The graph models the baseball schedule for a week. The vertices represent the teams. Each game played during that week is represented as an edge between two teams. Use the information in the graph to solve Exercises 1 and 2.

Pittsburgh
St. Louis
New York
Chicago
Montreal
Philadelphia
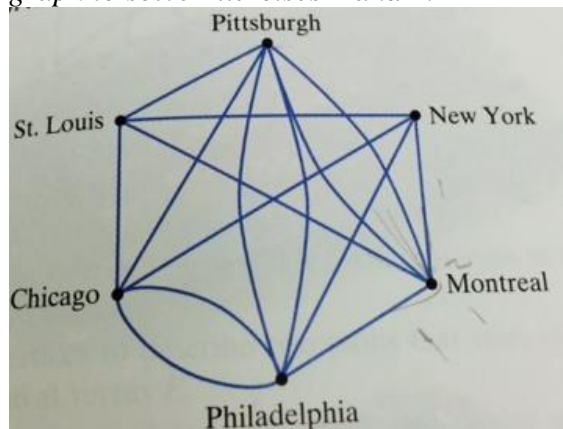
1. How many games are scheduled for Montreal during the week? List the teams that they are playing. How any times are they playing each of these teams?
2. Do the positions of New York and Montreal correspond to their geographic locations on a map? If not, is the graph drawn incorrectly? Explain your answer.
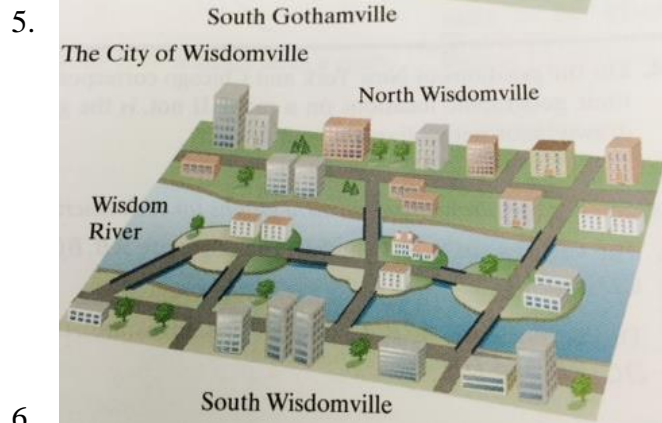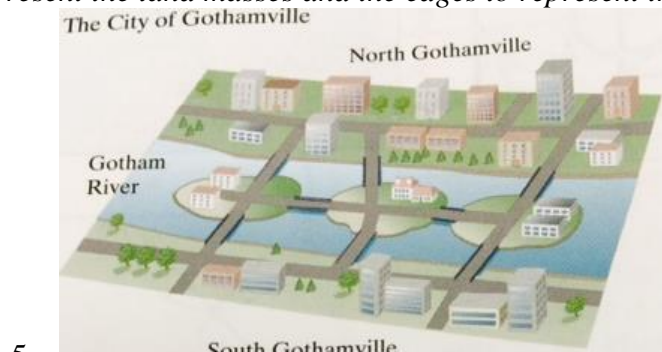
In Exercise 3, explain why the two figures show equivalent graphs. Then draw a third equivalent graph.
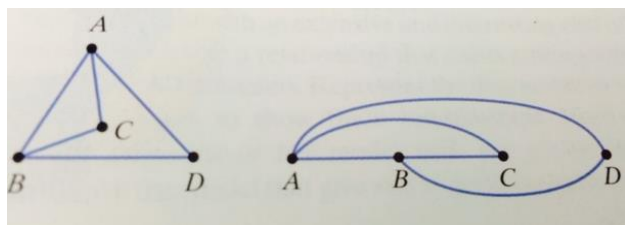

3.

