

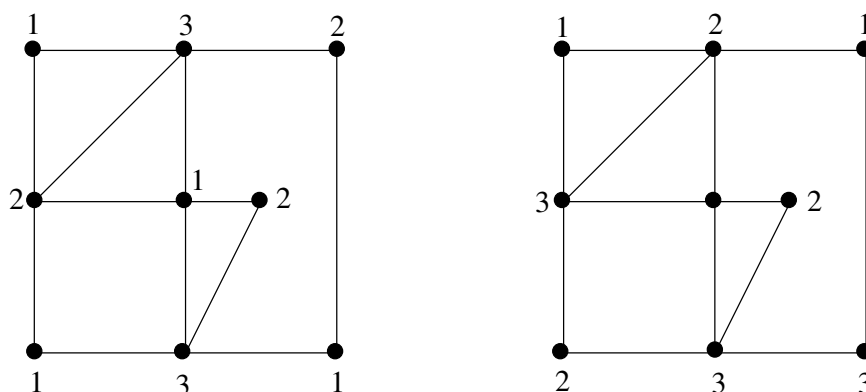
Quiz 4
 Friday, March 2.

NAME _____

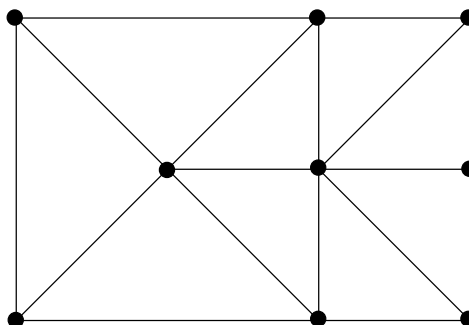
1.(a) A local cafeteria offers a choice of 5 meats, 6 vegetables, and 3 salads. A complete dinner includes 1 meat, 1 vegetable, and 1 salad. How many different dinners can be created?

(b) An online banking service requires its customers to select a password that is four characters long. The password is case-sensitive, so upper-case letters are considered to be different than lower-case letters. The first character of the password must be an upper-case letter and the second character must be a digit. The remaining two characters may be a digit, an upper case letter or a lower-case letter. What is the number of possible passwords?

2. Which of the following is a correct vertex coloring of the given graph?



3. Find the chromatic number of the graph below, and give a vertex-coloring that uses a minimum number of colors.



4. The table below represents species of plants which have competing light or water requirements (for instance the cross at AB means that A and B cannot be in the same habitat). Draw the graph that would be useful in determining the minimum number of different habitats that would be needed to display all these plants in a garden, and find this number.

	A	B	C	D	E
A		X		X	X
B	X		X		
C		X		X	
D	X		X		X
E	X			X	

5. A group of thirteen students have to decide among three types of pizza : Sausage (S), Mushroom (M), and Beef (B). Their preference rankings are shown below.

	Number of Students				
	4	3	2	2	2
First choice	M	B	S	B	S
Second choice	B	M	M	S	M
Third choice	S	S	B	M	B

Determine which choice the group will make (or if they won't be able to make a choice) if the students apply the following voting systems :

- (a) Plurality voting
- (b) Condorcet method
- (c) Borda count
- (d) Sequential pairwise voting with the agenda B,M,S