Question 1   _____ / 6
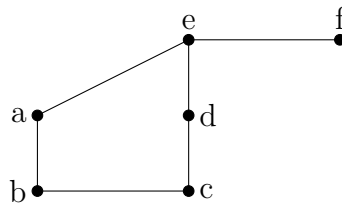
Identify each item for the graph G given.

a. How many nodes (vertices) are there?

b. How many edges are there?

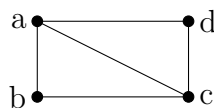c. Write down the degree of each node:

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. $a \rightarrow b \rightarrow c$ (2) or $a \rightarrow d \rightarrow c$ (2) or $a \rightarrow c$ (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.
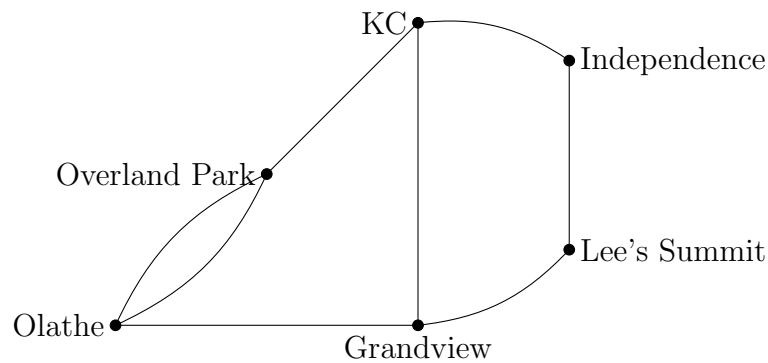
a. Come up with a **trail**, a walk with no repeated edges. Example: KC $\rightarrow$ Independence $\rightarrow$ Lee's Summit

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

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

d. Identify: Did you come up with any **Eulerian Trails**? If not, create one. Example: Yes, (c.)

e. Identify: Are there any **parallel edges**? Yes: Olathe $\rightarrow$ 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