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For each of the following problems, find the requested set. There is no partial credit on this part of the quiz. For each of the following problems use the sets:

$$U = \{1, 2, 3, 4, 5\}$$

$$X = \{1, 3, 5\}$$

$$Y = \{1, 2, 3\}$$

$$Z = \{3, 4, 5\}$$

1.  $X - Y = \{1, 3, 5\} - \{1, 2, 3\} = \{5\}$
2.  $Y - Z = \{1, 2, 3\} - \{3, 4, 5\} = \{1, 2\}$
3.  $(Y - Z) - X = \{2\} - \{1, 3, 5\} = \{2\}$
4.  $Y \times Z = \{(1, 3), (1, 4), (1, 5), (2, 3), (2, 4), (2, 5), (3, 3), (3, 4), (3, 5)\}$
5.  $(Y \cup Z) - X = \{1, 2, 3, 4, 5\} - \{1, 3, 5\} = \{2, 4\}$

Complete the following problem. Show all work, including an explanation, to receive full credit.

6. Three announcers each tried to predict the winners of Sunday's professional football games. The only team not picked that is playing Sunday was the Giants. The choices of each person were as follows:

Phyllis: Cowboys, Steelers, Vikings, Bills  
Paula: Steelers, Packers, Cowboys, Redskins  
Rasheed: Redskins, Vikings, Jets, Cowboys

If the only teams playing Sunday are those just mentioned, which teams will play which other teams?

See diagram from class on Monday, but the idea is that we set up three circles - one for each announcer. The Cowboys were chosen by everyone, so they are in the intersection of all three circles. The Steelers were chosen by Phyllis and Paula, so they are in the intersection of those two circles. The Redskins were picked by Rasheed and Paula, so they are in that intersection. The Vikings were picked by Rasheed and Phyllis, hence in that intersection. The Bills were chosen by Phyllis only, the Packers by Paula only, and the Jets by Rasheed only. The Giants were chosen by nobody, and are therefore on the outside of all of the circles. Since teams playing each other cannot both be chosen to win, the teams in the intersections have to be paired with teams picked by only one announcer, and the team chosen by everyone has to be playing the team that nobody chose to win. Therefore, we have the following matchups:

Bills vs. Redskins

Packers vs. Vikings

Cowboys vs. Giants

Steelers vs. Jets