4. An environmental action group has six members, A, B, C, D, E, and F. The group has three committees: The Preserving Open Space Committee (B, D, and F), the Fund Raising Committee (B, C, and D), and the Wetlands Protection Committee (A, C, D, and E) Draw a graph that models the common members among committees. Use vertices to represent committees and edges to represent common members.
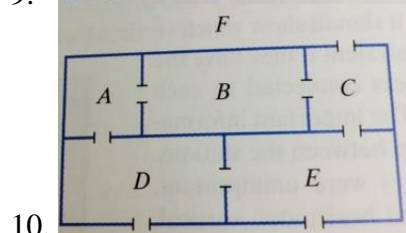
In Exercises 5-6, draw a graph that models the layout of the city shown in each map. Use vertices to represent the land masses and the edges to represent the bridges.

The City of Gothamville

North Gothamville

Gotham
River

South Gothamville

5.

The City of Wisdomville

North Wisdomville

Wisdom
River

South Wisdomville

6.

In Exercises 7-8, create a graph that models the bordering relationships among the states shown in each map. Use vertices to represent the states and edges to represent common borders.

WA

MT

OR

ID

WY

7.

WA

OR

ID

NV

CA

AZ

8.
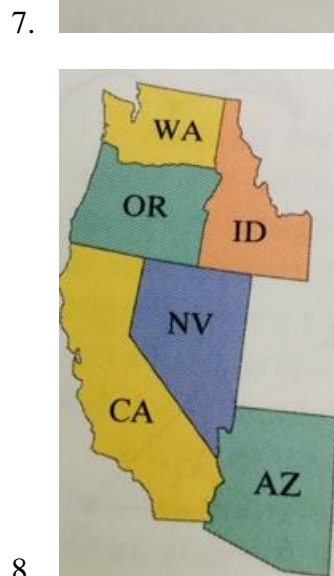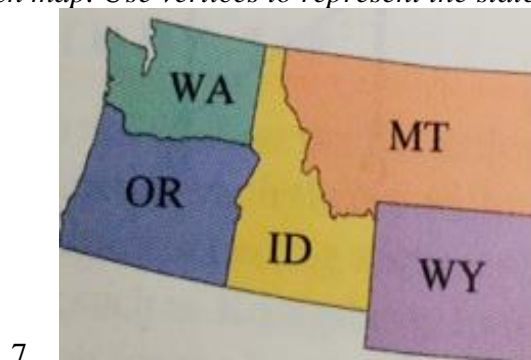
In Exercises 9 and 10, draw a graph that models the connecting relationships in each floor plan. Use vertices to represent the rooms and the outside, and the edges to represent the connecting doors.

9.

10.
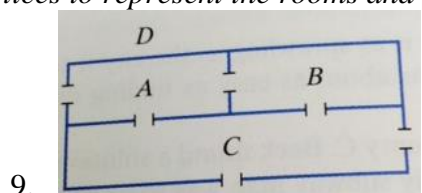
In Exercise 11, a security guard needs to walk the streets of the neighborhood shown in each figure. The guard is to walk down each street once, whether or not the street has houses on both sides. Draw a graph that models the neighborhood. Use vertices to represent the street intersections and corners. Use edges to represent the streets the security guard needs to walk.

11.

12. *In Exercise 12, a mail carrier is to walk the streets of the neighborhood shown in Exercise 11, respectively. Unlike the security guard, the mail carrier must walk down each street with houses on both sides twice, covering each side separately. Draw a graph that models the neighborhood for the mail carrier. Use vertices to represent the street intersections and corners. Use edges to represent the streets the mail carrier needs to walk, with one edge for streets covered once and two edges for streets covered twice.* See the figure for Exercise 11.

In Exercises 13-21, use the following graph.

13. Find the degree of each vertex in the graph.
14. Identify the even vertices and identify the odd vertices.
15. Which vertices are adjacent to vertex A?
16. Which vertices are adjacent to vertex D?
17. Use vertices to describe two paths that start at vertex B and end at Vertex D.
18. Which edges shown on the graph are not indicated in the following path: E, E, D, C, B, A?
19. Which edges shown on the graph are not indicated in the following path: E, E, D, C, A, B?
20. Explain why edge CD is a bridge.