Math Olympiad 4 roundup

1. Each letter in the ordered list A, B, C, D, E, ..., Y, Z represents a number, not necessarily different from each other, so two letters may represent the same number. The sum of any 4 consecutive numbers is 30. If A=3, C=9, and D=10, what is the value of J?

2. In the previous problem, what is the value of Z?

3. Each letter in the ordered list A, B, C, D, E again represents a number. The sum of any three consecutive numbers is 16. If A=1, what is D?

4. The clock at Jacobi Towers is also slow. Every day at noon, Theo corrects it from 11:37 to 12:00pm. He misses correcting it for 5 days. What time does it read when he shows up at noon to correct it on the 6th day?

5. Two watches are set correctly at 7:00 AM. One watch gains 3 minutes every two hours. The other watch loses 1 minute every two hours. At what time the next day will the faster watch be exactly one hour ahead of the slower watch? (indicate AM or PM)

6. Theo lost his adjustment wrench. How many days will it take before the Jacobi clock towers read the correct time again at noon?

7. How many numbers between 1 and 1000 are divisible by 5 and by 7?

8. How many numbers between 1 and 1000 are divisible by 10 but not by 15?

9. How many numbers between 1 and 1000 are divisible by 6 or by 8, but not by 9?