
MATHCOUNTS®

2012

■ School Competition ■
Target Round
Problems 1 and 2

Name _____

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 |
|---------------|-------------------|
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| | |

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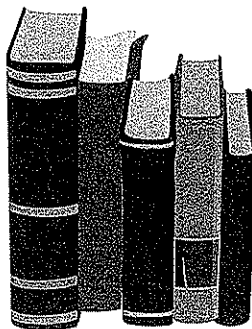
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1. _____ combi-
nations

Mrs. Libro's students may write book reports on any three books from a list of five books. How many combinations of three books are possible?



2. _____

Jennifer has taken three exams and earned scores of 92, 77 and 95. She has to take a final exam which will count as two exam scores. What score does she need to earn on the final exam to have an exam average of 90 for the year?

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Target Round

Problems 3 and 4

Name _____

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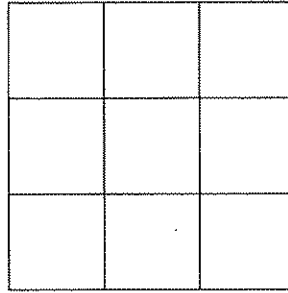
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3. rectangles

How many rectangles are there in the 3×3 grid made of 9 congruent squares, shown here?



4. cups

If $2\frac{1}{2}$ cups of milk are needed to make ice cream for 5 people, how many cups of milk are needed to make ice cream for 20 people?



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Target Round

Problems 5 and 6

Name _____

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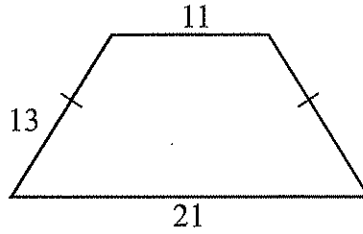
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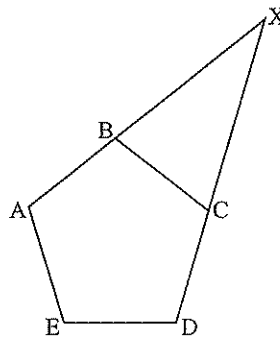
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5. _____ units An isosceles trapezoid has bases of length 11 units and 21 units and legs of length 13 units. In units, what is the height of the trapezoid?



6. _____ degrees When sides AB and DC of regular pentagon ABCDE are extended, they intersect at point X. What is the degree measure of $\angle X$?



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Target Round

Problems 7 and 8

Name _____

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7. _____ If x is negative and $x^2 = 16$, what is the value of $x^3 + \sqrt{-x}$?

8. _____ in² A 4 in \times 4 in square is surrounded by a border consisting of all points in the plane of the square that are within 1.5 inches of the square and not in the square. In square inches, what is the area of the border? Express your answer as a decimal to the nearest tenth.

