

2010 TAPS Round 3

11. The digits of the following number,

12345678910111213...997998999,

are found by writing the counting numbers 1, 2, 3, ..., 999 in order.
What would be the 2006th digit from left?

12. What is the area, in square units, of a pentagon with vertices at (8, 10), (0, 6), (0, -2), (12, -2), and (12, 6)?

13. Find the diameter of a circle whose area is quadrupled when the length of its radius is increased by 4 cm.

14. Mike and Michelle live in different towns 56 km apart. They want to ride their bicycles and meet each other at a point between the two towns. Mike can ride his bike at 8 km an hour, and Michelle rides at 6 km an hour. If they both start at 10:00 A.M., at what time will they meet?

15. Sarah is taking 6 classes at Odyssey Middle School for next year. How many different ways could her classes be assigned? She asked to have her PE class at the end of the day so that she would be ready for after-school sports. She also must have Student Council during 3rd period, since she is the vice president. How many fewer possible schedules does she have, given these conditions? (Only type in the answer for how many FEWER possible schedules)