Round 1

1. An equilateral triangle is inscribed within a circle. Find the height of the equilateral triangle if the radius of the circle is 6.

Round 1

2. Let T = TNYWR. Sophia drinks water according to the function $2n+1$ for each hour, where n is the nth hour that she has walked. For instance, the first hour she drinks 3 ounces, the second hour she drinks 5 ounces, the third hour she drinks 7 ounces, leading to a *total* of 15 ounces in those 3 hours. What is the *total* number of ounces she drinks after walking for T hours?

Round 1

3. Let T = TNYWR. Parker is a student at MFD school. His teacher Mrs. Devereaux weighs all tests the same, but drops the lowest score. If Parker's test scores are 91, 87, 95, T, and X, find X if after dropping his lowest score, Parker's average test score is 94.

Round 2

1. Jerry has four textbooks – one math, one history, one physics, and one Spanish. How many ways can he rearrange the books in his locker, if the history and Spanish textbooks cannot be placed next together?

Round 2

2. Let T = TNYWR. Thomas has a quadratic function f(x) which has zeroes at (2,0) and (-2,0), and a y-intercept at (0,4). What is the least common multiple of T and –f(6)?

Round 2

3. Let T = TNYWR. Rachel has T/8 feet of fencing to use for her rectangular garden. Because of the 100-foot wall on one side, she can only use fencing for 3 sides of the garden, what is the maximum possible area of her garden?

Round 3

1. Allison has an unlimited amount of paint bottles in all 7 different hues of the rainbow (ROYGBIV). If she picks from her infinite paint drawer without looking, how many paint bottles will she need to pick, before she is absolutely certain that she has at least five bottles of the same color?

Round 3

2. Let T = TNYWR. The perimeter of a regular hexagon is equal to (T-5). What is the area of the hexagon?

Round 3

3. Let T = TNYWR. Spiders have 8 legs and Nicholases have $\sqrt{3T}$ legs. In a random area, there are a total of 16 spiders and Nicholases, and 192 total legs, how many Nicholases are there?

Round 4

1. A=1+2+3+4+5+6+…+100, and B=1-2+3-4+5-6+...-100. If C=A+B, find C.

Round 4

2. Let T = TNYWR. T/1000 is the length of a stick. Diana breaks the stick two times, so that there are three smaller pieces of integer length. The three pieces must be able to form a triangle. Find the area of that triangle.

Round 4

3. Let T = TNYWR. Linette is trying to travel from her home to her workplace, a distance of $4\sqrt{17T}$ miles. If she drives at a rate of 60 miles per hour, she gets to work 17 minutes early. How fast would she need to drive to get to work exactly on time (assuming she leaves at the same time)?

Answers

Round 1
1. 9
2. 99
3. 91

Round 2
1. 12
2. 96
3. 18

Round 3
1. 29
2. $24\sqrt{3}$
3. 15

Round 4
1. 5000
2. $\sqrt{17}/4$
3. 30