



Math Olympiad and Problem Solving Programs
F130 - Advanced Problem Solving
Problem Set 5.2 - Important Ones

Name:

Date:

1. 899 to 2453 inclusive means all numbers from 899 to 2453, including 899 and 2453. As an exercise, notice that there are 5 numbers from 1 to 5 inclusive but $5 - 1 = 4$. We need to add one more to make sure we include 899 and 2453 so our answer is $\boxed{2453 - 899 + 1 = 1555}$.
2. $\boxed{9}$
3. The maximum amount of money means William will earn \$2 per day starting December 5 all the way to December 24. Notice that he is also earning money on December 24. This means he is earning money on all the days from **5 to 24 inclusive** so he earns \$2 a day for $24 - 5 + 1 = \mathbf{20 \text{ days}}$. To find how much money he can earn total, we multiply $\boxed{2 \times 20 = \$40}$.
4. Since McKinley started counting when she passed the first antenna, the **first antenna is our starting point**. From the first antenna to the last she passes **20** antennas. This means that by the time she passes the 21st and last antenna, she has gone $\boxed{20 \times 2 = 40 \text{ miles}}$.
5. For every 5 floors Robert climbs, Connor climbs 4 floors. In other words, Connor climbs $\frac{4}{5}$ of the floors Robert climbs. Now when Robert reaches the 29th floor, Connor has climbed $\frac{4}{5} \times 29 = 23.2$ floors. This means he hasn't quite reached the 24th floor yet so he is still on the $\boxed{23\text{rd floor}}$.
6. Similar to problem #4, the **first row is our starting row**. We then will add 1.5 meters for each row behind the first row. Thus our answer is $\boxed{41 \times 1.5 = 61.5}$.
7. $\boxed{7}$
8. The wording was a little ambiguous here. If a girl is inserted between every two boys we have a lineup that looks like **boy-girl-boy**. Then there are $\boxed{7}$ girls in line.
-OR-
However if we assume that between every two boys means **boy-boy-girl-boy-boy**, then there are $\boxed{3}$ girls in line.
9. $\boxed{48}$
10. $\boxed{25}$