Variables:

- Slope_AB: this will be used to find the slope of a point between points A and B
- Slope_BC: this will be used to find the slope of a point between points B and C
- Slope_CD: this will be used to find the slope of a point between points C and D
- Slope_DE: this will be used to find the slope of a point between points D and E
- Excess: this will be the value they enter for us to use in our calculations
- Surface_heat: this will be as the final output inside the if else statement

Steps:

- Set out an input for the user to enter the excess heat
    - Excess= float(input("Enter the excess temperature: "))
- Find slopes for each of the segments
    - Slope_AB: (log10(7000/1000)) / (log10(5/1.3))
    - Slope_BC: (log10(1.5E6/7000)) / (log10(30/5))
    - Slope_CD: (log10(2.5E4/1.5E6)) / (log10(120/30))
    - Slope_DE: (log10(1.5E6/2.5E4)) / (log10(1200/120))
- Set up the if else statement
    - If (excess>= 1.3 and excess <5)
        - Surface_heat= 1000 (excess/1.3) ^Slope_AB
        - Print ("The surface heat flux is approximately", surface heat)
    - Elif (excess>=5 and excess <30)
        - Surface_heat= 7000 (excess/5) ^Slope_BC
        - Print ("The surface heat flux is approximately", surface heat)
    - Elif (excess>=30 and excess<120)
        - Surface_heat= 1.5E6 (excess/30) ^Slope_CD
        - Print ("The surface heat flux is approximately", surface heat)
    - Elif (excess>=120 and excess <=1200)
        - Surface_heat= 2.5E4 (excess/120) ^Slope_DE
        - Print ("The surface heat flux is approximately", surface heat)
    - Else
        - Print ("Surface heat flux is not available")

Test Cases:

Excess Heat	Surface heat influx	Case type
1.3	1000	Edge
3	3347	Typical
5	7000	Edge
12	96392	Typical
30	1.5E6	Edge
62	175775	Typical
-7	Surface heat influx not available	Special
120	2.5E4	Edge
300	127508	Typical
1200	1.5E6	Edge