Problems Of The Week
Due January 22nd

Make sure to review the guidelines before you start!

1. Let $ABCD$ be a rectangle such that $AB=32$ cm and $BC=10$ cm. Let $M$ be a point on $AB$ such that $AM=11$ cm, $N$ be a point on $BC$ such that $BN=4$ cm, $P$ be a point on $CD$ such that $CP=11$ cm, and $Q$ be a point on $DA$ such that $DQ=4$ cm. What is the number of the square centimeters in the area of the quadrilateral $MNPQ$?

2. Alia's digital clock read 5:16 a.m. when she left for school. When she returned home 6 hours and 11 minutes later, the clock read 3:37 a.m. because the power had gone off during the day. If her clock automatically reset to 12:00 a.m. when the power was restored, at what time that morning did the power return?

3. A sum is formed by alternatively adding and subtracting consecutive odd integers starting with 1 and ending with 1413 as indicated. What is the sum $1 - 3 + 5 - 7 + 9 -11 + ... + 1409 - 1411 +1413$? (Do not add all these numbers... please!)

4. Angel wants to sell 90 identical pencils in groups of 5 or 2. In how many ways can the pencils be grouped? (Do not just give me a number, explain why that is the correct number.)

5. Exactly one ordered pair of positive integers $(x,y)$ satisfies the equation $19x + 17y = 108$. What is the sum of $x+y$? How did you find $(x,y)$?
Problems are from MAA American Mathematics Competitions and Laura's head!