

College Bound Math Problem Set #1
for the week of October 6, 2014

Try to solve any two of these problems.

1. Write each of the following as an ordinary number and also in exponential form (also known as scientific notation). Some answers are provided.

one hundred = <u>100</u> = <u>10^2</u>	one million = _____ = _____
five hundred = _____ = _____	eight million = _____ = _____
two thousand = <u>2,000</u> = <u>2×10^3</u>	ten million = _____ = _____
ten thousand = _____ = _____	one billion = _____ = _____
one hundred billion = _____ = _____	
one trillion = _____ = _____	

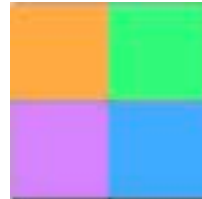
2. You can compute 14^2 in your head!

$$14^2 = (2 \times 7)^2 = (2 \times 7) \times (2 \times 7) = (2 \times 2) \times (7 \times 7) = 4 \times 49$$

and, continuing,

$$4 \times 49 = 4 \times (50 - 1) = 4 \times 50 - 4 \times 1 = 200 - 4 = 196.$$

Tell your mentor why each step above makes sense. Which step can be done by counting backward?



Suppose each of these 4 small squares is 7 by 7. Then the whole figure is 14 by 14.

3. For a project consisting of three tasks, a teacher divides the class into teams of three, so that in any group each student will do one of the tasks. Each team must assign its members to tasks randomly so that all possible outcomes are equally likely. Let's label the tasks by letters: task **a**, task **b**, and task **c**. One of the groups has as its members students named **A**tieno, **B**ao, and **C**himayi. What is the probability that none of them is assigned the task labeled by her/his initial?