

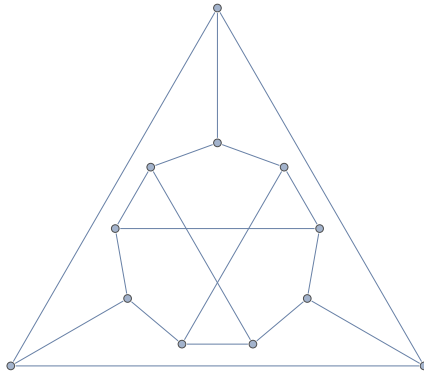
MATH 634, Spring 2013  
PRACTICE PROBLEMS  
in preparation for Exam 1 on Wednesday, March 6, 2013.

The exam covers:

- *Pearls in Graph Theory*, Sections 1.1 through 2.3.
- Additional topics that are included in the course notes

Below are some questions that practice concepts from the class.

- Book questions: 1.1.17, 1.2.1, 1.2.7, 1.2.10, 1.3.8, 1.3.9, 1.3.20, 2.1.3, 2.1.4, 2.1.6, 2.2.3, 2.2.5, 2.3.2, 2.3.7, 2.3.14, 2.3.18
- P1.** Prove that at a party with 49 people, there is always a person who knows an even number of others. [Assume acquaintance is mutual.]
- P2.** (a) If  $G$  is a  $k$ -regular graph, what can you say about  $G^c$ ?  
(b) If  $G$  is a connected graph, what can you say about  $G^c$ ?
- P3.** Determine and prove the edge chromatic number for this graph:



- P4.** For some  $k$  greater than or equal to 2, find a  $k$ -regular graph that has a bridge.