

Let flow rate as 'Q1' pounds per hour in the first line, 'Q2' pounds per hour in the second line and 'Q3' pounds per hour in the third line.

Find the enthalpy of fluid in each line from the steam tables.

Let the enthalpy of fluid in the first line at 398 F as 'h1', enthalpy of fluid in second line at 428 F as 'h2' and enthalpy of fluid in third line at 329 F as 'h3'.

From the energy balance equation,

$$(Q1 \times h1) + (Q2 \times h2) + (Q3 \times h3) = (Q \times h)$$

You know that  $Q = Q1 + Q2 + Q3$ . So you can find the unknown 'h' which is the enthalpy of mixed fluid.

From the steam tables you can read the temperature corresponding to this enthalpy.

I hope you got it.