Algebra 1 Unit 1 worksheet: Elements and membership

Name _____ Date _____ Period _____

1. Let B be the set of real numbers x for which $3x - 2 \geq 13$. Decide whether each number is an element of B, and write each answer with $\in$ or $\notin$: 4, 7, 5, 0.

2. Decide whether each description gives a set. For each one that does not, say what question about membership has no clear answer.

(a) The whole numbers that are factors of 36.

(b) The big numbers less than 1000.

(c) The students in your class whose birthday is in March.

(d) The songs that are popular this year.

(e) The real numbers between 3 and 4.

3. Hannah rolls a six-sided die 5 times and writes down the set of numbers that came up: $\{2, 3, 6\}$.

(a) What is the largest number of times a 6 could have come up?

(b) What is the smallest number of times a 6 could have come up?

(c) Carlos also rolls the die 5 times, and the set of numbers that came up is the same set. Must Carlos have rolled each number the same number of times as Hannah? Explain.

4. Let G be the set of all numbers $3n^2 - 7$, where n is a whole number. Decide whether $68 \in G$ and whether $71 \in G$. Explain each answer.

5. For which value of x does the set $\{6x - 1,\ -4x - 41\}$ have exactly one element? Write the set for that value of x.

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6. Let $W = \{\{1, \{2\}\}, 3, \varnothing\}$.

(a) List the elements of W and say how many there are.

(b) List every object that is an element of some element of W.

(c) True or false: $2 \in W$. True or false: 2 is an element of some element of W.

7. For which real numbers x does the set $\{x, x^2, x^3\}$ have exactly one element? For which does it have exactly two? Explain why every other real number x gives three elements.

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