

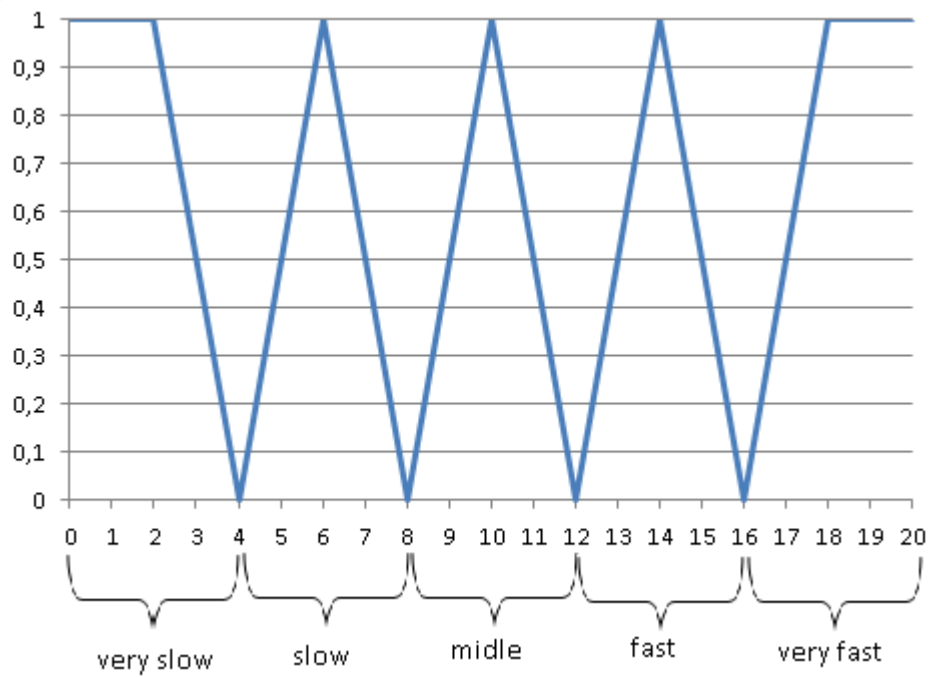
Table of search:

| Speed | Distance | Brake | ... | ... | ... |
|-------|----------|-------|-----|-----|-----|
| 0     | 0        | 0     | 12  | 500 | 6   |
| 0     | 0        | 0     | 1   | 500 | 7   |
| 0     | 0        | 0     | 2   | 500 | 8   |
| 0     | 0        | 0     | 3   | 500 | 9   |
| 0     | 0        | 0     | 4   | 500 | 10  |
| 0     | 0        | 0     | 5   | 550 | 0   |
| 0     | 0        | 0     | 6   | 550 | 1   |
| 0     | 0        | 0     | 7   | 550 | 2   |
| 0     | 0        | 0     | 8   | 550 | 3   |
| 0     | 0        | 0     | 9   | 550 | 4   |
| 0     | 0        | 10    | 12  | 550 | 5   |
| 0     | 50       | 0     | 12  | 550 | 6   |
| 0     | 50       | 1     | 12  | 550 | 7   |
| 0     | 50       | 2     | 12  | 550 | 8   |
| 0     | 50       | 3     | 12  | 550 | 9   |
| 0     | 50       | 4     | 12  | 550 | 10  |
| 0     | 50       | 5     | 12  | 600 | 0   |
| 0     | 50       | 6     | 12  | 600 | 1   |
| 0     | 50       | 7     | 12  | 600 | 2   |
| 0     | 50       | 8     | 12  | 600 | 3   |
| 0     | 50       | 9     | 12  | 600 | 4   |
| 0     | 50       | 10    | 12  | 600 | 5   |
| 0     | 100      | 0     | 12  | 600 | 6   |
| ...   | ...      | ...   | ... | ... | ... |

