You MUST use good notation
and show appropriate work.

Math 102
(Section 2.1)
Language of Sets

Name ___Key___

1. Explain the difference between $\emptyset$ and $\{\emptyset\}$.

1pt

$\emptyset$ is the empty set while
$\{\emptyset\}$ is the empty set inside a set

2. Using proper set notation and the listing method (roster method) express each as a set.

(a) the set of integers between −3 and 4, not inclusive.

2pt

$\{-2, -1, 0, 1, 2, 3\}$

(b) the set of multiples of five between 2 and 38.

$\{5, 10, 15, 20, 25, 30, 35\}$

(c) the set of integers which when squared equal 9.

$\{-3, 3\}$

½pt

(d) the set of integers which when squared equal 7.

$\emptyset$

3. Express each as a set using set builder notation.

1pt

(a) $\{1, 4, 9, 16, 25, 36, 49\}$

$\{X : X \text{ is perfect square less than } 50\}$

(b) $\{3, 6, 12, 15, \dots\}$

$\{X : X \text{ is a multiple of 3 but not a perfect square}\}$

(c) $\{a, e, i, o, u\}$

$\{X : X \text{ is a common vowel in the English language}\}$

4. Determine the cardinal number, $n(A)$, for each of the following sets.

2 p^{kr}

a) A = { x: x is a state in the U.S.}　　　　　　　　　　　　50

b) A = { x: x is a letter in our alphabet}　　　　　　　　　26

c) A = {1, 0, ∅, {∅}}　　　　　　　　　　　　　　　　4

d) A = { x: x is a letter in the word "mississippi"}　　*You do not count duplicate elements for its cardinality*　　4

5. The following table lists the number of home runs Roger Maris hit while playing for the NY Yankees. Referring to this table, give a complete, well-defined description of each of the following sets in using set-builder notation.

Roger Maris	
Year	Home Runs
1960	39
1961	61
1962	33
1963	23
1964	26
1965	8
1966	13

example:

A = {1960, 1961, 1962, 1963, 1964, 1965, 1966}

A = { x : x is a year that Roger Maris played for the NY Yankees}

(a) B = {39, 61, 33, 23, 26, 8, 13}

{X: X is the # of home runs Roger Maris hit each year he played for the NY Yank

3 p^{kr}

(b) C = {39, 61}

{X: X is the # of home runs Roger Maris hit in 1960 & 1961}

or {X: X is the # of home runs Roger Maris hit in his first two years while playing for the NY Yankees}

(c) D = {1965, 1966}

{X: X is the year Roger Maris hit 8 or 13 home runs while playing for the NY Yankees}