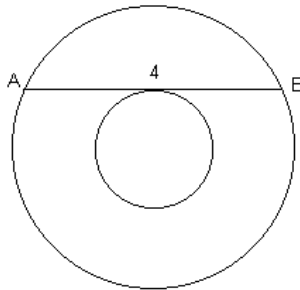


Huddle 2003

1. AB is a chord of the outer circle and a tangent to the inner circle. If the circles have the same center and AB has length 4, what is the area of the ring between the two circles?



2. How many positive integers below 1000 are multiples of 4 and 6, but not 9?

3. Define the operation $x * y = \frac{x + y}{1 + xy}$. Evaluate $1 * (2 * (3 * (4 * 5)))$.

4. How many ways are there to express 10 as the sum of positive integers? For example, there are 8 ways to express 4, namely 4, 3+1, 2+2, 2+1+1, 1+3, 1+2+1, 1+1+2, 1+1+1+1.