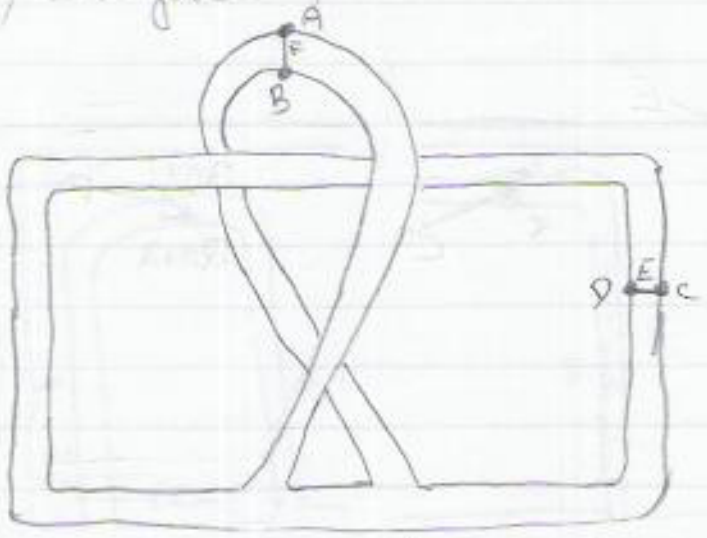
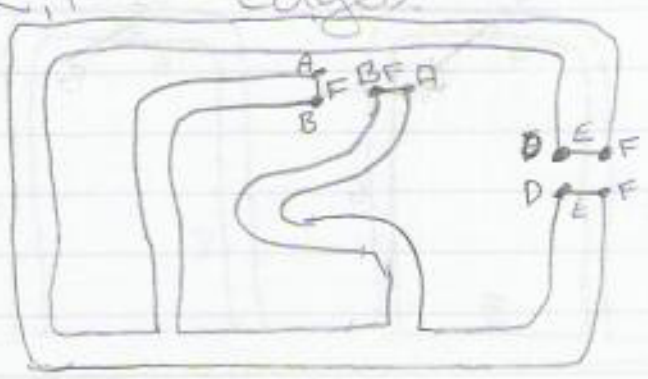
(12)

7) Surface 1



A, B, C, D - vertices
E, F - edges.



V = 4 E = 6 F = 1

X = V - E + F = 4 - 6 + 1 = -1

Check: no boundary curves = 3

$X = 2 - 2p - B$ for an orientable surface

p = no. handles, B = no. boundary curves

$X = 2 - 2 \times 0 - 3 = -1$ ✓

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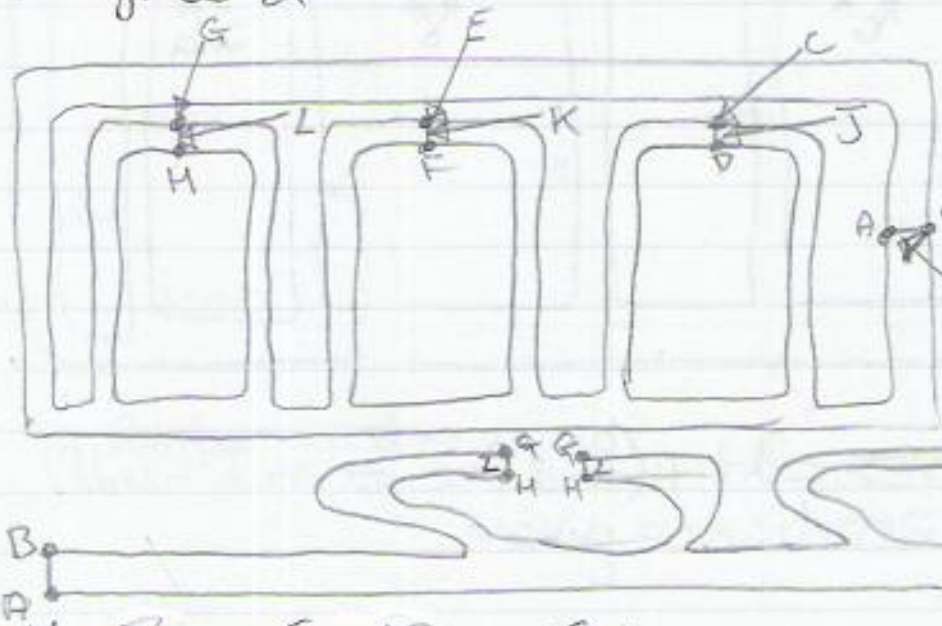
Surface 2



A, B, C, D, E, F, G, H - vertices

I, J, K, L - edges.

V = 8 E = 12 F = 1

X = V - E + F = 8 - 12 + 1 = -3

Check: no boundary curves, B = 5

$X = 2 - 2p - B$

$= 2 - 2 \times 0 - 5 = -3$ ✓

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