
MATHCOUNTS®

2018
■ School Competition ■
Target Round
Problems 1 & 2

Name _____

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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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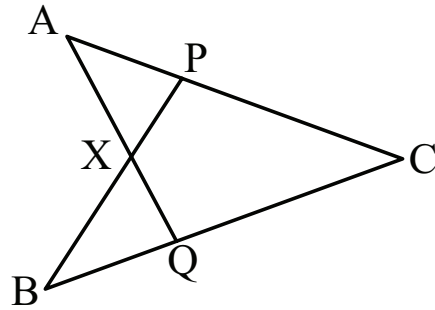
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1. _____ degrees

In the figure, points P and Q lie on segments AC and BC, respectively. Segments AQ and BP intersect at X. The measures of angles PAQ and PBQ are 42 degrees and 37 degrees, respectively. The measure of angle PXQ is 118 degrees. What is the measure of angle ACB?



2. _____

What is the least common multiple of 143 and 1001?

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Problems 3 & 4

Name _____

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Problem 3	Problem 4	Scorer's Initials

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3. _____ If n is a positive integer such that n^3 is a four-digit number with thousands digit 9, what is the value of n ?

4. _____ degrees Latoya created this table showing how she spent her time yesterday. She wants to make a pie chart (circle graph) of this data. What is the sum, in degrees, of the central angles of the regions representing the hours she spent at school and the hours she spent doing homework?

Latoya's Activities

Activity	School	Meals	Homework	Leisure	Sleep	Other
Hours	7	$1\frac{1}{2}$	$1\frac{1}{3}$	$1\frac{1}{2}$	$8\frac{1}{2}$	$4\frac{1}{6}$

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2018
■ School Competition ■
Target Round
Problems 5 & 6

Name _____

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Problem 5	Problem 6	Scorer's Initials

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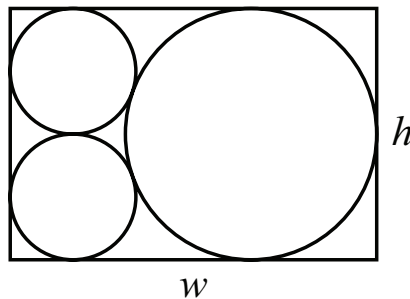
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5. _____ Three dogs arrived at the dog park at three different times, with their three owners, using three different leash colors. The Dalmatian was next to arrive after the Schnauzer. The dog with the red leash is owned by the 7th grader. The Poodle was not the first to arrive. The Schnauzer does not use a green leash. If the 6th grader owns the Dalmatian, then the Poodle's leash is blue. The 8th grader arrived first. What is the product of the grade levels of the student who arrived second, the student who owns the Poodle and the student who uses the green leash?

6. _____ Three circles are inscribed in a rectangle of width w and height h as shown. Two of the circles are congruent and are each tangent to two adjacent sides of the rectangle and to each other. The other circle is larger and is tangent to three sides of the rectangle and to the two smaller circles. What the ratio of h to w ? Express your answer as a decimal to the nearest hundredth.



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2018
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Target Round
Problems 7 & 8

Name _____

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Problem 7	Problem 8	Scorer's Initials

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7. _____ A box contains 4 chocolates and 1 fruit chew. Clark and Chloe take turns drawing a treat out of the box without replacement. Whoever draws the fruit chew wins. Clark draws first. What is the probability that Chloe wins? Express your answer as a common fraction.

8. _____ units² A rhombus has diagonals of length 12 units and 16 units. It is rotated 90 degrees and positioned, as shown, such that the shorter diagonal of the rotated figure is collinear with the longer diagonal of the original with an overlap of 4 units. What is the area of the overlapping shaded region? Express your answer as a decimal to the nearest hundredth.

