Warm-Up PL

1. _____ Bill disputes his current grade average. His teacher says that he has a 93 average, but he thinks it is a 99. His homework average, which represents 25% of his grade, is a 96. Tests represent the other 75% of his grade. He has taken four tests and has scored a 98, a 105, a 99, and something else. What is the positive difference between the grade he thinks he got and the grade his teacher thinks he got?

2. _____ Al and Bill are arm-wrestling. Each has a 50 percent chance of winning in the first round. Al's chance increases by 5 percent every time he wins and Bill's chances increase by 10% every time he wins. What is the probability that Bill wins exactly one round out of three and he wins either first or last? Express your answer as a common fraction.

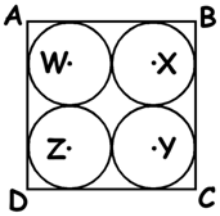
3. _____ How many digits are in the number represented by $6^4 5^{10} 2^3$?

4. _____factors_____ How many factors does the number 972 have?

5. _____ What are the *odds* that a randomly chosen number from 1 to 1,000 has at least two digits that are 1's? Express the odds as a common fraction in simplest form.

6. _____ Point A(3,2) is reflected across the line y=x, then that point is reflected across the y-axis. The resulting point is labeled point B. What is the area of the circle with diameter AB? Express your answer as a common fraction in terms of pi.

7. _____ Square ABCD contains congruent inscribed circles W, X, Y, and Z as shown. What is the ratio of the length of AX to the length of BZ? Express your answer as a common fraction in simplest radical form.



8. _____ Kevin has forgotten his telephone number. He knows that the last four digits are 2, 4, 6, and 8, but not necessarily in that order. He does not know any of the last three digits. What is the probability that he will correctly guess his phone number on his fortieth attempt (but not before his fortieth attempt)?

9. _____times_____ Alana and Paul are running laps around a track. They begin at the starting line and run in opposite directions. Alana runs 12 laps, and Paul runs 23 before they both finish where they started. Not including the start and finish, how many times to they meet?

10. $_____ Sally is selling seashells by the seashore. She purchased large and small seashells from CShells Inc. Large seashells cost $2.40 each, and small ones cost $1.40 each. She bought 20 seashells in all and spent 36 dollars. She then sells all of the small shells for $2.40 each and all of the large shells for $3.90 each. What is her total profit?

Written by Peter Luo 2009