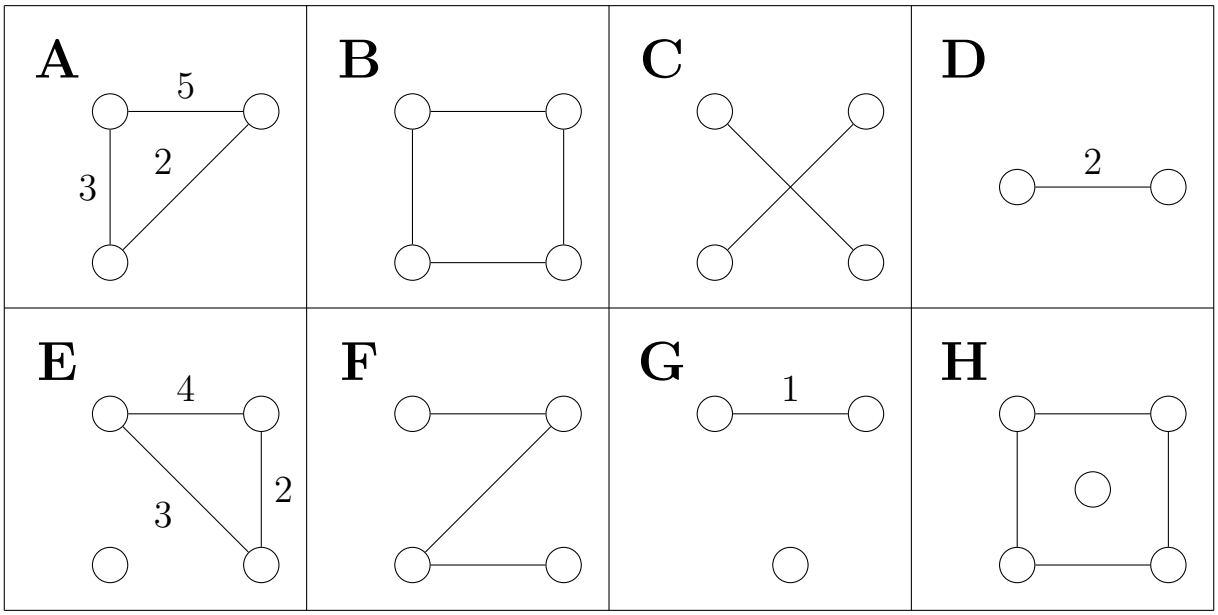
Name:

Stage 1 - General Maths Networks Test

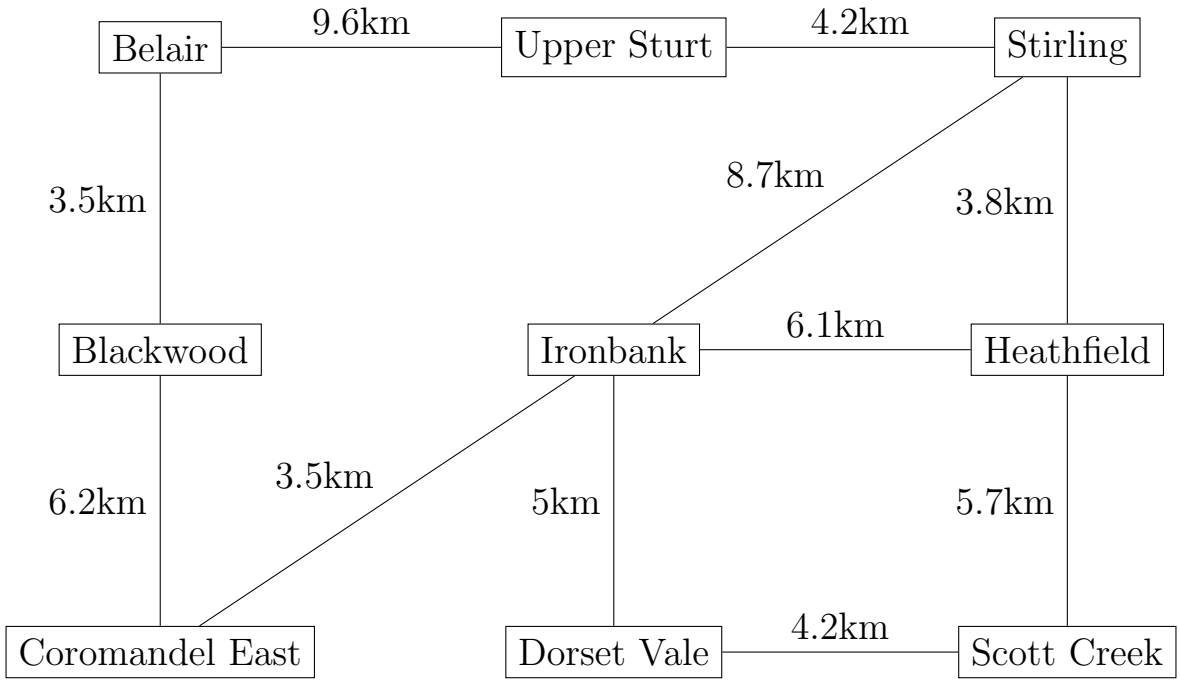
Question 1



By considering the networks above, complete the table below.

Network	Number of Nodes	Number of Edges	Connected Network (Yes or No)	Weighted Network (Yes or No)	Contains a Circuit (Yes or No)
A					
B					
C					
D					
E					
F					
G					

Question 2



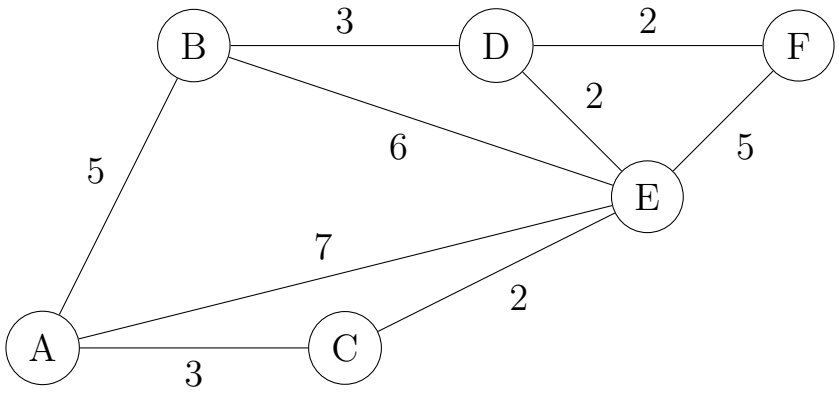
(a) What is represented by the nodes in the networks above?

(b) What is represented by the edges in the networks above?

(c) Apply both Prim's and Kruskal's algorithms in order to find a minimum spanning tree and highlight the edges in this minimum spanning tree in the network diagram above.

(d) Describe the difference between Prim's and Kruskal's algorithm in terms of the steps you follow to arrive at a minimum spanning tree.

Question 3



(a) Use Dijkstra's Algorithm to find the shortest path from A to F in the network shown. Make sure to annotate and box each node appropriately, and neatly cross out labels as needed. Then, write the shortest path here in the form A $\rightarrow \ldots \rightarrow \ldots \rightarrow$ F.

(b) What is the length of the shortest path you found in (a)?

(c) Find the **longest path** (that does not go through any node more than once) from A to F in the network above. Write the longest path in the form A $\rightarrow \ldots \rightarrow \ldots \rightarrow$ F.

(d) What is the length of the longest path you found in (c)?
