Grade 6 Math Circles  
Sets Solutions  
February 5/6, 2013

1. Answers may vary.

2. Answers may vary.
   
   (a) Musical instruments
   
   (b) Words with an 'x' in it
   
   (c) Words with double letters back-to-back
   
   (d) Multiples of 7

3. False. The first set is the set containing just the numbers 2, 4, 6 and 8. The second set is the set contains numbers 2, 4, 6, 8, and so on to infinity (i.e. all even numbers 2 or greater).

4. (a) Answers will vary.
   
   (b) Answers will vary.
   
   (c) \( \infty \)
   
   (d) 1 (\(|\{\text{number of math circles classes there will be}\}| = |\{8}\| = 1\))

5. \( \in, \notin \), answers will vary, \( \notin \)

6. (a) Answers will vary.
(b) Answers will vary.
(c) \{3,9,15,21,...\}
(d) \{2,3,4,5,...\}

7. (a) Universe: All cities in the world. Compliment: cities you have not lived in.
(b) Universe: All shapes. Compliment: Shapes without a 27° angle.

Note this question changed after Tuesday’s class. Please see the updated problem.
(c) Universe: Everyone in this room. Compliment: People with hair that’s not brown.
(d) Universe: All numbers. Compliment: Numbers with a decimal entry.

8. (a) \(A \cup B = \{\text{Carter, Ashley, Patrick, Kelly, Helen, Shawn, Stephanie, Juan}\}\)
    \(A \cup B \cup C = \{\text{Carter, Ashley, Patrick, Kelly, Helen, Shawn, Stephanie, Juan, Jacques, Steven}\}\)
    \(A \cup B \cup C \cup D = \{\text{Carter, Ashley, Patrick, Kelly, Helen, Shawn, Stephanie, Juan, Jacques, Steven, Terry}\}\)
(b) \(\overline{A} \cap D = \{\text{Juan, Terry, Jacques}\}\)
(c) 3
(d) D
(e) \(\overline{A} \cap \overline{B} = \{\text{Jacques, Steven, Terry}\}\)
    \(\overline{A \cap B} = \{\text{Carter, Ashley, Patrick, Shawn, Stephanie, Juan, Jacques, Steven, Terry}\}\)
(f) \(\overline{B \cap C} \cap \overline{D} = \{\text{Ashley, Patrick, Terry}\}\)

9. \((B \cap C \cap D) \cup (D \cap \overline{A} \cap \overline{B} \cap \overline{C}) = \{\text{Shawn, Terry, Kelly}\}. Answers may vary.

10. (a) \(C \cap D\)
(b)

(c)