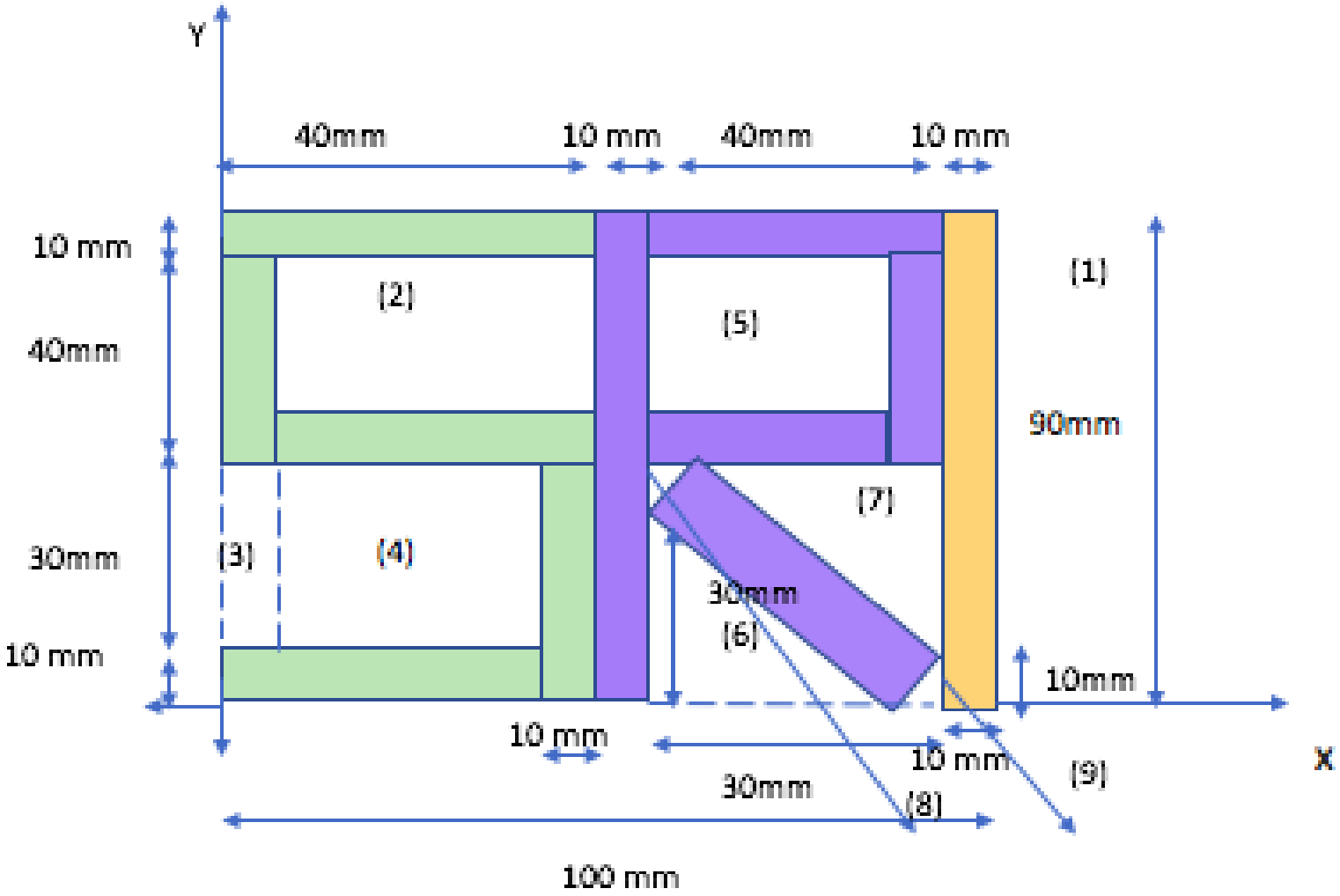
PROBLEM ON CENTROID OF A RECTANGLE

- To calculate the centre of gravity(CG) of the given figure:

- **FIGURE:**



- **TABLE:**

COMPONENT	AREA IN MM2	X in mm	Y in mm	AX	AY
RECTANGLE 1	90*100=9000	100/2=50	90/2=45	450000	405000
RECTANGLE 2	-30*30=-900	10+30/2=25	50+30/2=65	-22500	-58500
RECTANGLE 3	-10*30=-300	10/2=5	10+30/2=25	-1500	-7500
RECTANGLE 4	-30*30=-900	10+30/2=25	10+30/2=25	-22500	-22500
RECTANGLE 5	-30*30=-900	50+30/2=65	40+10+30/2=65	-58500	-58500
TRIANGLE 6	-½*30*30=-450	50+1/3*30=60	1/3*30=10	-27000	-4500
TRIANGLE 7	-½*30*30=-450	60+2/3*30=80	10+1/3*30=20	-36000	-9000
TRIANGLE 8	-½*10*10=-50	50+1/3*10=53.33	30+1/3*10=33.33	-2666.5	-1666.5
TRIANGLE 9	-½*10*10=-50	80+2/3*10=86.66	1/3*10=3.33	-4333	-166.5

- **CALCULATIONS:**

$\sum AX = 275000.5$

$\sum AY = 242717$

$\sum A = 5000$

$\bar{X} = \sum AX / \sum A = 275000.5/5000$

$\bar{X} = 55.0001 mm$

$\bar{Y} = \sum AY / \sum A = 242717/5000$

$\bar{Y} = 48.5434 mm$