MATH COUNTY INVITATIONAL
MATH TOURNAMENT
FOR GRADES 4-6

Some Problems From 2008

2008 Individual Event

2. What missing number makes the statement true? $44 \times 32 = 64 \times \square$

6. The area of a square is less than 200 sq cm. The length in centimeters of each side is a counting number. What is the greatest perimeter that the square can have, in cm?

9. Amy plays Zane in a game with twelve rounds. In each round, the winner scores 5 points and the loser scores 3 points. At the end of the game, Zane's total score is 44 points. How many rounds did Amy win?

The individual event contained 10 problems.

2008 Team Event

11. Find the value: $(6-12)\times(6-9)\times(6-6)\times(6-3)$.

15. What missing number makes the statement true? $\frac{3}{5}+17=\frac{\square}{15}+16$

19. In the square shown, the length of the diagonal is 6 cm. What is the area of the square, in square centimeters?

The team event contained 10 problems.

2008 Tiebreaker Event

21. Brionna walks exactly 5 blocks in 7 minutes and 30 seconds. At this rate, what is the total number of blocks that she walks in 12 minutes?

5 problems are provided to break ties.

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Sample Solutions

2008 Individual Event

2. **22** Doubling the 32 and halving the 44 does not change the product, nor does switching the positions of two numbers multiplying each other.

6. **56** Since $10^2 = 100$ and $20^2 = 400$, the side-length of the square is between 10 and 20. The side-length is less than 15 cm because $15^2 = 225$. The area of the square is $14^2 = 196$, the side-length is 14 cm and the perimeter is 56 cm.

9. **8** **METHOD 1:** Think of the scoring this way: each player gets 3 points per round just for playing and the winner of the round receives a bonus of 2 points. If we remove those 3 points per round from each person, then the only scoring is 2 points per round for the winner. For the whole game each player would have scored 36 fewer points, so Zane would have scored 44 – 36 = 8 points. At 2 points per round, he would have won 4 rounds and Amy would have won 8 rounds.

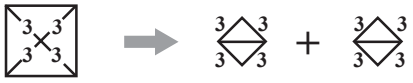
METHOD 2: If Zane won every round, the final score would have been 60-36 in his favor. Each round he loses lowers his total score by 5 – 3 = 2 points. However, his total score was 44 points, which is 16 points less than 60 points. He lost (and Amy won) 16 ÷ 2 = 8 rounds.

2008 Team Event

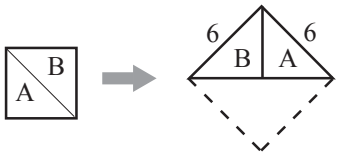
11. **0** In the third set of parentheses, the value is 0. The product of 0 and any number is 0.

15. **24** $\frac{\square}{15} + 16$: $\frac{3}{5} + 17 = \frac{9}{15} + 17 = \frac{9}{15} + (\frac{15}{15} + 16) = (\frac{9}{15} + \frac{15}{15}) + 16 = \frac{24}{15} + 16$. The numerator is 24.

19. **18** **METHOD 1:** Draw the other diagonal and move the four triangles as shown to form two small squares. Then the sum of the areas of the two small squares, 9 + 9, equals the area of the original square, 18 sq cm.



METHOD 2: Rearrange the two given triangles as shown and draw the two dashed lines to complete the square.The area of the square is 6 × 6 = 36 sq cm. The area of the original square is equal to the upper half of the diagram, 18 sq cm.



2008 Tiebreaker Event

T1. **8** At that rate she walks 10 blocks in 15 minutes, which is 2 blocks every 3 minutes. Thus in 12 = 4 × 3 minutes, she walks 4 × 2 = 8 blocks.