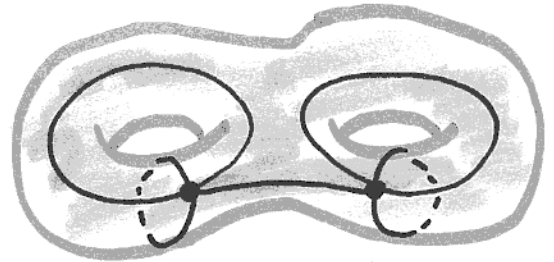
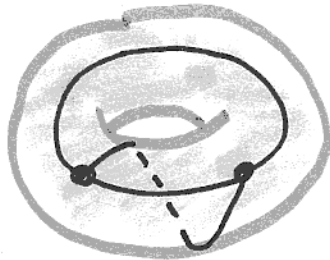
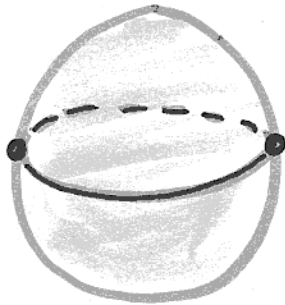


Surfaces and Knots Assignment #1

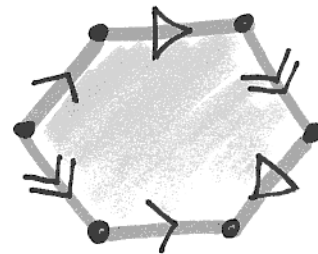
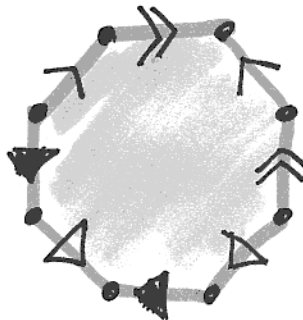
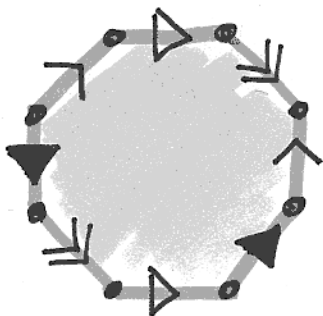
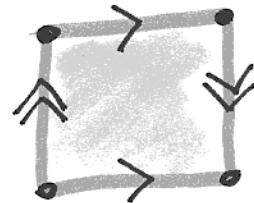
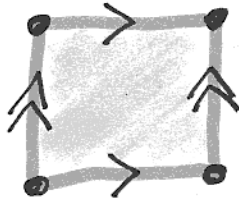
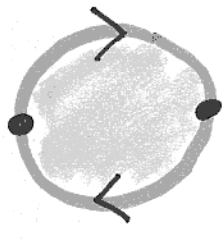
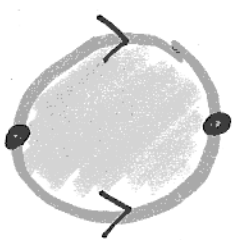
1) Compute the Euler characteristic $\chi = v - e + f$ of the following ways to cut up the surfaces shown:



2) Draw several other ways of cutting up surfaces of genus $g \leq 3$ (3 or fewer handles), and compute their Euler characteristics using your drawings.

3) For each gluing pattern shown, decide

- how many vertices does the surface have?
- is the surface orientable?
- what is its Euler characteristic?



4) How many different gluing patterns are there of each (even) size, for small (2, 4, 6) sizes? Classify the surfaces they represent.