Roster Form and Set-builder Form

Two ways to write one set: Roster form lists the elements, Set-builder form states their common property. When to use each.

Name: Date: Score: ____ / 19

A. Fill in the blanks

1. In roster form, elements are written inside ____ brackets.

2. The letters of SCHOOL form a set of ____ elements.

3. In set-builder form, the colon means ____.

4. A set must be ____ defined.

5. The roster form of the vowels is {a, e, i, o, ____}.

B. True or False

6. {1, 2, 3} = {3, 1, 2}. True / False

7. In roster form an element may be repeated. True / False

8. An infinite set is best written in set-builder form. True / False

9. "The tall students of a class" is a set. True / False

C. Assertion and reason

10. Assertion (A): {a, b} and {b, a} are the same set.
Reason (R): The order of elements in a set does not matter.

(a) Both A and R are true, and R explains A
(b) Both A and R are true, but R does not explain A
(c) A is true, R is false
(d) A is false, R is true

Answer: _____

11. Assertion (A): Set-builder form is used for infinite sets.
Reason (R): Infinite sets cannot be fully listed.

(a) Both A and R are true, and R explains A
(b) Both A and R are true, but R does not explain A
(c) A is true, R is false
(d) A is false, R is true

Answer: _____

D. Choose the correct option

12. The letters of BANANA in roster form are:

(a) {B, A, N}
(b) {B, A, N, A, N, A}
(c) {B, N}
(d) {A, N}

Answer: _____

13. {x : x is a natural number, x < 4} equals:

(a) {0, 1, 2, 3}
(b) {1, 2, 3}
(c) {1, 2, 3, 4}
(d) {2, 3}

Answer: _____

14. {2, 4, 6, 8} in set-builder form is:

(a) {x : x is even}
(b) {x : x = 2n, n ∈ N, n ≤ 4}
(c) {x : x < 8}
(d) {x : x = n^2}

Answer: _____

15. Which suits roster form best?

(a) all natural numbers
(b) all real numbers
(c) days of a week
(d) all fractions

Answer: _____

E. Numerical problems

16. How many elements has {x : x is a prime number, x < 10}?

17. How many elements has the set of letters of MATHEMATICS?

F. Short answer questions

18. Write {x : x is an integer, −3 < x < 2} in roster form.

G. Match the columns

19. Match each item in Column A with the correct item in Column B.

Column A	Column B	Your answer
1. {a, e, i, o, u}	(a) such that	1 → ____
2. {x : x is a vowel}	(b) set-builder form	2 → ____
3. :	(c) roster form	3 → ____
4. { }	(d) curly brackets	4 → ____

Detailed solutions

1. curly

2. 5

3. such that

4. well

5. u

6. True. Order does not matter.

7. False. Elements are not repeated.

8. True. A property describes all elements.

9. False. "Tall" is not well-defined.

10. (a) R explains A.

11. (a) R explains A.

12. (a) {B, A, N}. Each letter is written once.

13. (b) {1, 2, 3}. Natural numbers start at 1.

14. (b) $\{x : x = 2n, n \in N, n \leq 4\}$. Four even numbers from n = 1 to 4.

15. (c) days of a week. A small set.

16. {2, 3, 5, 7}. **Answer: 4**

17. {M, A, T, H, E, I, C, S}. **Answer: 8**

18. The integers strictly between −3 and 2 are {−2, −1, 0, 1}.

19. 1 → (c), 2 → (b), 3 → (a), 4 → (d). Each item matches its meaning.