Problem 1

s_1	s_2	$\bar{X}$	S
0	0	0	0
0	1	0.5	0.7071
0	2	1	1.4142
1	0	0.5	0.7071
1	1	1	0
1	2	1.5	0.7071
2	0	1	1.4142
2	1	1.5	0.7071
2	2	2	0

1.1)

$\bar{X}$	Probability
0	1/9
0.5	2/9
1	3/9
1.5	2/9
2	1/ 9

1.2)

S	Probability
0	3/9
$\sqrt{0.5} = 0.7071$	4/9
$\sqrt{2} = 1.4142$	2/9

calculations were performed using computer [1]

```
const means = {}
const stdevs = {}
let samples = []

for (let i of [0, 1, 2]) {
  for (let j of [0, 1, 2]) {
    let sample = [i, j]
    sampleMean = mean(sample)
    sampleStdev = stdev(sample)

    means[sampleMean] = 1 + (means[sampleMean] ?? 0)
    stdevs[sampleStdev] = 1 + (stdevs[sampleStdev] ?? 0)
    samples = [...samples, {i, j, sampleMean, sampleStdev }]
  }
}

console.table(samples)
console.table(
  Object.keys(means).sort()
    .reduce((acc, x) => [
      ...acc, { x, probabilty: `${means[x]}/${samples.length}` }], []))
console.table(
  Object.keys(stdevs).sort()
    .reduce((acc, x) => [
      ...acc, { x, probabilty: `${stdevs[x]}/${samples.length}` }], []))
```

[1] JavaScript with ECMAScript 2020 (ES11) features.