Pa=N/m2

= MLT-2/L2

= M1L1-2T-2

= M1L-1T-2 (Pressure Dimensional Formula)

Dimension= 1,-1,-2

Area=5m2 ,Convert to cgs

N1u1=n2u2

N2=n1

area=side2=L2

n2=5 m/cm=5[L1/L2]2=5[m/cm]2

5 [100cm/cm]2 = 5 X 10000 = 50000

Principle of homogeneity of Dimensions

Dimensions of LHS=RHS, if not equal then equation incorrect

V = u + at

LT-1 = LT-1 + LT-2T

LT-1= LT-1 + LT-1 == Yes, this equation is dimensionally correct.

W+F X Power+Pressure [Because they are not dimensionally correct.

WXF = distance/time

S= ut+at2

L= LT-1T + LT-2T2

L=LT-1+1=0+LT-2+2=0

L=L+L

LHS=RHS

Yes, this equation is dimensionally correct but not numerically.

S= ut+ ½at2

This equation is dimensionally and numerically correct.

½ is dimensionless (Dimension = 0)

Q1: If the velocity of light c, accln due to gravity g and atmospheric pressure p are taken into fundamental units, then dimensions of length will be---

Ans- Length ∝ cxgypz

(c = velocity of light

c = LT-1

g = LT-2

p = F/A = MLT-2/L2

p = M1L-1T-2)

L = K [LT-1]x [LT-2]y [M1L-1T-2]z

L = KLx+y-z T-x-2y-2z Mz

M0L1T0 = KMzLx+y-z T-x-2y-2z

z = 0, -x-2y-2z = 0,-x-2y-2(0)=0, -x-2y= 0, -x=2y, -x=2(-1), x=2

1=x+y-z, 1=x+y-0, x+y=1, -2y+y=1

-y=1, y=-1

Length= Kcx.gy.pz.

Length= Kc2.g-1.p0

Length=K c2/g

Length ∝ c2 /g

Work, torque, energy = ML2T-2