Bayes Coins A

We have a bag of old coins in different phases of wearing out, i.e., coins of the same value may have different weights. The true values of coins is nevertheless still readable. We have to sort the coins in the bag by their value. We know that the bag contains coins with value of 1, 2 and 5 crowns. The loss function for our decision making is $l(s, d) = |d - s|$ where s is the true value of a coin and d is our decision about the value of the coin.

We have at our disposal a weighing machine, which weights with a 5 gram precision. We will try to estimate the weight of individual values of coins based on experiment. We will randomly choose 100 coins, weight them and write down their values. We will create a training multiset. After the weighing of the training multiset, we get this table:

$s \backslash x$	5 g	10 g	15 g	20 g	25 g	Suma
1 CZK	9	10	4	1	0	24
2 CZK	7	5	8	13	7	40
5 CZK	1	4	4	17	10	36
Suma	17	19	16	31	17	100

$P(s, x)$	5 g	10 g	15 g	20 g	25 g	Suma
1 CZK	0.09	0.1	0.04	0.01	0.0	0.24
2 CZK	0.07	0.05	0.08	0.13	0.07	0.4
5 CZK	0.01	0.04	0.04	0.17	0.1	0.36
Suma	0.17	0.19	0.16	0.31	0.17	1

- How many decision strategies are there?

- We have found out the weight of a new coin, it is 20 grams. Into which class will you put this coin to minimize your loss? Write down your calculation.