MATH 396 Final Exam Review

The Math 396 Final Exam is an in-class group exam. You will work in assigned teams of 3 or 4 students to answer 5 or 6 problems. You will employ the problem solving strategies from the text and in-class work. A good way to review is to do problems from the text (re-work homework problems and try other problems that were not assigned) and to re-work problems from your coursepack. The following are additional problems to use for practice, but are not meant to be an exhaustive set of examples of the problems you are likely to see on the final.

Solve each of these questions - if you use the guess and check strategy you must make a well-labeled table.

1. Dale, Al and Mario each have a battery-operated car. The cars always travel in a straight line at a constant rate of speed. They decided to have a race. Each car started at the same time at the beginning of a straight race course.

   When Al's car crossed the finish line, it was ahead of Dale's car by 24 inches and was ahead of Mario's car by 32 inches. When Dale's car crossed the finish line, it was ahead of Mario's car by 10 inches. How many inches long is the race course?

2. Three adults and two kids want to cross a river by using a small canoe. The canoe can carry two kids or one adult. How many times must the canoe cross the river to get everyone to the other side?

3. Five logicians got together one evening to play some logic games. Their first game consisted of four players and one emcee who ran the game. The four players were Ryan, Torrey, Michael, and Bonnie. Janet acted as the emcee. Janet told the players that she was shuffling four white hats and three black hats and was going to put a hat on each of their heads. Each person would be given a chance to tell what color hat he or she was wearing. Janet told everyone to close their eyes. She then put a hat on each head and lined people up in single file, facing in the same direction. Ryan, the person in the back, could see all the other heads when he opened his eyes. Janet asked him if he knew what color hat he was wearing. He didn't know and said so. Torrey was next in line. She could not see Ryan, but could see the other two players. She also said she didn't know her hat color. Michael could see only Bonnie, and he said that he didn't know either. Bonnie, who was in front and could see no one else, knew the color of the hat on her head and announced it correctly. What color was her hat, and how did she know? (Hint: use the eliminate possibilities strategy and consider what must be true if someone could not figure out what color their hat was.)

4. There are 48 people at a party. There are seven times as many adults as children. There are twice as many females as males. If there are 5 girls (female children) at the party, how many men (male adults) are there?

5. Al, George, Kathleen and Chad counted ballots in Florida. They were each given a box of ballots. Each box contained the same number of ballots. Each person counted ballots at a constant rate. However, the rate at which each person counted ballots was different. When Al finished counting all of his ballots, George had 54 ballots left to count, Kathleen had 90 ballots left to count and Chad had 106 ballots left to count. When George finished counting all his ballots, Kathleen had 45 ballots left to count and Chad had 65 ballots left to count. When Kathleen finished counting all of her ballots, how many ballots did Chad have left to count? How many ballots were in each box to start with?

6. Abbie, Bridget, Cynthia and Dena are women whose professions are water quality engineer, soil contamination scientist, air pollution consultant and biological diversity advocate. Match each woman to her expertise, using the follow clues.
    1. Bridget and the biological diversity advocate are both from Oregon.
    2. Abbie, the soil contamination scientist and the air pollution consultant all love to garden.
    3. The air pollution expert, the water quality engineer and Dena all met one another at a global warming conference.
    4. Bridget has never met the person who works on air pollution.

7. Trivia took some fishbowls she'd bought to the flea market. In the first hour, she sold one-third of them and a third of one more. In the second hour, she sold half of them, and half of one more. In her third hour there, she sold one-third of them and a third of one more. The next hour, she sold half of them and half of one more. Finally, she sold the last two and went home. How many fishbowls did Trivia sell?