Math 325 Name KEY
Quiz 2-B

1. Suppose that there were 66 jelly beans in a bowl. Peter, Jerry and Pam ate all of them. Peter had four times as many jelly beans as Jerry did and had 3 fewer jelly beans than Pam. How many jelly beans did Peter eat? Make sure you correctly introduce all of your variables and clearly show your work.

   Let p be the number of jelly beans Peter ate.
   Let j be the number of jelly beans Jerry ate.
   Let q be the number of jelly beans Pam ate.

   Then, since there are 66 jelly beans altogether, $p + j + q = 66$
   and, since Peter had 4 times as many as Jerry, $p = 4j$
   and, since Peter had 3 fewer than Pam, $p = q - 3$.

   We may rewrite $p = q - 3$ as $q = p + 3$.
   Now, substituting $(q = p + 3)$ into the very first equation, we have

   $$p + j + (p + 3) = 66.$$

   Substituting $(p = 4j)$ into this equation, we have

   $$\begin{aligned} 4j + j + (4j + 3) &= 66. \\ 9j + 3 &= 66 \\ 9j &= 63 \\ j &= 7 \end{aligned}$$

   Thus, Jerry had 7 jelly beans. Since $p = 4j = 28$,
   Peter had 28 jelly beans.

2. List all of the subsets of the set $\{1, b\}$.

   $$\{\}, \{1\}, \{b\}, \{1, b\}$$

3. List all of the elements of the set $\{x + 15 \,|\, x \in N \text{ and } 3 \leq x < 8\}$.

   $$\{18, 19, 20, 21, 22\}$$

4. State the cardinal number of each of the following sets:

   (a) $\{6\}$

(b) $\{a, b, c, \ldots, y, z\}$

$$26$$

(c) $\emptyset$

$$0$$

(d) N

$$\infty$$