4 5 5 5 5 5 . . .

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2016
■ Chapter Competition ■
Target Round
Problems 3 & 4

Name _____

School _____

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Problem 3	Problem 4	Scorer's Initials

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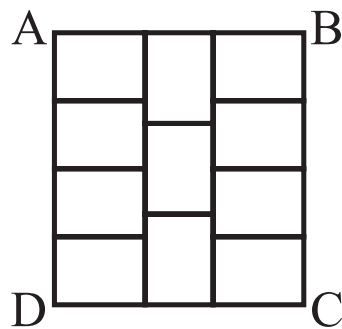
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3. minutes Eunice runs around an oval quarter-mile track, completing one lap every 2 minutes, 30 seconds. At this speed, how many minutes will it take her to run 1 mile?

4. units² Rectangle ABCD, shown here, is composed of 11 congruent rectangles. The length of side AB is 33 units. What is the area of rectangle ABCD?



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2016
■ Chapter Competition ■
Target Round
Problems 5 & 6

Name _____

School _____

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Problem 5	Problem 6	Scorer's Initials

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5. _____ The sum of the first five terms of an arithmetic sequence is 90 less than the sum of the next five terms. What is the absolute difference between two consecutive terms of this sequence? Express your answer as a common fraction.

6. _____ seconds The hour and minute hands of a clock create a 60° angle at 2:00. How many seconds later is the next time when the hour and minute hands create a 60° angle? Express your answer to the nearest whole number.

MATHCOUNTS®

2016
■ Chapter Competition ■
Target Round
Problems 7 & 8

Name _____

School _____

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Problem 7	Problem 8	Scorer's Initials

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7. _____ marbles In a bag containing only blue and yellow marbles, there are exactly eleven yellow marbles. After five additional blue marbles are added to the bag, the probability of randomly drawing a blue marble from the bag then exceeds 70%. What is the least possible number of blue marbles in the bag originally?
8. _____ A room has eight switches, each of which controls a different light. Initially, exactly five of the lights are on. Three people enter the room, one after the other. Each person independently flips one switch at random and then exits the room. What is the probability that after the third person has exited the room, exactly six of the lights are on? Express your answer as a common fraction.