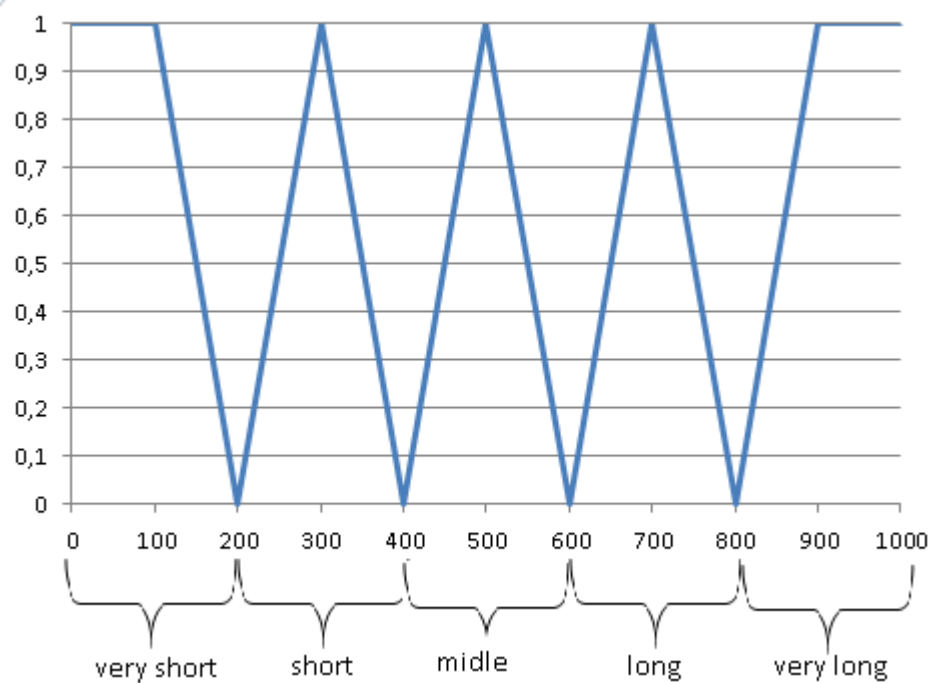
|     |      |     |
|-----|------|-----|
| ... | ...  | ... |
| 20  | 900  | 9   |
| 20  | 900  | 10  |
| 20  | 950  | 0   |
| 20  | 950  | 1   |
| 20  | 950  | 2   |
| 20  | 950  | 3   |
| 20  | 950  | 4   |
| 20  | 950  | 5   |
| 20  | 950  | 6   |
| 20  | 950  | 7   |
| 20  | 950  | 8   |
| 20  | 950  | 9   |
| 20  | 950  | 10  |
| 20  | 1000 | 0   |
| 20  | 1000 | 1   |
| 20  | 1000 | 2   |
| 20  | 1000 | 3   |
| 20  | 1000 | 4   |
| 20  | 1000 | 5   |
| 20  | 1000 | 6   |
| 20  | 1000 | 7   |
| 20  | 1000 | 8   |
| 20  | 1000 | 9   |
| 20  | 1000 | 10  |

## 1. Task 1

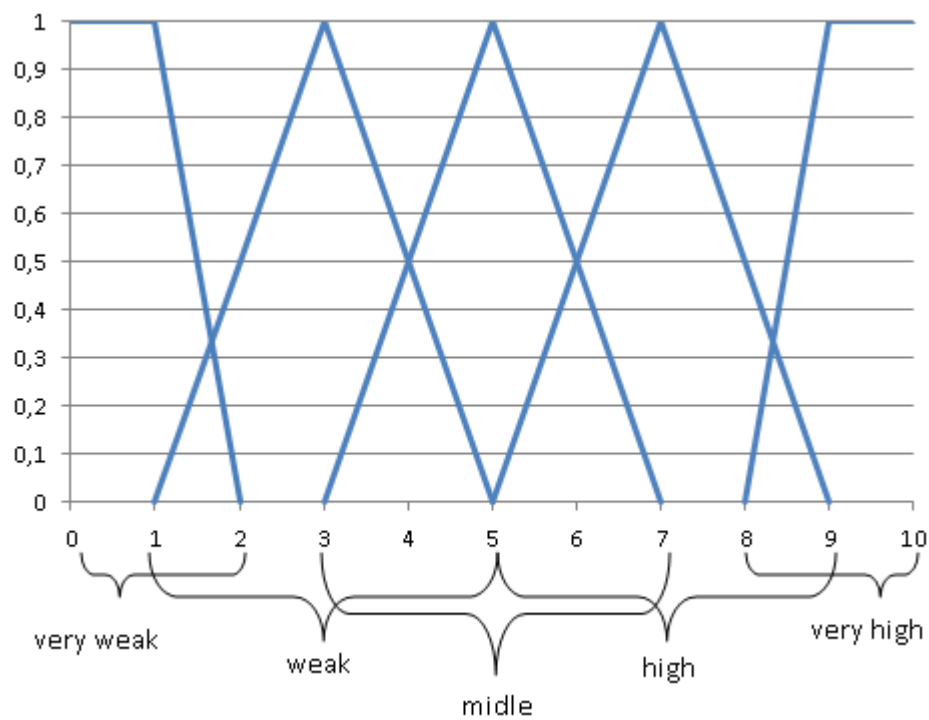
Speed:



Distance:

