Externalization

Write things down.

(39) Four cities, conveniently named A, B, C and D, lie along a very straight road, not necessarily in that order. B is between C and D and D is between B and A. The distance from B to C equals the distance from A to D, which is twice the distance from B to D. The distance from A to C is 250 miles. What is the distance from A to B?

(40) How many times a day between 1 pm and 10 pm do the digits displayed on a digital clock (without seconds) add up to 22? At what times?

(41) Among the integers from 1 to 10,000,000,000 which are there more of: those in which the digit 1 occurs or those in which it does not occur?

(42) John, Paul, George and Ringo discovered that each of them had a different favorite philosopher-Kant, Plato, Hobbes and Aquinas, not necessarily in that order. Paul admitted that Aquinas was definitely his favorite, but he agreed with John that Plato and Hobbes were losers. George thought Plato and Kant were losers. Who was John’s favorite philosopher? Who was Ringo’s favorite philosopher?

(43) You just saved a princess from certain doom and so the king offers you a treasure from his collection of golden spheres. He says that you can take either two golden spheres, each of whose diameters is the length of his royal index finger, or one single larger golden sphere whose diameter is twice the length of his royal index finger. Which is the better deal?

(44) How many ways can you make fifty cents in change?

(45) How many ways can you make a dollar in change?

(46) You are purchasing an item at a 25 percent discount but you have to pay a 10 percent sales tax. Are you better off having the discount calculated first or having the sales tax calculated first?

(47) (Black Friday) A Friday the thirteenth is known as a black Friday. What is the greatest number of black Fridays possible in one year? What is the smallest number possible? What about in any twelve month period?

(48) A rectangular board is sawed into two pieces by a straight cut across its width. The larger piece is twice the length of the smaller piece. The smaller piece is then cut again into two parts, one three times the length of the other, giving three pieces of wood, with the smallest piece a 7-inch square. What was the area of the surface of the board?

(49) What is the smallest number, other than 1, that leaves a remainder of 1 when divided by 2, 3, 4, 5, and 6?