

1. Suppose that there were 56 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 2 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 56 jelly beans altogether, $p + j + q = 56$
and, since Peter had 4 times as many as Jerry, $p = 4j$
and, since Peter had 2 fewer than Pam, $p = q - 2$.

We may rewrite $p = q - 2$ as $q = p + 2$.

Now, substituting ($q = p + 2$) into the very first equation, we have

$$p + j + (p + 2) = 56.$$

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

$$4j + j + (4j + 2) = 56.$$

$$9j + 2 = 56$$

$$9j = 54$$

$$j = 6$$

Thus, Jerry had 6 jelly beans. Since $p = 4j = 24$,
Peter had 24 jelly beans.

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

$$\{\}, \{2\}, \{a\}, \{2, a\}$$

3. List all of the elements of the set $\{x + 10 \mid x \in N \text{ and } 3 \leq x < 8\}$.

$$\{13, 14, 15, 16, 17\}$$

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

(a) $\{4\}$

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

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(c) \emptyset

0

(d) N

∞