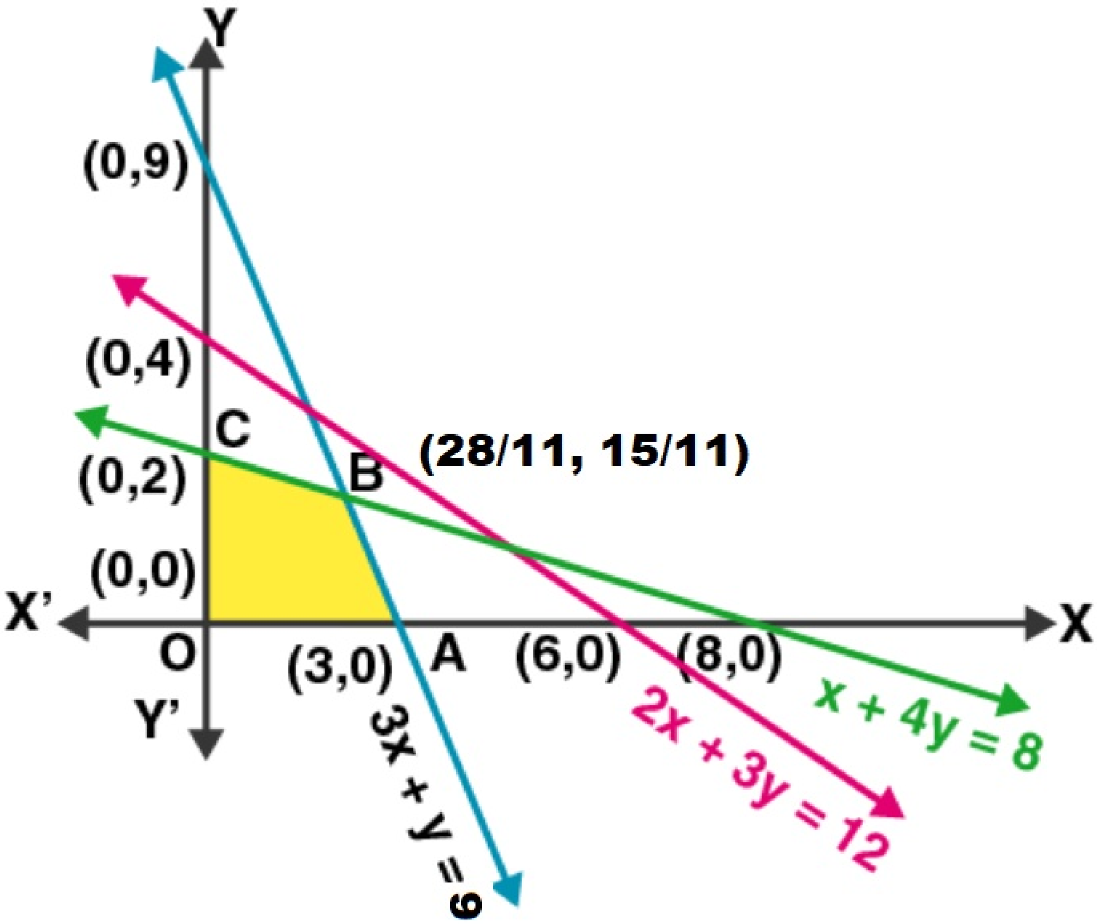
21. Maximize Z = *x* + *y* subject to
***x* + 4*y* £ 8, 2*x* + 3*y* £ 12, 3*x* + *y* £ 9, *x* ³ 0, *y* ³ 0.**

Solution:



Given: Z = x + y subject to constraints, *x* + 4*y* £ 8, 2*x* + 3*y* £ 12, 3*x* + *y* £ 9, *x* ³ 0, *y* ³ 0

Constructing a constrain table for the above, we have

Table for *x* + 4*y* = 8

x	0	8
y	2	0

Table for 2*x* + 3*y* = 12

x	0	6
y	4	0

Table for 3*x* + *y* = 9

x	3	0
y	0	9

On solving equations *x* + 4*y* £ 8 and 3*x* + *y* £ 9, we get

x = 28/11 and y = 15/11

Here, it’s seen that OABC is the feasible region whose corner points are O(0, 0), A(3, 0), B(28/11, 15/11) and C(0, 2).

Now, let’s evaluate the value of Z

Corner points	Value of Z = x + y
O(0, 0)	Z = 0 + 0 = 0
A(3, 0)	Z = 3 + 0 = 3
B(28/11, 15/11)	Z = 28/11 + 15/11 = 43/11 = 3.9
C(0, 2)	Z = 0 + 2 = 2

From the above table it’s noticed that the maximum value of Z is 3.9

Therefore, the maximum value of Z is 3.9 at (28/11, 15/11).