Problem 1. Find

$$1 + 2 + 4 + 8 + 16 + \cdots + 1024$$

Problem 1. Find

$$1 + 2 + 4 + 8 + 16 + \cdots + 1024$$

Problem 2. Find

$$1 - 2 + 3 - 4 + 5 - 6 + \cdots + 2003$$
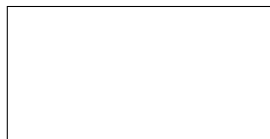
Problem 2. Find
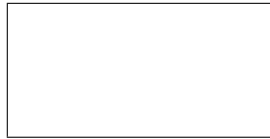
$$1 - 2 + 3 - 4 + 5 - 6 + \cdots + 2003$$

Problem 3. A man can cut a long cylindrical log into 4 cylindrical pieces in 5 minutes. Into how many such pieces can he cut it in 10 minutes?

Problem 4. Find the radius of the circle whose equation is

$$x^2 - 2x + y^2 + 4y = 20.$$

Problem 4. Find the radius of the circle whose equation is

$$x^2 - 2x + y^2 + 4y = 20.$$

Problem 5. Alice, Bob, Charlie and Diane stand in a line in a random order. What is the probability that Alice and Bob are standing next to each other?

Problem 6. Both of Ted's Algebra II classes took the same test. With 20 students in the first class, the average score was 80%. With 30 students in the second class, the average score was 70%. The average score of all his students was

Problem 7. Express the following with as few logarithms as possible:
$\left(\log_8 27 \right)\left(\log_9 64 \right) =$

$$\boxed{}$$

Problem 7. Express the following with as few logarithms as possible:
$\left(\log_8 27 \right)\left(\log_9 64 \right) =$

$$\boxed{}$$

Problem 8. Find

$$\sin^2 10^0 + \sin^2 20^0 + \sin^2 30^0 + \cdots + \sin^2 90^0$$

Problem 8. Find

$$\sin^2 10^0 + \sin^2 20^0 + \sin^2 30^0 + \cdots + \sin^2 90^0$$

Problem 9. Leslie drives 50 mph to a city 60 miles away. At what rate must she drive on the return trip so as to average 60 mph for the round trip?

Problem 9. Leslie drives 50 mph to a city 60 miles away. At what rate must she drive on the return trip so as to average 60 mph for the round trip?

Problem 10. A point P is chosen inside parallelogram $ABCD$. If $\triangle PAB$ has area 10, $\triangle PBC$ has area 8 and $\triangle PCD$ has area 7, then what is the area of $\triangle PDA$?