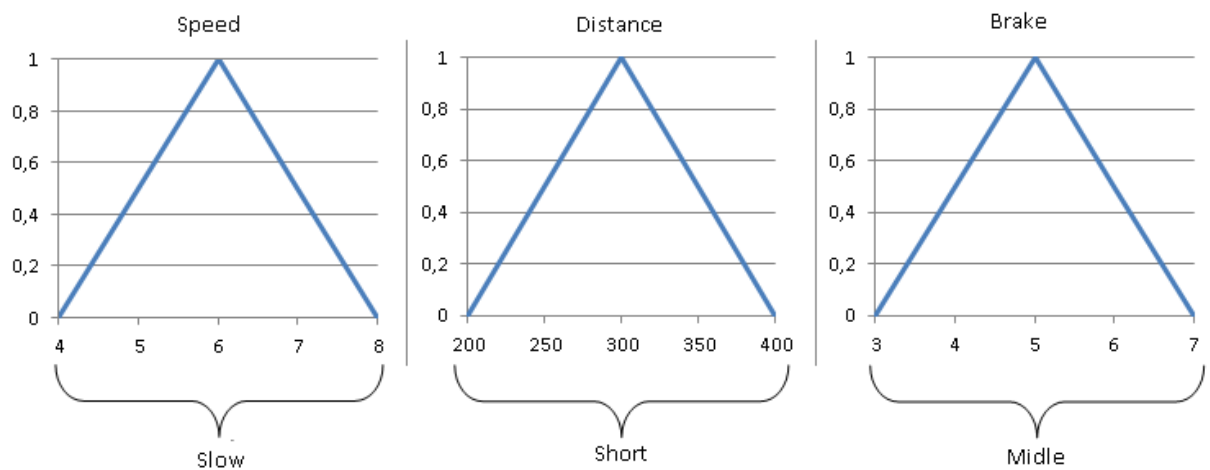


Brake:

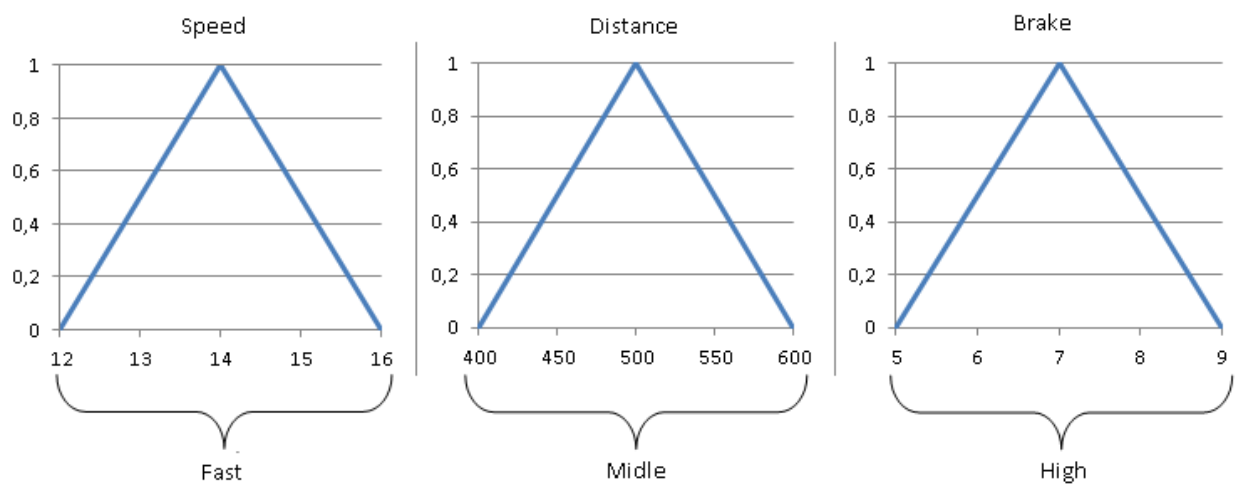


## 2. Task 2

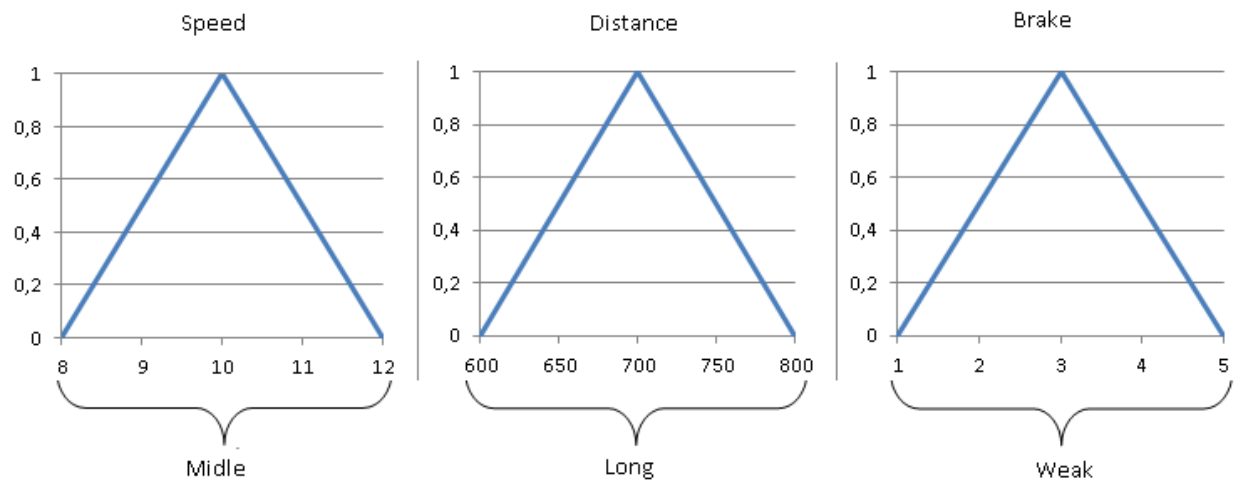
1) First rule if speed is slow and distance is short then brake is middle.



