



Subsets

- Set A is a subset of set B if every element of A is also an element of B, written A ⊆ B
- Of the sets U, R, and S shown in the Venn diagram below, which are subsets?



If T = { 2, 6 }, and the other sets are as given before, what elements are in the area where all the sets overlap? Is T \subseteq S in this case?

Set Equality

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A second definition for set equality: Set A = B if A ⊆ B and B ⊆ A Proper Subset: A ⊂ B if A ⊆ B and A B Is the left set equal to, a proper subset of, or not a subset of the set on the right?

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Is or Is Not a Subset?

* Is the left set a subset of the set on the right?

{ a, b, c }	 { a, c, d, f }	
{ a, b, c }	 { c, a, b }	
{ a, b, c }	 { a, b, c }	
{ a }	 { a, b, c }	
{ a, c }	 { a, b, c, d }	
{ a, c }	 { a, b, d, e, f}	
set X	 set X	
Ø	 { a, b, c }	
Ø	 Ø	
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Cardinality of the Power Set

Power Set: $\mathcal{P}(A)$ is the set of **all** possible subsets of the set A

For example, if $A = \{0, 1\}$, then $\mathscr{P}(A) = \{\emptyset, \{0\}, \{1\}, \{0, 1\}\}$

Find the following Power Sets and determine their cardinality, or number of elements.

♦ 𝒫(∅) =

3

5

- ✤ 𝒫({ a }) =
- ♦ P({ a, b}) =
- ✤ 𝒫({a,b,c}) =
- Is there a pattern?

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