If x equals the customers location then:

Score(A0): 28 – x – 12 or 16 – x

And

Score(B0): 28 – (10 - x) -15 or 3 +x

The customers distance to B0 is equal to 10 – x because the location of the restaurant B0 is at 10.

Probability:

P(A0) =(16-x) / ((16-x)+(3+x)) which is equal to (16-x)/19

P(B0) = (3+x) / ((16-x)+(3+x)) which is equal to (3+x)/19

Profit:

If they pick A0 the profit would be the price of coffee minus how much it costs to make so the profit for A0 would be 4-2 = $2

The profit if the customer picked B0 would be $0 because they are not part of our business.

The average location is 5 and since P(A0) and P(B0) are both linear you can find the average profit by taking the average location. This means all we have to do is plug in x = 5.

P(A0) = (16-5)/19 = 0.57894

P(B0) = (3+5)/19 = 0.42105

You can now multiply the probability of A0 by $2 (the profit if they pick A0) to find the average profit.

Avgprof(A0) = 0.57894 \* 2 = 1.157