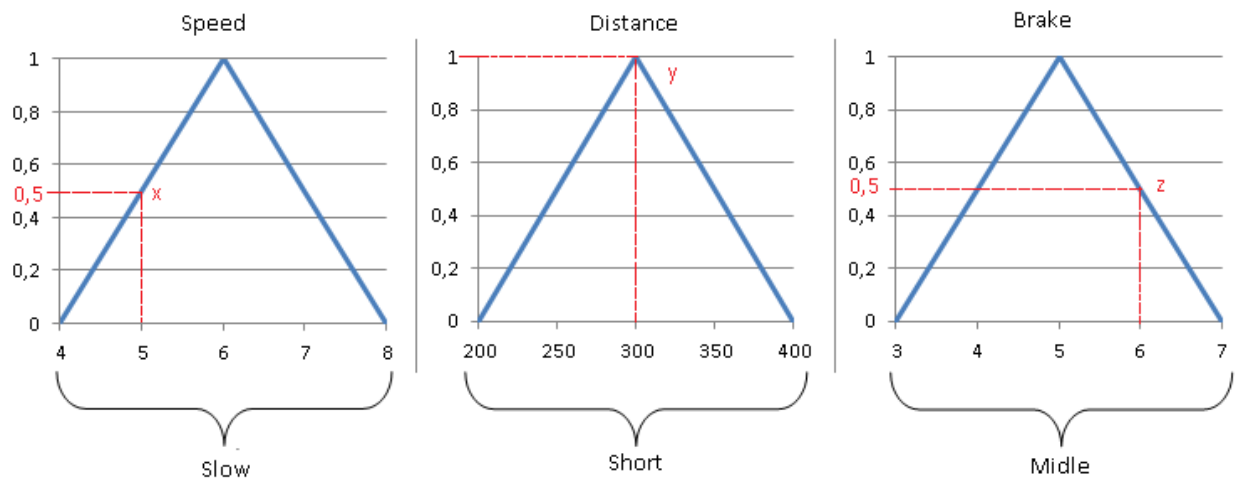
2) Second rule if speed is fast and distance is middle then brake is high.



3) Third rule if speed is middle and distance is long then brake is weak.



### 3. Task 3



$$X = 0,5$$

$$Y = 1$$

$$Z = 0,5$$

$$\text{If } x < y \text{ then } u = x * z \text{ else } u = y * z$$

In this case  $x < y$  ( $0,5 < 1$ ) then  $u = x * z = 0,5 * 0,5 = 0,25$

|   |     |   |      |
|---|-----|---|------|
| 5 | 300 | 3 | 0    |
| 5 | 300 | 4 | 0.25 |
| 5 | 300 | 5 | 0.5  |
| 5 | 300 | 6 | 0.25 |
| 5 | 300 | 7 | 0    |

This is big table for first rule:

| Speed | Disance | Brake | u    | Speed | Disance | Brake | u    |
|-------|---------|-------|------|-------|---------|-------|------|
| 4     | 200     | 3     | 0    | 4     | 400     | 7     | 0    |
| 4     | 200     | 4     | 0    | 5     | 200     | 3     | 0    |
| 4     | 200     | 5     | 0    | 5     | 200     | 4     | 0    |
| 4     | 200     | 6     | 0    | 5     | 200     | 5     | 0    |
| 4     | 200     | 7     | 0    | 5     | 200     | 6     | 0    |
| 4     | 250     | 3     | 0    | 5     | 200     | 7     | 0    |
| 4     | 250     | 4     | 0    | 5     | 250     | 3     | 0    |
| 4     | 250     | 5     | 0    | 5     | 250     | 4     | 0.25 |
| 4     | 250     | 6     | 0    | 5     | 250     | 5     | 0.5  |
| 4     | 250     | 7     | 0    | 5     | 250     | 6     | 0.25 |
| 4     | 300     | 3     | 0    | 5     | 250     | 7     | 0    |
| 4     | 300     | 4     | 0    | 5     | 300     | 3     | 0    |
| 4     | 300     | 5     | 0    | 5     | 300     | 4     | 0.25 |
| 4     | 300     | 6     | 0    | 5     | 300     | 5     | 0.5  |
| 4     | 300     | 7     | 0    | 5     | 300     | 6     | 0.25 |
| 4     | 350     | 3     | 0    | 5     | 300     | 7     | 0    |
| 4     | 350     | 4     | 0    | 5     | 350     | 3     | 0    |
| 4     | 350     | 5     | 0    | 5     | 350     | 4     | 0.25 |
| 4     | 350     | 6     | 0    | 5     | 350     | 5     | 0.5  |
| 4     | 350     | 7     | 0    | 5     | 350     | 6     | 0.25 |
| 4     | 400     | 3     | 0    | 5     | 350     | 7     | 0    |
| 4     | 400     | 4     | 0    | 5     | 400     | 3     | 0    |
| 4     | 400     | 5     | 0    | 5     | 400     | 4     | 0    |
| 4     | 400     | 6     | 0    | 5     | 400     | 5     | 0    |
| Speed | Disance | Brake | u    | Speed | Disance | Brake | u    |
| 5     | 400     | 6     | 0    | 6     | 400     | 5     | 0    |
| 5     | 400     | 7     | 0    | 6     | 400     | 6     | 0    |
| 6     | 200     | 3     | 0    | 6     | 400     | 7     | 0    |
| 6     | 200     | 4     | 0    | 7     | 200     | 3     | 0    |
| 6     | 200     | 5     | 0    | 7     | 200     | 4     | 0    |
| 6     | 200     | 6     | 0    | 7     | 200     | 5     | 0    |
| 6     | 200     | 7     | 0    | 7     | 200     | 6     | 0    |
| 6     | 250     | 3     | 0    | 7     | 200     | 7     | 0    |
| 6     | 250     | 4     | 0.25 | 7     | 250     | 3     | 0    |
| 6     | 250     | 5     | 0.5  | 7     | 250     | 4     | 0.25 |
| 6     | 250     | 6     | 0.25 | 7     | 250     | 5     | 0.5  |
| 6     | 250     | 7     | 0    | 7     | 250     | 6     | 0.25 |
| 6     | 300     | 3     | 0    | 7     | 250     | 7     | 0    |
| 6     | 300     | 4     | 0.5  | 7     | 300     | 3     | 0    |
| 6     | 300     | 5     | 1    | 7     | 300     | 4     | 0.25 |
| 6     | 300     | 6     | 0.5  | 7     | 300     | 5     | 0.5  |
| 6     | 300     | 7     | 0    | 7     | 300     | 6     | 0.25 |
| 6     | 350     | 3     | 0    | 7     | 300     | 7     | 0    |
| 6     | 350     | 4     | 0.25 | 7     | 350     | 3     | 0    |
| 6     | 350     | 5     | 0.5  | 7     | 350     | 4     | 0.25 |
| 6     | 350     | 6     | 0.25 | 7     | 350     | 5     | 0.5  |
| 6     | 350     | 7     | 0    | 7     | 350     | 6     | 0.25 |
| 6     | 400     | 3     | 0    | 7     | 350     | 7     | 0    |
| 6     | 400     | 4     | 0    | 7     | 400     | 3     | 0    |

