Set Theory Basics Guide

Difference between Subset and Proper Subset:

- **Subset (⊆)**: Set A is a subset of set B if every element of A is also an element of B. A set is always a subset of itself.
- **Proper Subset (⊂)**: Set A is a proper subset of set B if every element of A is also an element of B, and B contains at least one element not in A. A set is not a proper subset of itself.

Examples of Subset:

1. A = {1, 2}, B = {1, 2, 3} → A ⊆ B
2. C = {a, b}, D = {a, b, c, d} → C ⊆ D
3. E = {x, y}, F = {w, x, y, z} → E ⊆ F

Examples of Proper Subset:

1. G = {1, 2}, H = {1, 2, 3} → G ⊂ H
2. I = {a}, J = {a, b, c} → I ⊂ J
3. K = {m, n}, L = {m, n, o, p} → K ⊂ L

Problems to Identify Subset and Proper Subset:

1. Identify whether {2, 4} is a subset or proper subset of {2, 4, 6}.
2. Determine if {a, c} is a subset or proper subset of {a, b, c, d}.
3. Check if {x, y} is a subset or proper subset of {w, x, y, z}.
4. Assess whether {1, 3, 5} is a subset or proper subset of {1, 2, 3, 4, 5}.
5. Evaluate if {p, q} is a subset or proper subset of {p, q, r}.
6. Decide if {7, 8} is a subset or proper subset of {6, 7, 8, 9}.
7. Verify whether {u, v, w} is a subset or proper subset of {u, v, w, x}.
8. Judge if {3, 5, 7} is a subset or proper subset of {3, 4, 5, 6, 7, 8}.
9. Confirm if {d, e} is a subset or proper subset of {c, d, e, f}.
10. Determine whether {x, y, z} is a subset or proper subset of {x, y, z}.

Key:

1. Proper Subset
2. Proper Subset
3. Proper Subset
4. Proper Subset
5. Proper Subset
6. Proper Subset
7. Proper Subset
8. Proper Subset
9. Proper Subset
10. Subset