

Problems of the Week for April 23

Do 5 of 8 of your choice

1. Of a group of boys and girls at Central Middle School's after-school party, 15 girls left early to play in a volleyball game. The ratio of boys to girls then remaining was 22 to 7 . Later, 45 boys left for a football game. The ratio of girls to boys was then 7 to 13 . How many students attended the party?
2. In the equation $a * b = 2310$, a and b are both two-digit numbers. What is the greatest possible value of $a + b$?
3. A circular garden is surrounded by a sidewalk with a uniform width of 11 feet. The total area of the sidewalk equals the total area of the garden. How many feet are in the diameter of the garden? Round your answer to the nearest whole number.
4. The first five triangular numbers are pictured. The nth trinagluar number is formed by drawing a row of n dots below the (n-1)th triangular dot pattern. The k-th triangular number is represented by 136 dots. What is the value of k?
5. How many ways can the letters of the word NUMBER be scrambled so that the first and the last letters are both vowels? What if the first and last letters are both consonants?
6. What is the sum of all positive integer values of n such $(n + 25)/n$ is an integer?
7. A number can be written in the form $(m+11)(n+22)$, where m and n are two-digit numbers created by using each of the digits in this set $\{1, 2, 3, 4\}$ exactly once. What is the **greatest** such number?
8. How many four-digit numbers between **4000** and **5000** are there for which the thousands digits equal the sum of the other three digits?