has to buy another more expensive object. The minimum price that can be added is 15 cents again, by buying one 10 cent object less and one 25 cent object instead. Then the 40 objects cost \$7.10. So Sharon has to buy less than 7 items that cost 50 cents.

If 6 of the 40 objects cost each 50 cents, it is possible to spend \$7 for all objects by buying 33 items that cost 10 cents, 0 that cost 25 cents, 6 that cost 50 cents, and 1 that costs 70 cents. Thus, 6 is the largest number of 50 cent items she could have bought.

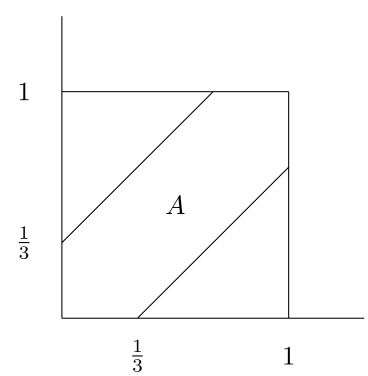
CC230. Two friends agree to meet at the library between 1:00 P.M. and 2:00 P.M. Each agrees to wait 20 minutes for the other. What is the probability that they will meet if their arrivals occur at random during the hour and if the arrival times are independent?

Originally problem 38 from the Thirty-fifth Annual Columbus State Invitational Mathematics Tournament (2009).

We received seven correct solutions. We present the solution of Ángel Plaza.

Let us use as sample space the unit square. Let X and Y be the two independent, randomly chosen times by person X and Y respectively from the one hour period.

These assumptions imply that every point in the unit square is equally likely, where the first coordinate represents the time when person X shows up and the second coordinate represents when person Y shows up. As 20 minutes is one third of the time between 1 pm and 2 pm, the required probability in this situation is the area of the the set of all points lying in region A in the figure below.



This can be seen as the unit square minus two triangles, giving the area of A as

$$1 - 2\left(\frac{1}{2} \cdot \frac{2}{3} \cdot \frac{2}{3}\right) = 1 - \frac{4}{9} = \frac{5}{9}.$$