
MATHCOUNTS®

2011

■ Chapter Competition ■

Target Round

Problems 1 and 2

Name _____

School _____

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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 right-hand column of the problem sheets. If you complete the problems before time is called, use the time remaining to check your answers.

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1. How many of the smallest, non-overlapping triangular regions are there in Figure 4 of the sequence whose first three figures are shown?

1. _____ regions

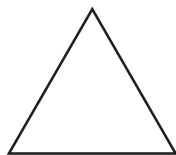


Figure 1

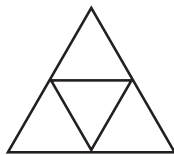


Figure 2

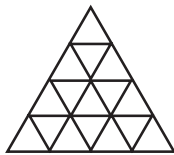


Figure 3

2. Given arithmetic sequences A and B shown, what is the positive difference between the 2011th term of sequence A and the 2011th term of sequence B?

2. _____

Sequence A: 1, 5, 9, 13, ...

Sequence B: 1, 7, 13, 19, ...

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Target Round
Problems 3 and 4

Name _____

School _____

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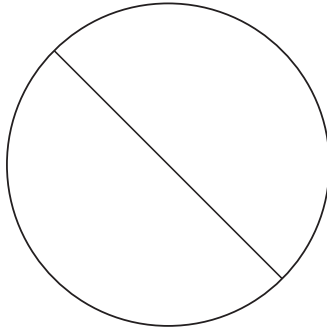
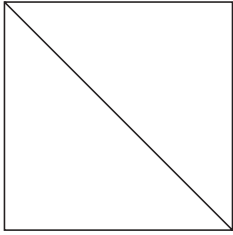
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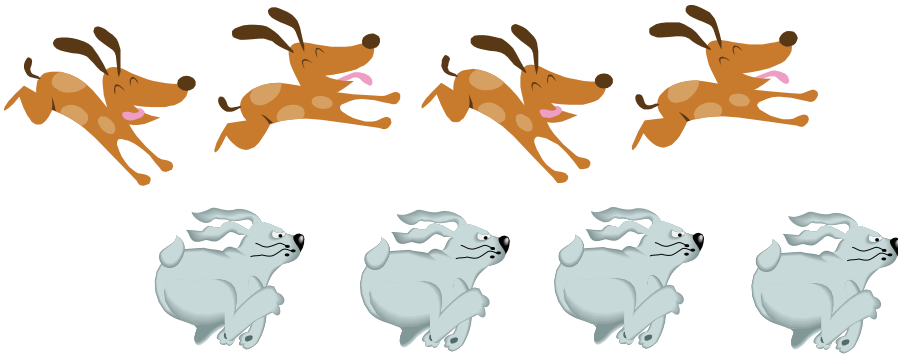
3. The diagonal of a particular square is 5 inches. The diameter of a particular circle is also 5 inches. By how many square inches is the area of the circle greater than the area of square? Express your answer as a decimal to the nearest tenth.



3. _____ sq inches

4. In a small town all the registered pets are either rabbits or dogs. In a recent parade 65% of the 840 registered pets participated. If 180 registered rabbits participated, how many registered dogs participated?

4. _____ dogs



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2011

■ Chapter Competition ■
Target Round
Problems 5 and 6

Name _____

School _____

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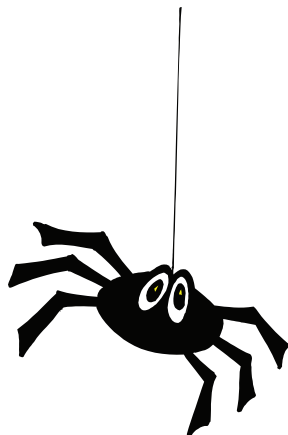
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5. On a scale drawing showing the floor plan of an apartment, the rectangular living room measures 3.5 cm by 6 cm. If 1 centimeter represents 1.5 meters, what is the area of the floor of the actual living room, in square meters? Express your answer as a decimal to the nearest hundredth.

5. _____ sq meters

6. Each day, the itchy-bitsy spider will travel 5 feet up the waterspout of a building. Each night, it will rain and wash the spider 3 feet down the waterspout. If the itchy-bitsy spider starts traveling up the 50-foot waterspout on the morning of April 1, on what date will it first reach the top of the spout?

6. April



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Target Round

Problems 7 and 8

Name _____

School _____

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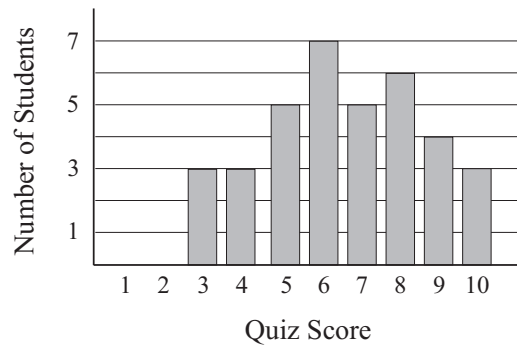
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7. The following graph shows the quiz scores Mr. Washington recorded for his 10-question algebra quiz. Each question was worth one point. After looking at this graph and knowing that only three students answered #7 correctly, he decided to give full credit for #7 to every student. With this adjustment, what was the new mean quiz score? Express your answer as a decimal to the nearest tenth.

7. _____ points

Quiz Scores for Mr. Washington's Class



8. Square ABCD has side length 1 unit. Points E and F are on sides AB and CB, respectively, with $AE = CF$. When the square is folded along the lines DE and DF, sides AD and CD coincide and lie on diagonal BD. The length of segment AE can be expressed in the form $\sqrt{k} - m$ units. What is the integer value of $k + m$?

8. _____