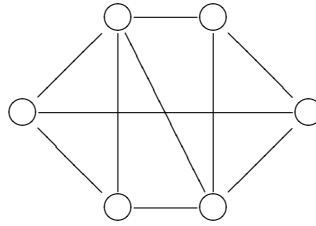
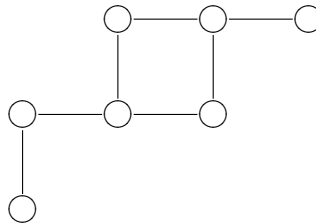


2008 Test 2: F11ME3 Algebra 3/graph theory

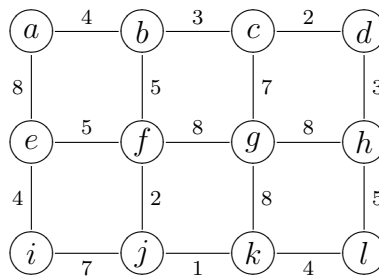
1. The graph below is planar. How many faces does it have? [1 mark]



2. What is the face degree of the *outside* face in the planar graph below? [1 mark]



3. Use Prim's algorithm to find a minimum weight spanning tree for the weighted graph below. **Write down the total weight of your tree.** [4 marks]



4. Prove by induction that

$$\sum_{i=1}^n (4 - 6i) = n - 3n^2$$

for all natural numbers $n \geq 1$. [4 marks]

End of test