| Speed | Disance | Brake | u | Speed | Disance | Brake | u |
|-------|---------|-------|---|-------|---------|-------|---|
| 7     | 400     | 4     | 0 | 8     | 300     | 4     | 0 |
| 7     | 400     | 5     | 0 | 8     | 300     | 5     | 0 |
| 7     | 400     | 6     | 0 | 8     | 300     | 6     | 0 |
| 7     | 400     | 7     | 0 | 8     | 300     | 7     | 0 |
| 8     | 200     | 3     | 0 | 8     | 350     | 3     | 0 |
| 8     | 200     | 4     | 0 | 8     | 350     | 4     | 0 |
| 8     | 200     | 5     | 0 | 8     | 350     | 5     | 0 |
| 8     | 200     | 6     | 0 | 8     | 350     | 6     | 0 |
| 8     | 200     | 7     | 0 | 8     | 350     | 7     | 0 |
| 8     | 250     | 3     | 0 | 8     | 400     | 3     | 0 |
| 8     | 250     | 4     | 0 | 8     | 400     | 4     | 0 |
| 8     | 250     | 5     | 0 | 8     | 400     | 5     | 0 |
| 8     | 250     | 6     | 0 | 8     | 400     | 6     | 0 |
| 8     | 250     | 7     | 0 | 8     | 400     | 7     | 0 |
| 8     | 300     | 3     | 0 |       |         |       |   |

Now is big table for second rule:

| Speed | Disance | Brake | u | Speed | Disance | Brake | u    |
|-------|---------|-------|---|-------|---------|-------|------|
| 12    | 400     | 5     | 0 | 12    | 600     | 9     | 0    |
| 12    | 400     | 6     | 0 | 13    | 400     | 5     | 0    |
| 12    | 400     | 7     | 0 | 13    | 400     | 6     | 0    |
| 12    | 400     | 8     | 0 | 13    | 400     | 7     | 0    |
| 12    | 400     | 9     | 0 | 13    | 400     | 8     | 0    |
| 12    | 450     | 5     | 0 | 13    | 400     | 9     | 0    |
| 12    | 450     | 6     | 0 | 13    | 450     | 5     | 0    |
| 12    | 450     | 7     | 0 | 13    | 450     | 6     | 0.25 |
| 12    | 450     | 8     | 0 | 13    | 450     | 7     | 0.5  |
| 12    | 450     | 9     | 0 | 13    | 450     | 8     | 0.25 |
| 12    | 500     | 5     | 0 | 13    | 450     | 9     | 0    |
| 12    | 500     | 6     | 0 | 13    | 500     | 5     | 0    |
| 12    | 500     | 7     | 0 | 13    | 500     | 6     | 0.25 |
| 12    | 500     | 8     | 0 | 13    | 500     | 7     | 0.5  |
| 12    | 500     | 9     | 0 | 13    | 500     | 8     | 0.25 |
| 12    | 550     | 5     | 0 | 13    | 500     | 9     | 0    |
| 12    | 550     | 6     | 0 | 13    | 550     | 5     | 0    |
| 12    | 550     | 7     | 0 | 13    | 550     | 6     | 0.25 |
| 12    | 550     | 8     | 0 | 13    | 550     | 7     | 0.5  |
| 12    | 550     | 9     | 0 | 13    | 550     | 8     | 0.25 |
| 12    | 600     | 5     | 0 | 13    | 550     | 9     | 0    |
| 12    | 600     | 6     | 0 | 13    | 600     | 5     | 0    |
| 12    | 600     | 7     | 0 | 13    | 600     | 6     | 0    |
| 12    | 600     | 8     | 0 | 13    | 600     | 7     | 0    |

