1. Let's look at a few examples of the sums of two primes. $7 + 13 = 20$, and $11 + 19 = 30$. The sums aren't prime, because the two primes are $odd + odd = even$. So in order to have a prime sum, the sum MUST be odd. To have an odd sum, we must do $even + odd = odd$. Therefore, there has to be an even prime added to an odd prime. The only even prime is 2, so 2 must be one of the primes. $\boxed{\text{C}}$

2. Look at each choice:

   $12^2 + 33^2 = 2^4 \cdot 3^2 + 3^2 \cdot 11^2 = 3^2(2^4 + 11^2)$. So this number can be expressed as a product, so it cannot be prime.

   $14^2 + 18^2 = even + even = even$. Not prime.

   $15^2 + 49^2 = odd + odd = even$. Not prime.

   $13^2 + 38^2 = odd + even = odd$. $13^2 + 38^2 = 13^2 + 2^2 \cdot 19^2$, can't be factored. $13^2 + 38^2 = 1613$, test the primes less than 40, whcih are 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37. None work, so 1613 is prime. $\boxed{\text{B}}$

3. If the perimeter is 36, then $l + w = 18$. So our two side lengths must add up to 18. Consider the combinations of prime number that add up to 18: $5 + 13$, $7 + 11$. The largest area is the shape closest to a square, so $7 \times 11 = 77$. $\boxed{77}$

4. $\boxed{43}$

5. $\boxed{270}$

6. Prime factorize: $391 = 17 \times 23$, and $713 = 23 \times 31$. So their greatest common factor is $\boxed{23}$.

7. $\boxed{31}$

8. The list of all 2-digit multiples of 7: 14, 21, 28, 35, 42, 49, 56, 63, 70, 77, 84, 91, 98. You can average them, or you can just choose the middle number of the list. Either way, you will get $\boxed{56}$.

9. $\boxed{122}$

10. The greatest common factor of positive integers $m$ and $n$ is 6. The least common multiple of $m$ and $n$ is 126. What is the least possible value of $m + n$? (MATHCOUNTS) $\boxed{60}$