**Mass Relay**  
**First Leg**No calculators

1. 
2. What is the value of 9342 + (-437) × 719 + (-9340) + (-438) × (-719)?
3. Eight toy camels and three toy pigs cost Gary $85. Twelve toy camels cost Larry $96. Assuming everyone bought their toys at the same store and there were no discounts, what is the cost of two toy pigs?
4. 
5. What is the length of the longest, straight, thin stick that can fit into a right rectangular prism measuring 3 feet by 4 feet by 12 feet?
6. The first figure in this pattern is a 2 by 2 square, with an area of 4 square units. In the second figure, a congruent square is placed behind the first square such that the midpoints of the left and bottom sides intersect at the midpoints of the top and right sides, respectively, of the first square. In each successive figure, a congruent square is placed behind the preceding, intersecting in the same way. What will be the area of the complete region of the 100th figure in this pattern?  
   
7. Caroline can walk 30 meters in 20 seconds. At this pace, how far (in meters) will she walk in an hour?
8. 

**Mass Relay  
Second Leg**No calculators

1. In trapezoid ABCD, AB = CD = 2 cm, BC = TNYWR cm, segment AD is parallel to segment BC, and m <BAD = 60˚. What is the area of the trapezoid? Express your answer in simplest radical form.  
   
2. Let n = the sum of the digits of TNYWR. What is the single discount that is equivalent to the two successive discounts of TNYWR% off followed by 20% off the discounted price? Express your answer as a percent to the nearest tenth.
3. Lisa has TNYWR friends and 81 marbles. What is the minimum number of additional marbles she needs so that she can give each friend at least one marble and no two friends receive the same number of marbles?
4. In an algebra class, half of the students are boys. One-third of the students are wearing glasses. -1/TNYWR (note the negative sign) of the boys are wearing glasses. What fraction of the girls are wearing glasses? Express your answer as a common fraction.
5. What is the last digit in the decimal expansion of 1 / 2TNYWR?
6. The quotient of a particular circle’s area, in square cm, and its circumference, in cm, is TNYWR. How long is the circle’s radius?
7. What is the smallest number with exactly TNYWR / 200 factors, including 1 and itself?
8. Maya lists all the positive divisors of TNYWR4. (Positive divisors include 1 and the number itself.) Shen then randomly picks one divisor. What is the probability that the divisor is a perfect square? Express your answer as a common fraction.

**Mass Relay  
Third (and last) Leg**No calculators

1. Triangle ABC has AB = AC = TNYWR and m<CAB = 120o. Circle D is inscribed in triangle ABC. Find the radius of D, in simplest radical form.
2. What is the TNYWR x 10th digit to the right of the decimal place in the expansion of 1/7?
3. The driveway in front of my house is TNYWR feet wide and 100 feet long. If asphalt is ordered in a whole number of cubic yards, how many cubic yards of asphalt must be ordered to pave my driveway with a layer of asphalt three inches thick?
4. The nth term of the sequence 1, 5, 12(TNYWR)… is generated by a quadratic function an=f(n). Find the eighth term.
5. What is the greatest prime factor of 13! + (3 \* TNYWR)! ?
6. Let F(n) be the remainder when the nth Fibonacci number is divided by 3. For example, the 8th Fibonacci number is 21, so F(8) = 0. Find (-1)F(1) + (-1)F(2) + (-1)F(3) + … + (-1)F(TNYWR) .
7. Chelsea wants to make a semicircle, including the diameter that closes in the shape, out of string. With TNYWR inches of string, what is the radius of the semicircle that she can make? Round your answer to the nearest inch.
8. I have an unfair 6-sided die such that the probability of rolling a 1 is TNYWR. The probabilities of rolling a 2 through 6 are equal to each other. I roll one of these die twice. Find the probability that the sum of my two rolls equals 6. Express your answer as an exact percent.