| Speed | Disance | Brake | u    | Speed | Disance | Brake | u    |
|-------|---------|-------|------|-------|---------|-------|------|
| 13    | 600     | 8     | 0    | 14    | 600     | 7     | 0    |
| 13    | 600     | 9     | 0    | 14    | 600     | 8     | 0    |
| 14    | 400     | 5     | 0    | 14    | 600     | 9     | 0    |
| 14    | 400     | 6     | 0    | 15    | 400     | 5     | 0    |
| 14    | 400     | 7     | 0    | 15    | 400     | 6     | 0    |
| 14    | 400     | 8     | 0    | 15    | 400     | 7     | 0    |
| 14    | 400     | 9     | 0    | 15    | 400     | 8     | 0    |
| 14    | 450     | 5     | 0    | 15    | 400     | 9     | 0    |
| 14    | 450     | 6     | 0.25 | 15    | 450     | 5     | 0    |
| 14    | 450     | 7     | 0.5  | 15    | 450     | 6     | 0.25 |
| 14    | 450     | 8     | 0.25 | 15    | 450     | 7     | 0.5  |
| 14    | 450     | 9     | 0    | 15    | 450     | 8     | 0.25 |
| 14    | 500     | 5     | 0    | 15    | 450     | 9     | 0    |
| 14    | 500     | 6     | 0.5  | 15    | 500     | 5     | 0    |
| 14    | 500     | 7     | 1    | 15    | 500     | 6     | 0.25 |
| 14    | 500     | 8     | 0.5  | 15    | 500     | 7     | 0.5  |
| 14    | 500     | 9     | 0    | 15    | 500     | 8     | 0.25 |
| 14    | 550     | 5     | 0    | 15    | 500     | 9     | 0    |
| 14    | 550     | 6     | 0.25 | 15    | 550     | 5     | 0    |
| 14    | 550     | 7     | 0.5  | 15    | 550     | 6     | 0.25 |
| 14    | 550     | 8     | 0.25 | 15    | 550     | 7     | 0.5  |
| 14    | 550     | 9     | 0    | 15    | 550     | 8     | 0.25 |
| 14    | 600     | 5     | 0    | 15    | 550     | 9     | 0    |
| 14    | 600     | 6     | 0    | 15    | 600     | 5     | 0    |
| Speed | Disance | Brake | u    | Speed | Disance | Brake | u    |
| 15    | 600     | 6     | 0    | 16    | 500     | 5     | 0    |
| 15    | 600     | 7     | 0    | 16    | 500     | 6     | 0    |
| 15    | 600     | 8     | 0    | 16    | 500     | 7     | 0    |
| 15    | 600     | 9     | 0    | 16    | 500     | 8     | 0    |
| 16    | 400     | 5     | 0    | 16    | 500     | 9     | 0    |
| 16    | 400     | 6     | 0    | 16    | 550     | 5     | 0    |
| 16    | 400     | 7     | 0    | 16    | 550     | 6     | 0    |
| 16    | 400     | 8     | 0    | 16    | 550     | 7     | 0    |
| 16    | 400     | 9     | 0    | 16    | 550     | 8     | 0    |
| 16    | 450     | 5     | 0    | 16    | 550     | 9     | 0    |
| 16    | 450     | 6     | 0    | 16    | 600     | 5     | 0    |
| 16    | 450     | 7     | 0    | 16    | 600     | 6     | 0    |
| 16    | 450     | 8     | 0    | 16    | 600     | 7     | 0    |
| 16    | 450     | 9     | 0    | 16    | 600     | 8     | 0    |
|       |         |       |      | 16    | 600     | 9     | 0    |

Now is big table for third rule:

