{Question 6E}
T_1=5[C]
P_1=P_6

s_1=s_2
P_2=18***convert**(bar,kPa)

T_3=45[C]
P_3=18***convert**(bar,kPa)

P_4=18***convert**(bar,kPa)

h_5=h_4
T_5=T_6

P_6=2***convert**(bar,kPa)
x_6=1

mdot=8[kg/min]

{Part a}
(h_4-h_3)=(h_6-h_1)

h_1=**enthalpy**(***Ammonia***,***T***=T_1,***P***=P_1)
h_3=**enthalpy**(***Ammonia***,***T***=T_3,***P***=P_3)
h_6=**enthalpy**(***Ammonia***,***P***=P_6,***x***=x_6)
T_6=**temperature**(***Ammonia***,***P***=P_6,***x***=x_6)

capactiy=mdot*(h_6-h_5)***convert**(kJ/min,tons) {Refrigeration Capacity: capacity = 40.94 tons}

{Part b}
s_1=**entropy**(***Ammonia***,***T***=T_1,***P***=P_1)
h_2=**enthalpy**(***Ammonia***,***P***=P_2,***s***=s_2)
Wdot_compressor=mdot*(h_2-h_1)/**convert**(min,sec) {Compressor Power: Wdot_compressor = 49.92 kW}

{Part c}
COP=capactiy***convert**(tons, kW)/Wdot_compressor {Coefficient of Preformance: COP = 2.884}

{Part d}
P_5=**pressure**(***Ammonia***,***T***=T_5,***h***=h_5)
s_3=**entropy**(***Ammonia***,***T***=T_3,***P***=P_3)
s_4=**entropy**(***Ammonia***,***P***=P_4,***h***=h_4)
s_5=**entropy**(***Ammonia***,***T***=T_5,***h***=h_5)
s_6=**entropy**(***Ammonia***,***P***=P_6,***x***=x_6)
T_2=**temperature**(***Ammonia***,***P***=P_2,***s***=s_2)
T_4=**temperature**(***Ammonia***,***P***=P_4,***h***=h_4)

Lookup Table: Lookup 1

	Temperature [C]	Pressure [kPa]	Entropy [kJ/kg-K]	Enthalpy [kJ/kg]
Row 1	5	200	6.097	1495
Row 2	181.8	1800	6.097	1870
Row 3	45	1800	1.722	415.5
Row 4	33.6	1800	1.542	359.4
Row 5	-18.85	200	1.64	359.4
Row 6	-18.85	200	5.886	1439
Row 7	5	200	6.097	1495