Q1> 1) when T=10,

255	255	0	0	0
255	255	0	0	0
255	255	0	0	0
255	255	0	0	0

B(x,y) > T → 255

otherwise → 0

2) $\bar{x} = \frac{SS\ x \cdot B(x,y)}{SS\ B(x,y)} = \frac{12}{8} = \frac{3}{2}$

$\bar{y} = \frac{SS\ y \cdot B(x,y)}{SS\ B(x,y)} = \frac{20}{8} = \frac{5}{2}$

$SS\ B(x,y) = B(1,1) + B(2,1) + B(3,1) + B(4,1) + B(5,1)$
$+ B(1,2) + B(2,2) + B(3,2) + B(4,2) + B(5,2)$
$+ B(1,3) + B(2,3) + B(3,3) + B(4,3) + B(5,3)$
$+ B(1,4) + B(2,4) + B(3,4) + B(4,4) + B(5,4)$

$= 8$

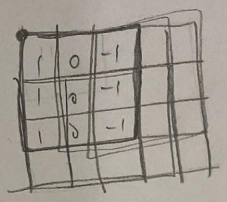
$SS\ x \cdot B(x,y) = 1 \cdot B(1,1) + 2 \cdot B(2,1)$
$+ 1 \cdot B(1,2) + 2 \cdot B(2,2)$
$+ 1 \cdot B(1,3) + 2 \cdot B(2,3)$
$+ 1 \cdot B(1,4) + 2 \cdot B(2,4)$

$= 12$

$SS\ y \cdot B(x,y) = 1 \cdot B(1,1) + 1 \cdot B(2,1)$
$2 \cdot B(1,2) + 2 \cdot B(2,2)$
$3 \cdot B(1,3) + 3 \cdot B(2,3)$
$4 \cdot B(1,4) + 4 \cdot B(2,4)$

$= 20$

Q2> In case of kernel is placed inside image like this:



$11+11+91-2=111$

$11+51+41-3-3-3=94$

2

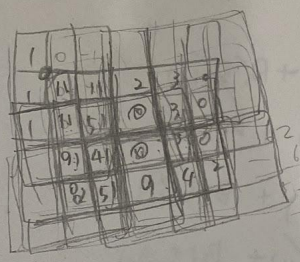
$11+91+82-9=175$

$51+41+51-3-3-4=133$

$9-2=7$

111	94	2
175	133	7

In case of kernel is placed with PAD 0's



$-11-51=-$

$11+11-2=20$

$11+51-3-3=56$

$2 \quad 3+3=4$

$-11-51-41=-103$

$11+11+91-2=111$

$11+51+41-3-3-3=94$

2

$-51-41-51=-143$

$11+91+82-9=175$

$51+41+51-3-3-4=133$

$9+-2=7$

$-41-51=-92$

$91+82-9=164$

$41+51-3-4=85$

$9-2=7$

-62	20	56	2	0
-103	111	94	2	9
-143	175	133	7	10
-92	164	85	7	7

$3+4=7$

91
82
173
9
164