| Speed | Disance | Brake | u    | Speed | Disance | Brake | u    |
|-------|---------|-------|------|-------|---------|-------|------|
| 8     | 600     | 1     | 0    | 8     | 800     | 5     | 0    |
| 8     | 600     | 2     | 0    | 9     | 600     | 1     | 0    |
| 8     | 600     | 3     | 0    | 9     | 600     | 2     | 0    |
| 8     | 600     | 4     | 0    | 9     | 600     | 3     | 0    |
| 8     | 600     | 5     | 0    | 9     | 600     | 4     | 0    |
| 8     | 650     | 1     | 0    | 9     | 600     | 5     | 0    |
| 8     | 650     | 2     | 0    | 9     | 650     | 1     | 0    |
| 8     | 650     | 3     | 0    | 9     | 650     | 2     | 0.25 |
| 8     | 650     | 4     | 0    | 9     | 650     | 3     | 0.5  |
| 8     | 650     | 5     | 0    | 9     | 650     | 4     | 0.25 |
| 8     | 700     | 1     | 0    | 9     | 650     | 5     | 0    |
| 8     | 700     | 2     | 0    | 9     | 700     | 1     | 0    |
| 8     | 700     | 3     | 0    | 9     | 700     | 2     | 0.25 |
| 8     | 700     | 4     | 0    | 9     | 700     | 3     | 0.5  |
| 8     | 700     | 5     | 0    | 9     | 700     | 4     | 0.25 |
| 8     | 750     | 1     | 0    | 9     | 700     | 5     | 0    |
| 8     | 750     | 2     | 0    | 9     | 750     | 1     | 0    |
| 8     | 750     | 3     | 0    | 9     | 750     | 2     | 0.25 |
| 8     | 750     | 4     | 0    | 9     | 750     | 3     | 0.5  |
| 8     | 750     | 5     | 0    | 9     | 750     | 4     | 0.25 |
| 8     | 800     | 1     | 0    | 9     | 750     | 5     | 0    |
| 8     | 800     | 2     | 0    | 9     | 800     | 1     | 0    |
| 8     | 800     | 3     | 0    | 9     | 800     | 2     | 0    |
| 8     | 800     | 4     | 0    | 9     | 800     | 3     | 0    |
| Speed | Disance | Brake | u    | Speed | Disance | Brake | u    |
| 9     | 800     | 4     | 0    | 10    | 800     | 3     | 0    |
| 9     | 800     | 5     | 0    | 10    | 800     | 4     | 0    |
| 10    | 600     | 1     | 0    | 10    | 800     | 5     | 0    |
| 10    | 600     | 2     | 0    | 11    | 600     | 1     | 0    |
| 10    | 600     | 3     | 0    | 11    | 600     | 2     | 0    |
| 10    | 600     | 4     | 0    | 11    | 600     | 3     | 0    |
| 10    | 600     | 5     | 0    | 11    | 600     | 4     | 0    |
| 10    | 650     | 1     | 0    | 11    | 600     | 5     | 0    |
| 10    | 650     | 2     | 0.25 | 11    | 650     | 1     | 0    |
| 10    | 650     | 3     | 0.5  | 11    | 650     | 2     | 0.25 |
| 10    | 650     | 4     | 0.25 | 11    | 650     | 3     | 0.5  |
| 10    | 650     | 5     | 0    | 11    | 650     | 4     | 0.25 |
| 10    | 700     | 1     | 0    | 11    | 650     | 5     | 0    |
| 10    | 700     | 2     | 0.5  | 11    | 700     | 1     | 0    |
| 10    | 700     | 3     | 1    | 11    | 700     | 2     | 0.25 |
| 10    | 700     | 4     | 0.5  | 11    | 700     | 3     | 0.5  |
| 10    | 700     | 5     | 0    | 11    | 700     | 4     | 0.25 |
| 10    | 750     | 1     | 0    | 11    | 700     | 5     | 0    |
| 10    | 750     | 2     | 0.25 | 11    | 750     | 1     | 0    |
| 10    | 750     | 3     | 0.5  | 11    | 750     | 2     | 0.25 |
| 10    | 750     | 4     | 0.25 | 11    | 750     | 3     | 0.5  |
| 10    | 750     | 5     | 0    | 11    | 750     | 4     | 0.25 |
| 10    | 800     | 1     | 0    | 11    | 750     | 5     | 0    |
| 10    | 800     | 2     | 0    | 11    | 800     | 1     | 0    |



| Speed | Disance | Brake | u | Speed | Disance | Brake | u |
|-------|---------|-------|---|-------|---------|-------|---|
| 11    | 800     | 2     | 0 | 12    | 700     | 1     | 0 |
| 11    | 800     | 3     | 0 | 12    | 700     | 2     | 0 |
| 11    | 800     | 4     | 0 | 12    | 700     | 3     | 0 |
| 11    | 800     | 5     | 0 | 12    | 700     | 4     | 0 |
| 12    | 600     | 1     | 0 | 12    | 700     | 5     | 0 |
| 12    | 600     | 2     | 0 | 12    | 750     | 1     | 0 |
| 12    | 600     | 3     | 0 | 12    | 750     | 2     | 0 |
| 12    | 600     | 4     | 0 | 12    | 750     | 3     | 0 |
| 12    | 600     | 5     | 0 | 12    | 750     | 4     | 0 |
| 12    | 650     | 1     | 0 | 12    | 750     | 5     | 0 |
| 12    | 650     | 2     | 0 | 12    | 800     | 1     | 0 |
| 12    | 650     | 3     | 0 | 12    | 800     | 2     | 0 |
| 12    | 650     | 4     | 0 | 12    | 800     | 3     | 0 |
| 12    | 650     | 5     | 0 | 12    | 800     | 4     | 0 |
|       |         |       |   | 12    | 800     | 5     | 0 |

#### 4. Task 4

This is small table for first rule:  
Favorite speed (7) and distance (300)

| Speed | Disance | Brake | u    |
|-------|---------|-------|------|
| 7     | 300     | 0     | 0    |
| 7     | 300     | 1     | 0    |
| 7     | 300     | 2     | 0    |
| 7     | 300     | 3     | 0    |
| 7     | 300     | 4     | 0.25 |
| 7     | 300     | 5     | 0.5  |
| 7     | 300     | 6     | 0.25 |
| 7     | 300     | 7     | 0    |
| 7     | 300     | 8     | 0    |
| 7     | 300     | 9     | 0    |
| 7     | 300     | 10    | 0    |

