

1. $\boxed{16}$
2. $\boxed{10}$
3. Assuming there are 4 flags in the corners, then each side will have $(40 - 4) \div 4 = 10$ flags. But then we will also see 2 corner flags on each side, for a total of $10 + 2 = \boxed{12}$ flags.
4. If we start at one corner of a side, then every rose after that will be 1 meter away. This gives us 10 roses plus the corner one we started with, or 11 roses on each side. Now assuming that 2 roses on each side are corner roses, we have $11 - 2 = 9$ roses on each side that are not corner roses, or $9 \times 4 = 36$ total roses that are not corner roses. Adding the corner roses we get $36 + 4 = \boxed{40}$ roses.
5. Since there are 5 cheerleaders on each side of the square, and 2 of them must be on the corners, there will be $5 - 2 = 3$ cheerleaders on each side that are not on the corners. This gives a total of $3 \times 4 = 12$ cheerleaders not standing on the corners, and a total of $12 + 4 = \boxed{16}$ cheerleaders.
6. We need not assume there to be 4 flags on the corners. Instead, we can stretch the perimeter of the plant into a line of 121 palm trees one-meter apart. This line must be 120 meters since the trees are spaced one-meter apart. If we roll this back into a square, each side must be $120 \div 4 = \boxed{30 \text{ meters}}$.
7. $169 = 13 \times 13$, indicating that this is a 13×13 square, with $\boxed{13}$ musicians on each side.
To figure out that $169 = 13 \times 13$, we know that 169 musicians form a square so if each side has x musicians, then there must be a total of $x \times x = x^2$ musicians. This gives us $x^2 = 169$ so $x = \sqrt{169} = 13$.
8. $\boxed{24}$
9. If the original square formation is $n \times n$ then when Troy adds one extra row and column it becomes $(n + 1) \times (n + 1)$. For example if the original is 4×4 then the new square becomes 5×5 . Adding an extra row and column to an $n \times n$ square takes $n + n + 1$ more marbles (try to visualize or draw this out using the 4×4 to 5×5 example).
Troy has 5 marbles left over and needs 10 more marbles to make the extra row and column. This means he needs a total of $5 + 10 = 15$ marbles to make his extra row and column. Since $n + n + 1 = 15$, then $n + n = 14$ and then $n = 7$ which means the original formation was a 7×7 which uses $7 \times 7 = 49$ marbles with 5 left over for a total of $49 + 5 = \boxed{54}$ marbles.
10. Similarly to #9, if Ethan starts out with an $n \times n$ square formation, then he uses $32 + 49 = 81$ quarters to add an extra row and $n + n + 1 = 81$ so $n + n = 80$ and then $n = 40$. This means he started with $40 \times 40 + 32 = \boxed{1632}$ quarters.