

# Symbols and Terminology

## Contemporary Math (MAT-130)

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List all the elements of each set. Use set notation.

1. The set of natural numbers less than 10.
2.  $\{x|x \text{ is a color of the rainbow}\}$
3. The set of even integers between -2 and 11.
4.  $\{\text{January, February, March}, \dots, \text{June}\}$
5.  $\{x|x \text{ is whole number less than or equal to } 4\}$
6. The set of odd counting numbers between 1 and 6.
7.  $\{x|x \text{ is a day of the week}\}$
8.  $\{a, b, c, \dots, k\}$
9. The set of natural numbers less than 1.
10.  $\{x|x \text{ is a vowel}\}$

Denote each set using the listing method.

11. The set of integers between 2 and 9.
12. The set of whole numbers greater than 8.
13. The set of integers between -3 and 25.
14. The set of cardinal directions (ie. North).
15. The set of even counting numbers which are greater than 20 and less than 58.
16.  $\{x|x \text{ is a whole number greater than or equal to } 7 \text{ and less than } 9\}$
17.  $\{x|x \text{ is an integer}\}$
18.  $\{x|x \text{ is an odd counting number}\}$
19.  $\{x|x \text{ is a positive, even multiple of } 3\}$
20.  $\{x|x \text{ is a perfect square less than } 30\}$

Denote each set using set builder notation with x as the variable.

21. The set of all negative integers.
22. The set of whole numbers greater than 2.
23. The set of natural numbers less than 8.
24. The set of the first seven triangular numbers.
25. The set of the planets in the solar system.
26.  $\{3, 5, 7, 9, 11\}$
27.  $\{12, 15, 18, 21, \dots\}$
28.  $\{\dots, -2, 0, 2, 4, \dots\}$
29.  $\{a, b, c, \dots, z\}$
30.  $\{5, 25, 125, 625, \dots\}$

Find  $n(A)$  for each set.

31.  $\{1, 2, 3, 4, 5, 6\}$
32.  $\{2, 3, 5, a, b\}$

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33.  $\{x|x \text{ is a letter of the English alphabet}\}$
34.  $\{1, 2, 3, \dots, 500\}$
35.  $\{x|x \text{ is whole number less than } 10\}$

Fill in the blank with either  $\in$  or  $\notin$  to make each statement true.

36.  $4 \quad \square \quad \{1, 2, 3\}$
37.  $1 \quad \square \quad \{1, 2, 3\}$
38.  $6 \quad \square \quad \{4, 5, 6\}$
39.  $c \quad \square \quad \{1, 2, a, b\}$
40.  $67 \quad \square \quad \{1, 2, 3, \dots, 100\}$

Write true or false for each statement.

41.  $5 \in \{1, 2, 3, 4, 5, 6\}$
42.  $m \in \{l, a, t, e\}$
43.  $10 \in \{x \mid x \text{ is a natural number}\}$
44.  $3 \notin \{0, 2, 4, 6\}$
45.  $f \notin \{1, 2, 3, 4\}$
46.  $\{a, b, c\} = \{b, c, a\}$
47.  $\{4, 5, 6\} = \{4, 5\}$
48.  $\{a, b, c\} = \{x, y, z\}$
49.  $\{1, 2, 1, 3, 1, 4\} = \{1, 2, 3, 4\}$
50.  $\{0, 1, 2, 3\} = \{1, 2, 3\}$

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### Solutions:

1. {1, 2, 3, 4, 5, 6, 7, 8, 9}
2. {red, orange, yellow, green, blue, indigo, violet}
3. {0, 2, 4, 6, 8, 10}
4. {January, February, March, April, May, June}
5. {0, 1, 2, 3, 4}
6. {3, 5}
7. {Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday}
8. {a, b, c, d, e, f, g, h, i, k}
9. {}
10. {a, e, i, o, u}
11. {3, 4, 5, 6, 7, 8}
12. {9, 10, 11, ...}
13. {-2, -1, 0, ..., 24}
14. {North, South, East, West}
15. {22, 24, 26, ..., 56}
16. {7, 8}
17. {..., -2, -1, 0, 1, 2, ...}
18. {1, 3, 5, ...}
19. {6, 12, 18, ...}
20. {0, 1, 4, 9, 16, 25}
21. {x|x is a negative integer}
22. {x|x is a whole number greater than 2}
23. {x|x is a natural number less than 8}
24. {x|x is one of the first seven triangular numbers}
25. {x|x is a planet in the solar system}
26. {x|x is an odd integer between 2 and 12}
27. {x|x is a multiple of 3 greater than 11}
28. {x|x is an even integer}
29. {x|x is a letter of the English alphabet}
30. {x|x is a power of 5 greater than 4}
31. 6
32. 5
33. 26
34. 500
35. 10
36.  $\notin$
37.  $\in$
38.  $\in$
39.  $\notin$

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- 40.  $\in$
- 41. True
- 42. False
- 43. True
- 44. True
- 45. True
- 46. True
- 47. False
- 48. False
- 49. True
- 50. False