
MATHCOUNTS®

2015
■ **School Competition** ■
Target Round
Problems 1 & 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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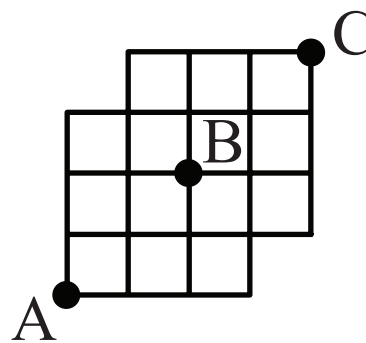
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1. \$ _____

A shirt that originally cost 64 dollars is on sale for 15 percent off. What is the sale price of the shirt?

2. _____ paths

Skipper follows a path along the grid shown, always moving either up or to the right. How many paths from A to C do not pass through B?



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Target Round
Problems 3 & 4

Name _____

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3. adults Amy surveyed eight adults about the number of cups of coffee they had consumed that day. The mean and median of the eight integer responses were both 2.5 cups, the maximum was 4 cups, the minimum was 0 cups, and the mode was 2 cups. How many of those surveyed reported drinking 2 cups of coffee?
4. questions After completing part of an online test, Chris had correctly answered 80% of the questions he'd attempted. Then, he answered 13 of the remaining 20 questions correctly. If his overall average for the online test was 75%, how many questions were on the test?

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2015
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Target Round
Problems 5 & 6

Name _____

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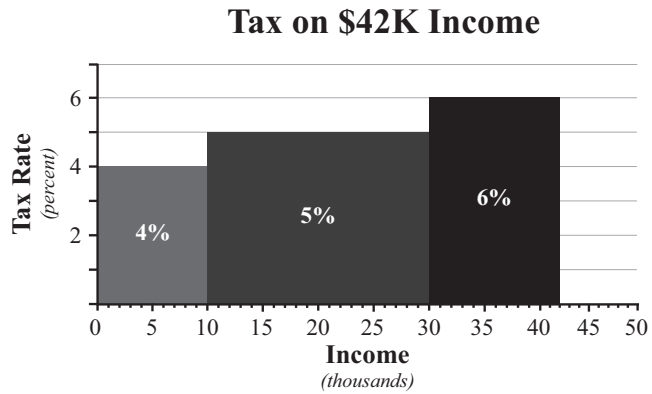
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5. \$ _____

In Alaya's home state, an individual's income tax is calculated as follows:

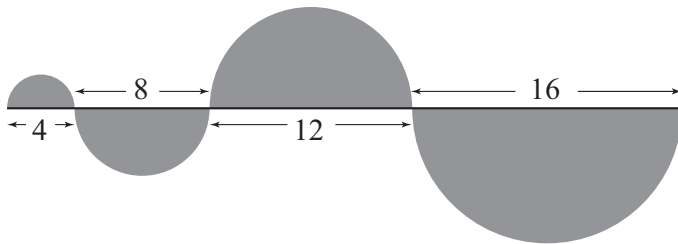
- 4% on any portion of income less than or equal to \$10,000, plus
- 5% on any portion of income greater than \$10,000 but less than or equal to \$30,000, plus
- 6% on any portion of income over \$30,000.

The figure shows how the state income tax is calculated for an income of \$42,000. If Alaya paid \$3200 in state income tax, what was his income?



6. _____ cm

Semicircles are formed on alternating sides of a 40 cm segment, as indicated below. In centimeters, what is the radius of a circle that has the same area as the shaded region? Express your answer as a decimal to the nearest tenth.



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2015
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Target Round
Problems 7 & 8

Name _____

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7. _____ cm

The square shown in Figure 1 has side length 24 cm. It is divided into four congruent quadrilaterals and rearranged to form the square in Figure 2. The square in the center of Figure 2 has side length 10 cm. What is the side length of the larger square in Figure 2?

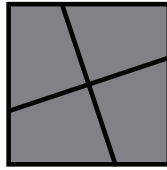


Figure 1

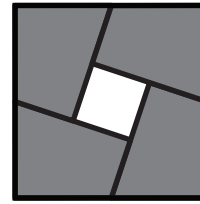


Figure 2

8. _____

Mr. Jared asked his math students to compute the numerical value of $(a + 3) \cdot (a + 6)$ for a particular positive value of a . Ruby accidentally copied the expression as $(a + 3) \cdot a + 6$, so even though she used the correct value for a and did all computations correctly, she got the wrong answer. Similarly, Amber mistakenly wrote the expression as $a + 3 \cdot (a + 6)$ and obtained an incorrect answer, despite making no other mistakes. Curiously, Ruby and Amber ended up with the same wrong answer! What was the correct answer to Mr. Jared's question?