AMC 8 Practice
IMS Math Club

Number Theory/Algebra

Concepts:
- Prime Numbers and Factorization
- Divisibility Rules
- Digits
- Mean and Median

1. The sum of two prime numbers is 85. What is the product of these two prime numbers? (2014 #4)
2. The 7-digit numbers 74A52B1 and 326AB4C are each multiples of 3. Which of the following could be the value of C: 1, 2, 3, 5, 8? (2014 #21)
3. What is the ratio of the least common multiple of 180 and 594 to the greatest common factor of 180 and 594? (2013 #10)
4. The mean, median, and unique mode of the positive integers 3, 4, 5, 6, 6, 7, and x are all equal. What is the value of x? (2012 #11)
5. What is the units digit of 13 to the 2012th power. (2012 #12)
6. Let R be a set of nine distinct integers. Six of the elements are 2, 3, 4, 6, 9, and 14. What is the number of possible values of the median of R? (2012 #22)
7. Let w, x, y, and z be whole numbers. If $2^w \cdot 3^x \cdot 5^y \cdot 7^z = 588$, what does $2w + 3x + 5y + 7z$ equal? (2011 #17)
8. A 2-digit number is such that the product of the digits plus the sum of the digits is equal to the number. What is the units digit of the number? (2014 #22).

-Distance, rate, work
-Systems of Equation
-Proportions
-Exponents
-Ratios
1. There are four more girls than boys in Ms. Raub’s class of 28 students. What is the ratio of number of girls to the number of boys in her class? (2014, #7)

2. The "Middle School Eight" basketball conference has 8 teams. Every season, each team plays every other conference team twice (home and away), and each team also plays 4 games against non-conference opponents. What is the total number of games in a season involving the "Middle School Eight" teams? (2014 #16)

3. Eight friends ate at a restaurant and agreed to share the bill equally. Because Judi forgot her money, each of her seven friends paid an extra $2.50 to cover her portion of the total bill. What was the total bill? (2013 #4)

4. Trey and his mom stopped at a railroad crossing to let a train pass. As the train began to pass, Trey counted 6 cars in the first 10 seconds. It took the train 2 minutes and 45 seconds to clear the crossing at a constant speed. Which of the following was the most likely number of cars in the train? (2013 #7)

5. The sum of six consecutive positive integers is 2013. What is the largest of these six integers? (2013 #17)

6. George walks 1 mile to school. He leaves home at the same time each day, walks at a steady speed of 3 miles per hour, and arrives just as school begins. Today he was distracted by the pleasant weather and walked the first ½ mile at a speed of only 2 miles per hour. At how many miles per hour must George run the last 1/2 mile in order to arrive just as school begins today? (2014 #17).

7. The Fort Worth Zoo has a number of two-legged birds and a number of four-legged mammals. On one visit to the zoo, Margie counted 200 heads and 522 legs. How many of the animals that Margie counted were two-legged birds? (2012 #9)

8. How many digits are in the product $4^5 \times 5^{10}$? (2011 #15)