13. The objective function Z = ax+by of an LLP has maximum value 42 at (4,6) and minimum value 19 at (3,2).Which of the following is true?

(A) a=9,b=1 (B) a=5,b=2

(C) a= 3,b=5 (D) a=5,b=3

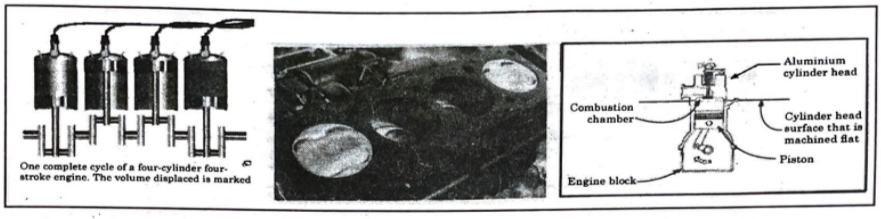
14. The corner point of the feasible region of a linear programming problem are (0,4),(8,0)and($\frac{20}{3}$,$\frac{4}{3}$).if Z=30x+24y is the objective fnction, then (maximum value of Z-minimum value of Z) is equal to

(A) 40 (B) 96

(C) 120 (D) 136

29. Solve the following linear programming problem graphically :
Maximum : Z=x+2y
subject to constraints : $x + 2y \geq 100$,
$2x - y \leq 0$,
$2x + y \leq 200$,
$x \geq 0, y \geq 0$.

37. Engine displacement is the measure of the cylinder volume swept by all the pistons engine.The piston move inside the cylinder bore



The cylinder bore in the form of circular cylinder open at the top is to be made from a metal sheet of area $75\pi cm^2$

Based on the above information,answer the following questions:

(i) if the radius of cylinder is r cm and height is h cm,then write the volme V of cylinder in terms of radius r.

(ii) Find $\frac{dV}{dr}$.

(iii) (a) Find the radius of cylinder when its volume ismaximum.

OR

(b) For maximum volume,h>r.State true or false and justify.