This is small table for second rule:  
Favorite speed (13) and distance (500)

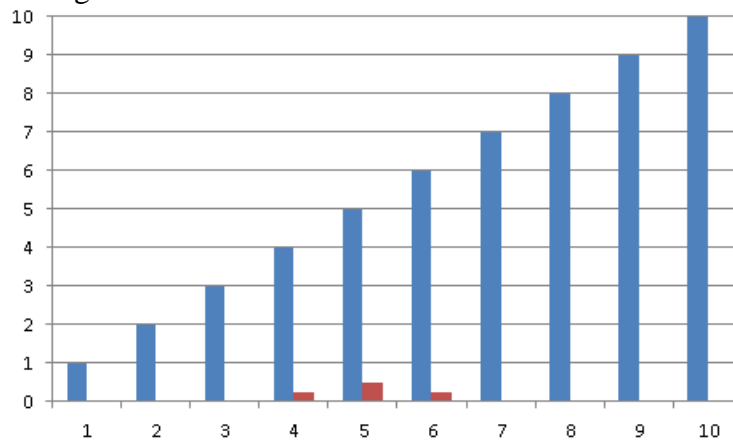
| Speed | Disance | Brake | u    |
|-------|---------|-------|------|
| 13    | 500     | 0     | 0    |
| 13    | 500     | 1     | 0    |
| 13    | 500     | 2     | 0    |
| 13    | 500     | 3     | 0    |
| 13    | 500     | 4     | 0    |
| 13    | 500     | 5     | 0    |
| 13    | 500     | 6     | 0.25 |
| 13    | 500     | 7     | 0.5  |
| 13    | 500     | 8     | 0.25 |
| 13    | 500     | 9     | 0    |
| 13    | 500     | 10    | 0    |

Now is small table for third rule:  
Favorite speed (9) and distance (700)

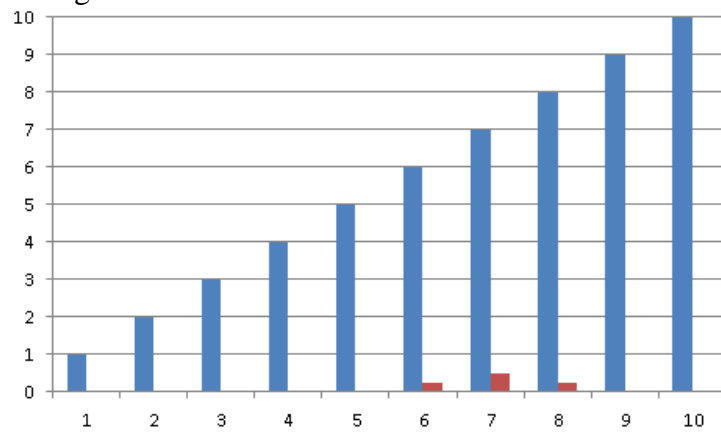
| Speed | Disance | Brake | u    |
|-------|---------|-------|------|
| 9     | 700     | 0     | 0    |
| 9     | 700     | 1     | 0    |
| 9     | 700     | 2     | 0.25 |
| 9     | 700     | 3     | 0.5  |
| 9     | 700     | 4     | 0.25 |
| 9     | 700     | 5     | 0    |
| 9     | 700     | 6     | 0    |
| 9     | 700     | 7     | 0    |
| 9     | 700     | 8     | 0    |
| 9     | 700     | 9     | 0    |
| 9     | 700     | 10    | 0    |

#### 5. Task 5

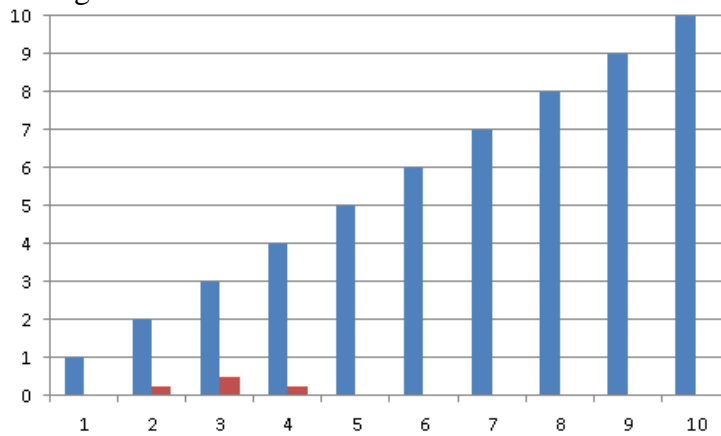
Histogram for first rule:



Histogram for second rule:



Histogram for third rule:



$$\sum (X_i - X) \cdot \mu_i = 0$$

$$X = 5/1 = 5 \quad \text{for first rule}$$

$$X = 7/1 = 7 \quad \text{for second rule}$$

$$X = 3/1 = 3 \quad \text{for third rule}$$