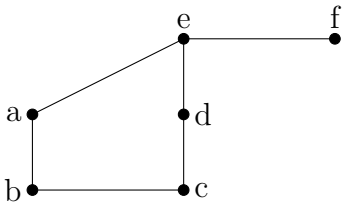

Question 1 ____ / 6

Identify each item for the graph G given.



a. How many nodes (vertices) are there?

b. How many edges are there?

c. Write down the degree of each node:

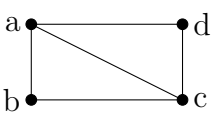
Vertex v	$deg(v)$
a	2
b	2
c	2
d	2
e	3
f	1

d. The **maximum degree** of a graph is the highest $deg(v)$ value. What is this graph's maximum degree? 3

e. The **minimum degree** of a graph is the lowest $deg(v)$ value. What is this graph's minimum degree? 1

Question 2 ____ / 3

Answer the following questions, using the graph H given.



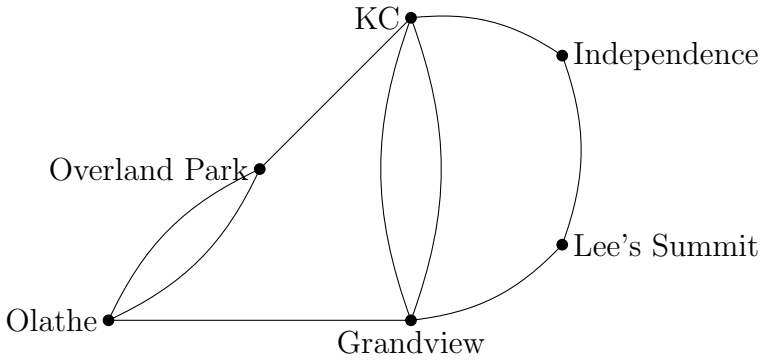
a. Come up with several walks from a to c. Write all steps (each node visited). Also label the **length** of each walk. $a \to b \to c$ (2) or $a \to d \to c$ (2) or $a \to c$ (1).

b. Come up with a **closed walk**, beginning and ending at a. You can choose to visit all nodes or not.

c. Come up with a **path**, where no vertices are repeated.

Question 3 ____ / 5

Answer the following questions, using the graph I given.



a. Come up with a **trail**, a walk with no repeated edges. Example: KC → Independence → Lee's Summit

b. Come up with a **circuit**, a closed trail. Example: KC → Independence → Lee's Summit → Grandview → KC → Overland Park → Olathe → Grandview

c. Come up with a **cycle**, a circuit where the only repeated node is the first/last one.. Example: KC → Independence → Lee's Summit → Grandview → KC

d. Identify: Did you come up with any **Eulerian Trails**?
If not, create one. Example: Olathe → Overland Park → Olathe → Grandview → KC → Grandview → Lee's Summit *to* Independence → KC → Overland Park

e. Identify: Are there any **parallel edges**? Yes: Olathe → Overland Park

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Question 4 _____ / 1

Draw a **Directed Graph** using the following list of edges:

$$(1, 2), (2, 1), (3, 3), (4, 2)$$

(Don't confuse these for points on an x, y plane that are interconnected, each ordered pair is its own set of information - beginning and end nodes.)

Multiple solutions

Question 5 _____ / 2

Draw a graph that is **not connected**, and draw a **subgraph** of your graph.

Multiple solutions