Bresenham's circle drawing Algorithm :-

Step 1 :- (h, k) = coordinates of circle center
$x_i = 0$, y_i = circle radius r
and $\boxed{P_i = 3 - 2 * r}$

Step 2 :- If $P_i < 0$, then
$P_{i+1} = P_i + 4x_i + 6$
and next pixel $(x_i + 1, y_i)$
else $(P_i \geq 0)$
$P_{i+1} = P_i + 4(x_i - y_i) + 10$
and next pixel $(x_i + 1, y_i - 1)$

Step 3 :- Plot the eight point found by symmetry with respect to the center (h, k) at the current (x_i, y_i) coordinates -

plot $(x_i + h, y_i + k)$, plot $(-x_i + h, -y_i + k)$
plot $(y_i + h, x_i + k)$, plot $(-y_i + h, -x_i + k)$
plot $(-y_i + h, x_i + k)$, plot $(y_i + h, -x_i + k)$
plot $(-x_i + h, y_i + k)$, plot $(x_i + h, -y_i + k)$

Step 4 :- Repeated step 2 till $x \leq y$.

— x — x —

Que: find the points lying on the circle centered at (5,10) and having radius 8 using Bresenham's circle algorithm.

Sol: Step: here, $h=5$, $k=10$ (coordinates of circle centre) $x=0$, $y=8$

(Initial decision parameter) and $P = 3-2r = 3-2\times8 = -13$

Step No	P	x	y	Plot (x, y)
	-13	0	8	
1.				(5, 18)
				(13, 10)
				(-3, 10)
				(5, 18)
				(5, 2)
				(-3, 10)
				(13, 10)
				(5, 2)
	-7	1	8	
2.				(6, 18)
				(4, 2)
				(13, 11)
				(-3, 9)
				(-3, 11)
				(13, 9)
				(4, 18)
				(6, 2)
	3	2	8	
3.				(7, 18)
				(3, 2)
				(13, 12)
				(-3, 8)

Step no	p	x	y	
				(-3, 12)
				(13, 8)
				(3, 18)
				(7, 2)
	-11	3	7	
4.				(8, 17)
				(2, 3)
				(12, 13)
				(-2, 7)
				(-2, 13)
				(12, 7)
				(2, 17)
	7	4	7	(8, 3)
5.				
				(9, 17)
				(1, 3)
				(12, 14)
				(-2, 6)
				(-2, 14)
				(12, 6)
				(1, 7)
				(9, 3)
	5	5	6	
6.				. (10, 16)
				. (0, 4)
				. (11, 15)
				. (-1, 5)
				. (-1, 15)
				. (11, 5)
				. (0, 16)
				. (10, 4)
	11	6	5	
	x	x	x > y	Stop