**Lab for Section 2.6** Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Use good notation and show appropriate work. Write explanations in* ***complete sentences***.

1. (a)  (b) What percent of 19 is 23? (c) Find the area of a rectangular garden
 that is  feet long and  feet wide.

2. A survey of 30 employees at a local restaurant showed that:

8 cooked food; 9 washed dishes; 18 operated the cash register;

4 cooked food and washed dishes; 5 washed dishes and operated the cash register;

*U*

*F*

*D*

*R*

3 cooked food and operated the cash register; 2 did all three jobs.

(a) How many only cooked food?

(b) How many only operated the cash register?

(c) How many washed dishes and operated the cash register, but did not cook food?

(d) How many did at least two jobs?

3. Show that the following sets are infinite by placing them in one-to-one correspondence with a subset of themselves.

 (a) {3, 5, 7, 9, 11,…} (b) {100, 200, 300, 400,…} (c) 

4. Show that the following sets have cardinality ℵ0 by placing them in one-to-one correspondence with *ℕ*.

 (a)  (b) {4, 8, 12, 16, …} (c) {–2, –4, –6, –8, …}

5. Let *F* = {*x* | *x* is a letter in *frontier*}, *T* = {*t, i, r, e*}, and *N* = {*n, o, t, a, r, y*}.

 (a) Write the following in roster notation.

 (i) *F* ∪ *N* (ii) *F* ∩ *N* (iii) *T* × {₤, €} (iv) *F* – *N*

 (b) Answer the following true or false.

 (i) *e* ∈ *N* (ii) *T* ⊂ *F* (iii) *T* ⊆ {*t, i, e, r*} (iv)  *t* ∈ *F*

 (v) *T* ∈ *F* (vi) {*f*} ∈ *F* (vii) *f* ⊂ *F* (viii) ∅ ⊂ *N*

6. Write the set of all multiples of 4 greater than 1 and less than 25 in roster notation and in set builder notation.

7. The Kardashian’s are planning a family reunion.

8 would not go to Kim’s place; 7 would not go to Kourtney’s place;

11 would not go to Khloe’s place; 3 would go to neither Kim’s nor Kourtney’s place;

4 would go to neither Kourtney’s nor Khloe’s place;

6 would go to neither Kim’s nor Khloe’s place;

*U*

*Ki*

*Ko*

*Kh*

2 would go to neither Kim’s nor Khloe’s nor Kourtney’s place; and

1 would go to all three places.

(a) Find the number of people surveyed.

(b) How many would go to Kim’s place?

(c) How many would go to both Kim’s and Kourtney’s?

(d) Who is the crazy person who would go to all three places?